Uncovering What Readers Know: Understanding Readers’ Online and Offline Processes for Identifying Story Elements

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Recommended Citation
UNCOVERING WHAT READERS KNOW: UNDERSTANDING READERS’ ONLINE AND OFFLINE PROCESSES FOR IDENTIFYING STORY ELEMENTS

By

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A dissertation submitted to the Graduate Center Faculty in Educational Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2017
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By

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This manuscript has been read and accepted for the Graduate Faculty in Educational Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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THE CITY UNIVERSITY OF NEW YORK
ABSTRACT

Uncovering What Readers Know: Understanding Readers’
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By

Esti Hellmann

Advisor: Linnea C. Ehri

School-age children are frequently asked to read and summarize narrative texts. However, despite the frequency that summarizing tasks are assigned, teachers infrequently provide instruction on summarizing narratives. In addition, researchers have failed to empirically investigate a summarizing technique specifically designed for narratives. In Study 1, thirty typically developing fourth grade students read passages at lower and upper levels of difficulty and produced summaries of the passages. The treatment participants received four, thirty-minute intervention sessions on using story grammar to summarize the narratives. Results found that story grammar is an effective method for summarizing narratives, and that text difficulty impacts summarizing ability. However, Study 1 also found that the participants struggled to correctly identify the story solution across both levels of text difficulty. Therefore, Study 2 was designed to further examine the online and offline processes readers use to identify the story problem and solution, and additional factors that may impact it. Specifically, Study 2 used a think aloud protocol to investigate online processes for identifying the story problem and solution. The study further investigated the impact of additional factors such as knowledge of story structure,
exposure to narratives, and text difficulty on identifying the story problem and solution. Results suggested that, overall, participants’ identification of the story problem and solution were impacted by text level, knowledge of narrative structure, and exposure to print.
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Chapter 1

Introduction

In pursuit of a topic for Study 1, I anecdotally surveyed elementary school teachers to identify an area of literacy their students struggle with and the intervention(s) they use to support their students. The teachers responded that summarizing is an area of frustration for their students. The teachers further explained that summarizing is particularly relevant when teaching longer texts, such as novels. They explained that summarizing well at the end of each chapter supports readers in remembering the most important story events across weeks of instruction needed for teaching a novel because readers can use the chapter summaries to revisit the most important events in the novel. However, this instructional scaffold is only supportive when the readers generate good summaries that include the important events, without extraneous information. However, the teachers reported that their students tended to generate poor summaries. In addition, the teacher reported that they had no effective intervention for teaching their students to effectively summarize narratives.

Given how often school-age children are expected to summarize, I found the teachers’ comments surprising. I proceeded to search the literature for an empirically-based intervention for summarizing narratives. And while some studies used an intervention to study summarizing narratives, the studies did not use an intervention specifically tailored for narratives. Studies tended to draw on summarizing interventions designed for texts with a hierarchical structure (Kintch & van Dijk, 1978; van Dijk & Kintsch, 1983; Hidi & Anderson, 1986), such as expository texts. However, the literature seemed to suggest that expository text structure is too dissimilar to narrative structure, and that it would be unhelpful to draw upon summarization interventions designed for expository to support summarizing narratives (Lemaire, Mandin,
Dessus & Denhiere, 2005; Meyer & Rice, 1984). Therefore, I drew upon the work of Dr. Joanna Williams (Williams et al., 2002) and story grammar theory (Johnson, 1983; McConaughy, Fizheny-Coor, & Howell, 1983; Meyer & Rice, 1984; Baumann & Bergeron, 1993) to create an intervention for effectively summarizing narratives.

Research findings indicated that text difficulty impacts reading comprehension, and by extension, the ability to summarize a passage (Hidi & Anderson, 1986). However, when reviewing the literature, I found that earlier studies tended to examine summarization ability by using passages that were considerably below the participants’ reading ability. Across studies, the participants’ ages ranged from 5th grade through adult, yet the experimental passages’ reading levels ranged from the 3rd to 6th, making the experimental passages relatively easy for most participants (Brown, Day & Jones, 1983; Johnson, 1983; Hare & Borchardt, 1984; Armbruster, Anderson & Ostertag, 1987; Kintsch, 1990). Also, earlier research concluded that summarizing ability improves with age. However, the impact of age on summarizing was uncovered through studies that asked participants of different ages (i.e. 3rd grade, 5th grade, 11th grade and college) to summarize the same passage, making the passage considerably easier for older participants (Brown, Day, & Jones, 1983; Johnson, 1983; Winograd, 1984). To extend the aforementioned findings of earlier research, in Study 1 text difficulty was experimentally manipulated to better understand the impact of text difficulty on summarizing. Finally, the ability to summarize well is dependent on the reader’s ability to comprehend the passage. However, most of the earlier studies did not pretest their participants for reading comprehension ability or vocabulary (Kitch & Kozminsky, 1977; Brown, Day, & Jones, 1983; Johnson, 1983; Kintch, 1991), an ability very closely correlated with the ability to comprehend a passage (Stanovich, 1986).
Study 1 aimed to answer the following questions:

1. Can story grammar be effectively used as a strategy to help students create better summaries of narrative texts than an irrelevant control treatment?

2. Does text difficulty impact the quality of the summary? Do participants generate better summaries when reading easy passages than reading difficult passages?

3. Do readers with a better vocabulary generate better summaries than readers with a poorer vocabulary?

4. Do readers with higher reading comprehension ability generate better summaries than readers with poorer reading comprehension ability?

Thirty fourth grade, typically developing readers participated in Study 1. The participants were pretested for reading comprehension, vocabulary, and cognitive verbal ability. In addition, the participants read and summarized one lower level (LL) and one upper level (UL) text. A summary was defined as a piece of writing that contains all of the important information without extraneous or redundant information.

After the pretest phase, participants were assigned to groups and the groups were randomly assigned to either a treatment or control condition. The treatment groups received four 30-minute intervention sessions on summarizing narratives. According to story grammar theory, the most important elements of a narrative are: the characters, problem, solution, and the subsequent falling action. The participants were guided to include these important story elements in a narrative summary, and to avoid including any extraneous or unnecessary information (such as story details). They were also taught to edit the summary to ensure
coherence. The control condition received four 30-minute sessions of an unrelated intervention on activating schema by generating self-to-text connections.

In the posttest phase, treatment and control participants once again read and summarized one lower level and one upper level passage.

In Study 1 a summary was operationally defined as writing that includes the important information without extraneous or redundant information. Therefore, the scoring scheme used was designed to give credit for the important information included (such as the story elements), but to penalize for extra or redundant information. Participants received five points for each element of the story included in the summary but lost one point for each unit of extraneous information.

To examine the effects of the treatment, the participants’ summary gains scores were analyzed. Results showed that participants in the treatment condition generated more effective summaries than those in the control condition on lower level and upper level passages. This finding indicates that using story grammar knowledge is an effective method for teaching students to summarize narratives.

Additional analyses revealed that text difficulty significantly impacted summarizing ability. An analysis comparing pretest lower level passage summaries to pretest upper level passage summaries revealed that participants were likely to identify a greater number of story elements in lower level passages as compared to upper level passages. However, they were also likely to include more extraneous information in lower level passages as compared to upper level passages. Univariate analyses on posttest summaries confirmed this trend. These findings
indicate that text difficulty does impact summarizing ability. Thus, to study summarizing ability, it is important to give participants passages that are matched to their reading ability.

A final set of analyses examined the impact of the participants’ vocabulary, reading comprehension, and verbal cognitive ability on summarizing. Results found that neither vocabulary nor reading comprehension scores impacted summary scores at any point during the study. However, when vocabulary and reading comprehension scores were combined to generate a composite score reflecting overall reading achievement, it predicted scores on pretest lower level summaries only. Verbal cognitive ability scores predicted scores on pretest upper level summaries only. These findings indicate that an achievement-based assessment predicted summary scores on a previously mastered level of text difficulty, in this case, the lower level passages, while a cognitive ability-based assessment predicted summary scores on “yet to be mastered” level of difficulty, in this case, the upper level text. However, at posttest, after the treatment participants had received instruction on summarizing narratives, neither the reading achievement scores nor the verbal cognitive ability scores predicted summarizing scores. These findings suggest that effective instruction on summarizing is most supportive to readers, above and beyond reading achievement and cognitive ability.

Overall, findings from Study 1 showed that story grammar is an effective intervention for summarizing narratives. Knowledge of story grammar improved summary quality for both lower and upper text levels. However in lower level texts it significantly improved correct identification of story elements, while in upper level texts it reduced the number of extraneous information included in the summary. In a secondary analysis examining gains for different elements of story grammar, it was found that across levels of text difficulty, participants showed the smallest gains in correctly identifying the story solution.
It is important to note that in Study 1, participants were taught to include story elements in their summaries. However, they were not taught how to identify them. Therefore, the instructional strategy did not support participants struggling with correct identification of story elements, specifically the story solution. Although the research on story grammar has been extensively reviewed, to the best of my knowledge there has not been a study that specifically examined or devised an intervention for the identification of a narrative’s solution. Therefore, Study 2 examined factors that may contribute to a readers’ correct identification of story solution, such as prior knowledge of story structure, exposure to narrative texts, and text difficulty. In addition, Study 2 used a think aloud protocol to uncover how readers identify the story solution. In this study, the participants were guided to think aloud about the story problem, solution and important parts. Two think aloud conditions were examined. In one think aloud condition the participants thought aloud during the first reading of the text. In the other condition, the participants first silently read through the entire text in an uninterrupted fashion and then reread the text in a think aloud condition. This design was intended to investigate whether reading the story as a whole unit before thinking aloud would improve readers’ ability to correctly identify the story problem and solution.

Although the primary interest in designing Study 2 involved readers’ identification of the story solution, the strong relationship between the story problem and solution implies that understanding how readers identify the solution may be linked to the story problem. Therefore, Study 2 investigated readers’ identification of both the story problem and the story solution.
Study 2 aimed to answer the following questions:

1. Does reading through a text before rereading the text in a think aloud protocol support readers’ identification of the story problem, solution, and important ideas in online and offline comprehension as compared to thinking aloud as a text is read for the first time? Will reading through a text before rereading the text in a think aloud protocol support readers in generating a greater number of verbal reports on the story problem, solution, and important ideas as compared to thinking aloud as a text is read for the first time?

2. Are readers with a better-developed knowledge of story structure or greater print exposure able to correctly identify the problem, solution, and important ideas as compared to readers with a weaker knowledge of story structure or less print exposure?

3. Will students who think aloud while reading a text outperform control students who read the texts silently on offline comprehension measures?

4. Will readers generate a greater number of think aloud verbal reports on the story problem, solution, and important ideas when reading a lower level text as compared to an upper level text?
Chapter 2

Literature Review

Study 1: Short and to the Point: Summarizing Narratives

In pursuit of a study topic, I asked elementary teachers to identify an area of literacy their students struggle with and the intervention(s) they use to support their students. Many of the teachers expressed that a sizable portion of their students struggle with summarizing narratives, among them proficient readers. They further explained that students tend to “summarize” by retelling the entire text (including unnecessary story detail) or selecting the funny/interesting parts of the text regardless of its relevance to the major story parts. Few of them properly summarize by selecting only the most important parts of the text (Kintsch & Kozminsky, 1977; Rinehart, Stahl, & Erickson, 1986; Armbruster, Anderson, & Ostertag, 1987). Moreover, the teachers expressed that they had no effective intervention for teaching their students to summarize narratives. It is most interesting to me, that despite the difficulty that students and elementary teachers face with summarizing narratives, it is a task students are commonly assigned by their teachers in the form of reader’s response, book report, or reading log.

The teachers’ frustrations led me to investigate the research in pursuit of an empirically-based intervention to support summarization skills among elementary school students. I was surprised to find that while there is research on summarizing expository text, the knowledge base on summarizing narratives was thin and outdated, with the bulk of the research conducted in the decade between 1975-1985. Moreover, none of the reviewed research on summarizing narratives included an intervention where participants were taught to summarize.

In the development of Study 1, I investigated three bodies of literature: (1) existing research on summarizing narratives, (2) research on summarizing expository text, and (3) theories and research on story grammar. As earlier noted, none of the existing research on
narratives included an empirically based intervention for summarization. Moreover, the literature seemed to suggest that expository text structure is too dissimilar to narratives, and that it would be unhelpful to draw upon summarization interventions used for expository to support narratives (Lemaire, Mandin, Dessus & Denhieré, 2005). Finally, I drew upon the work of Dr. Joanna Williams (Williams et al., 2002) and story grammar theory (Johnson, 1983; McConaughy, Fizhenry-Coor, & Howell, 1983; Meyer & Rice, 1984; Baumann & Bergeron, 1993) to create an intervention for effectively summarizing narratives. According to the simple view of reading (Gough & Tunmer, 1986), reading combines two basic skills: the ability to decode words and the ability to comprehend text. In Chall’s (1983) reading stages a child focuses primarily on the development of decoding skills in stages 1 and 2, often referred to as the learning to read stages. Once a reader’s decoding has consolidated and becomes fluent, the reader can more fully focus on text comprehension in stages 3 through 5, often referred to as the reading to learn stages. According to Chall, reading to learn typically extends from grade 4 through college. Chall’s description of the reading process highlights that the development of good reading comprehension is complex and dominates much of a reader’s years in school. However, although reading comprehension is central to a reader’s education, there is little agreement on how comprehension should be taught and measured (Pressley, 2000).

Some approaches parse reading comprehension into literal and inferential comprehension. Whereas literal comprehension assesses the reader’s ability to recall information explicitly stated in the text, inferential comprehension requires that the reader unglue from the text and combine prior knowledge with cognitive strategies to infer beyond the text. Finding the main idea, summarizing, and drawing conclusions are examples of inferential comprehension.
skills (Schunk, 2004). Summarization is a particularly relevant skill that readers use extensively during schooling and into adulthood.

**Total Recall and Summarization**

Summarization is defined as the ability to reproduce only the most important parts of a text (Kintsch and Kozminsky, 1977; Rinehart, Stahl, and Erickson, 1986; Armbruster, Anderson, and Ostertag, 1987). The literature contains a variety of interventions that researchers have used, aimed at improving the summarization of expository texts. In Kintch and van Dijk’s view (1978), each passage contains a microstructure and a macrostructure. The microstructure is comprised of propositions through which the author explicitly imparts information to the reader; recall is generally considered a microstructure comprehension task since recall demands that the reader retell all of the passage content as it is expressed. Total recall is the process in which the reader fully retells a passage and all of its details as presented in the microstructure. In contrast, the macrostructure, commonly referred to as the text structure, holds information that is derived from the text as a whole and cannot be found solely at the sentence level. For instance, finding the main idea and summarization are dependent on comprehension of the entire text, the macrostructure. Although Kintch and van Dijk examine the microstructure and macrostructure separately, comprehension at both levels is necessary to fully comprehend the text.

Researchers studied the relationship between comprehension skills that rely on the microstructure and comprehension skills that rely on the macrostructure and the effect they may have on each other. Specifically, studies examined the relationship between total recall which is dependent on the microstructure and summarization which is dependent on the macrostructure (Brown, Day & Jones, 1983; Winograd, 1984; Armbruster, Anderson & Ostertag, 1986;
Earlier research made the assumption that the effect may flow from total recall to summarization, with total recall having a direct impact on the reader’s ability to summarize the text. However, to better isolate total recall from summarization, in study designs such as Armbruser, Anderson & Ostertag’s (1987), participants summarized while the original text was present. The authors found that when the text was present and therefore the participants did not have to rely on total recall, they tended to include less extraneous information in their summaries.

Along these lines, in their 1986 review Hidi and Anderson strongly recommend that all readers have access to the text when summarizing in order to minimize the effects of poor total recall on summarization. Others argue to the contrary that summarization affects total recall. When children can identify the components of narrative summaries it provides a framework and thereby improves total story recall (Yussen, Mathews II, Buss, & Kane, 1980; Johnson, 1983; McConaughy, Fizhenry-Coor, & Howell, 1983; Meyer & Rice, 1984). Yet, it is important to note that studies found no causal relationship between total recall and summarization in either direction (see discussion in Rinehart, Stahl, & Ericson, 1986; Williams et al., 2002). These findings suggest that while total recall and summarization may influence each other, one is not caused by the other.

**Summarization Strategies and Text Structure**

Researchers have designed and studied a number of summarization strategies. In their rule-based method, Kintsch and van Dijk guided their participants to write effective summaries by: (1) deleting irrelevant information, (2) generalizing details into higher categories, and (3) constructing a topic sentence. In a second approach, Day (1986) guided her participants to
generate summaries through five principles: (1) deleting irrelevant information, (2) deleting redundant information, (3) creating a superordinate for all list exemplars, (4) selecting a topic sentence that already exists in the text, and (5) inventing a topic sentence if the text does not present one. In their review, Hidi and Anderson (1986) note that both theories employ similar processes: at first, readers evaluate propositions for their relative importance to the topic and delete those that are irrelevant or redundant. Second, the readers condense the information by creating categories and superordinates. Last, readers generate superordinates or sentences when they are missing. The authors further state that summarization makes considerable cognitive demands; summarization necessitates that the reader remember the text information, judge the information for its relative importance, and then generate a written summary.

These rule-based methods have been studied and found to yield positive results (Brown, Day, & Jones, 1983; Day 1986; Rinehart, Stahl, & Erickson, 1986). Nevertheless, as will be discussed below, these studies pose a number of difficulties, and therefore rule-based methods may not be optimally applied to summarize all text structures.

Text structures tend to vary dramatically along genre lines, and it is imperative that the method of summarization be closely aligned and well-fitted with the text’s structure. Support for this claim can be drawn from a 1987 study conducted by Armbruster, Anderson, and Ostertag. In this study the authors found that passages taken from a social studies textbook tended to deviate from the typical macrostructure of expository texts used in earlier studies. In contrast to the typical hierarchical expository structure, the social studies passages tended to present the information to the readers in problem-solution text structure. First the text stated a problem that occurred at a time in history and then discussed the solution. Given that problem-solution texts differ from other types of expository texts at the text structure level, rule-based methods
designed for expository texts were inefficient for summarizing problem-solution texts. In order to present good symmetry with the text macrostructure, the authors deviated from the traditional rule-based method and guided the participants to write summaries based on three core questions: (1) who had a problem or what is the problem? (2) what actions were taken to solve the problem? and (3) what happened as a result of these actions? Although this study only examined the misfit of rule-based methods on problem-solution texts, there is reasonable concern about the fit of rule-based methods for narrative texts too.

By structure, narrative and expository texts differ quite dramatically. Narrative texts tend to contain a familiar “story-like” presentation, with a detailed account of the characters, a problem, its solution, and the falling action (events in the story following the solution). In contrast, expository texts tend to present a main idea followed by supporting details. However, a study found greater differences between the two genres. The study compared middle schools students’ and a computer program’s identification of the most important sentences in a passage across several passages. The authors found that in expository texts: (1) sentences with the greatest number of semantic connections were ranked highest in importance, (2) important sentences were very closely connected to the preceding and succeeding sentences, and (3) important sentences discussing like topics tended to be blocked together. And while narrative texts displayed a good degree of coherence too, it is important to note that the expository texts fared better on all three measures of coherence. Importantly, the authors found that narrative texts tended to make greater demands on the reader that involve activating other sentences in the passage and using prior knowledge to construct meaning (Lemaire, Mandin, Dessus & Denhiere, 2005). This study provides support for theorists’ argument that narrative forms make considerably greater demands on the reader’s inferencing skill. Given that narratives generally
do not explicitly provide all of the necessary information at the sentence level readers need to compensate by inferring missing information (Johnson, 1983; McConaughy, Fitzhenry-Coor, & Howell, 1983). Put together, these studies found that while expository texts have characteristics that build text coherence, narrative texts make greater demands on prior knowledge and inferencing skills.

Noting the differences between expository and narrative macrostructure, Meyer and Rice (1984) state that Kintch and van Dijk’s macro/microstructure approach to text structure is hierarchical in nature and thus may be best suited for expository texts which present a hierarchy of the superordinate main idea followed by supporting details and strong text coherence. Therefore, Kintch and van Dijk’s rule-based summarization methods may strongly support expository text. The reader can typically find the superordinate first and then proceed to systematically retain or delete supporting details based on their relative importance to the superordinate. Studies examining rule-based summarization methods have yielded overwhelmingly positive results (Winograd, 1984; Rinehart, Stahl, & Erickson, 1986; Armbruster, Anderson, & Ostertag, 1987; Kintsch, 1990; Mateos, Martin, Villalon, & Luna, 2008). However, these findings should be approached with a healthy dose of skepticism. They have been uniquely examined with expository texts. This biases the generalizability of rule-based methods to other types of text. Rule-based methods of summarization nicely support expository texts, given that the reader can largely rely on the text itself to provide the needed information in a coherent and well-organized structure. For the most part, summarizers of expository text need to make judgments about the importance of a given proposition and delete the redundant and/or unnecessary one. Only on the rare occasion do summarizers of expository
text have to unglue from the text and reorganize or generate propositions. And, studies have shown that this is the most difficult aspect of summarization.

**Text Organization**

Rule-based methods guide the reader to create a superordinate proposition or combine propositions only in the rare case where the author has not already done so. Studies point out that these deviations from the original passage’s structure and organization are the most difficult aspects of summarization. Only more experienced readers do so. In Brown, Day, and Jones (1983), participants from 5th grade through college were asked to write a free paraphrase summary, then reduce it to a 40 word summary, and finally reduce it to a 20 word summary. When the data were analyzed, the authors found that younger participants met the 20 word limit by simply deleting entire idea units and strictly adhering to text order of the original passage. In contrast, older participants rearranged and reorganized the text order to create the most effective summary within the 20 word limit. Johnson (1983) too, found that only adult participants were able to shorten summaries while maintaining the most important information by combining and reorganizing propositions. In contrast, first, third, and fifth grade students struggled considerably. Consistent with other studies, the adults retained the most important information by departing from the text structure, whereas the younger participants consistently deleted entire propositions to meet the word requirement.

Similarly, Winograd (1984) compared the transpositions within text summaries between 8th graders and adults. Here too, the study results demonstrated that the adult participants wrote more effective summaries by combining two sentences from the original text and inventing new sentences when it could not explicitly be found in the text. However, even though the adults
tended to combine sentences and generate new ones more often than the younger participants, nevertheless, adults infrequently used these strategies.

A second finding from Winograd (1984) points to the fact that readers tend to rate propositions for importance based on their serial position within the text. Eighth grade and adults participants were asked to rate sentences for their overall importance to the passage. Raters then divided the passages into four quartiles and found that adults tended to rate the sentences in the first and fourth quartiles as most important. In contrast, eighth grade participants’ ratings steadily decreased in importance from the first to the fourth quartile. This was particularly true for weak eighth grade students. This finding provides evidence that readers tend to rely strongly on the serial position in a passage and therefore have difficulty reorganizing it. Yet, despite the fact that it was difficult for readers to “un glue” from the original passage and generate new propositions or reorganize existing ones, nevertheless, participants were largely successful in using rule-based methods with expository texts because expository texts tend to present most of the propositions necessary for a summary at the microstructure level in a coherent and blocked manner (Lemaire, Mandin, Dessus & Denhiere, 2005) and readers are rarely required to draw upon the most difficult aspect of rule-based methods: generate new sentences or reorganize them.

However, these most challenging aspects of summarization are frequently required when summarizing narrative texts. In contrast to expository texts that provide most of the necessary information at the microstructure level, narrative texts rarely do so. For instance, a story will not tell the main character’s problem in a single sentence; the problem will likely have to be deduced from a series of sentences. Additionally, as previously mentioned narratives do not provide the
reader with all of the information at the microstructure level and often depend on the reader’s ability to infer the missing information.

McConaughy, Fizheny-Coor, & Howell (1983) compared the narrative summaries of fifth grade students and adults. The author found that fifth graders were strongly glued to the text’s serial order and tended to summarize the passages on a causal-inference schema; they inferred cause and effect from the passage and summarized by sequentially and linearly following the order of events within the passage. In contrast, adults tended to use social-inference schema; the adults inferred and generated propositions that expressed the character’s motives. The adults’ social-inference summaries were qualitatively superior to the fifth graders’ causal-inference summaries. This study provides strong evidence that students need to be taught to depart from the microstructure to reorganize propositions or generate new ones when summarizing narrative texts. A narrative summary is likely to require considerably more inventions than an expository text, which is a great challenge for summarizers. Thus rule-based methods proposed by Kinstch and van Dijk (1978) and Day and Brown (1983) which draw heavily on information provided at the microstructure level, are not likely to be most effective for narrative texts. Nevertheless, to date no study had examined a strategy tailored for summarizing narratives.

**Structure of Narratives**

Researchers fully agree regarding the most important aspects of a narrative text. Since the 1970s story grammar has been adopted as the text structure for narratives, and contains its most important elements (Johnson, 1983). While theorists vary on the particulars of story grammar, across theories there is a strong consensus that at the most reduced canonical form,
narratives consist of three basic components: problem, solution and falling action (although they may be referred to by varying labels) (McConaughy, 1983; Meyer & Rice, 1984; Baumann & Bergeron, 1993). Moreover, these elements are so essential to the narrative structure that adult participants spontaneously selected these elements as the most critical components of narratives when no instruction was provided (Yussen, Mathews II, Buss, and Kane, 1980).

Moreover, a considerable body of research examined the benefits that readers experience when they have knowledge of story grammar. Gordon and Braun (1982) provided fifth grade students with instruction on story grammar over a five-week period and found that the treatment group outperformed the control group on measures of literal and inferential comprehension measures. Meyer and Rice (1984) explain that “in principle, a story grammar is generative, that is, it can produce structural descriptions of stories that have never been told but would be considered to be acceptable stories.” (p. 338) Story grammar thus, defines the type and amount of information that form a story and that will be remembered. Johnson (1983) explains that story grammar serves as a schema that readers use to identify and retain the important bits of information from a story. Therefore, it is important to ensure that readers possess accurate and strong knowledge of story grammar and to provide instruction to reshape story grammar knowledge where weak or faulty (McConaughy, Fizhenry-Coor, & Howell, 1983). Moreover, given that story grammar supports a reader in retaining only the most important aspects of narratives, McConaughy, Fizhenry-Coor, & Howell, (1983) suggest that story grammar can be used as an effective strategy for summarizing narrative texts. Yet, to date no study examined the effects of using story grammar as an intervention. Therefore, the current study investigated an intervention on summarizing narratives, based on story grammar knowledge. Based on the
works of Williams and colleagues (2002) participants were guided to first identify the story
grammar elements and then use that information to generate a cohesive summary.

Influence of Ability and Age

The emphasis of prior research on the success of rule-based methods as the preferred
summarization strategy is biased given that it has only been tested with expository texts. In
addition to this limitation, Hidi and Anderson’s (1986) suggest that the reader’s personal
characteristics such as vocabulary, reading proficiency and reading comprehension ability may
also impact summarization.

The research has long acknowledged the contribution of vocabulary to reading
comprehension (Pressley, 2000). In the 1986 landmark paper Stanovich hypothesized a
reciprocal relationship between vocabulary and reading comprehension. As a result of their
more extensive reading experience, good readers tend to have better vocabularies than poorer
readers and their advanced vocabularies enable them to comprehend text more deeply.
Consequently, the deep comprehension enhances further vocabulary acquisition. The National
Reading Panel (2000) too, acknowledged the relationship between reading comprehension and
vocabulary and pointed out that the earliest findings in the literature date back to 1925.
However, the panel was careful to note that despite strong correlational evidence, there has been
no demonstration of a causal relationship.

Despite a lack of causality, vocabulary is often viewed as a confounding variable in
reading comprehension studies and it is common practice among researchers to control for
vocabulary among the study participants (Cromley, Snyder-Hogan, & Luciw-Dubas2010; Kim,
Petcher, Schatschneider, & Foorman, 2010; Shany & Biemiller, 2010). This is typically achieved by using vocabulary as a predictor in a regression analysis or as a covariate in an analysis of variance. Given that summarization is an inferential reading comprehension task, the research provides ample basis to suggest that individual differences in vocabulary may confound findings in summarization tasks if it is not controlled. Given that readers with well-developed vocabularies comprehend the text more deeply, it is tenable that their enhanced vocabularies may improve the quality of their written summaries. It is possible that vocabulary rather than a treatment may create the observed differences in summary quality. However, despite the long legacy in reading research to treat vocabulary as a confound in reading comprehension, nevertheless, all of the aforementioned summarization studies neglected to control for vocabulary among their participants. In the present study, vocabulary was controlled by pretesting all participants using a valid and reliable instrument. Any participant demonstrating vocabulary scores that drastically differed from the norm were not invited to participate in the study.

Additional reader characteristics have been examined as well. Studies have found age effects in summarization tasks, in which older participants reliably outperform younger participants. In a study by Brown, Day & Jones (1983) the authors recruited 5th grade, 7th grade, 11th grade, and college freshmen. The participants were asked to read 6 fairytale passages that were roughly 500 words in length and on a fifth grade reading level. Participants had repeated exposure to the passages over the course of one week and were encouraged to take the passages home and study them. One week later participants were posttested on total recall and asked to complete summaries of varying lengths. Results of this study demonstrated that older and younger participants did not vary on total recall measures, but they did vary on summarization
tasks. More specifically, 5th and 7th grade participants used verbatim and near verbatim sentences and rarely departed from the macrostructure organization. In contrast, the older participants tended to paraphrase more frequently and were more eager to depart from text order.

In a later study Kintsch (1990) found similar results. Kintsch (1990) recruited 6th grade, 10th grade, college age participants, and the participants were asked to read expository passages roughly 500 words in length on a 6th grade level. However, the text structures were experimentally manipulated to present good/poor macro/microstructure texts. Results revealed that as compared to younger participants, older participants were more successful at including macrostructure information in their summaries, which improved the quality of the summaries.

Similar trends were found in studies examining narrative summaries. Like Brown, Day and Jones (1983), Johnson (1983) too found that while younger participants tended to shorten narrative summaries by deleting entire propositions, adults tended to improve summaries by reorganizing and/or generating prepositions to retain the most important information in the fewest words. Additionally, Johnson (1983) identified six skills that readers were observed to draw upon when summarizing and all six skills were more evident in older readers. Moreover, as mentioned earlier, McConaughy’s (1983) found that adults’ social-inference summaries of narrative texts were qualitatively superior to fifth graders’ causal-inference summaries.

However, it is important to note that while these studies found that older participants generated more effective summaries than younger participants, the authors failed to account for the fact that older participants were not merely older in years but also were likely to be more proficient readers. Given that older participants are likely to be better readers, the superior performance of older participants may not be uniquely attributed to age. The adults’ superior
reading comprehension may have had an influence on the quality of their summaries. Moreover, it is tenable that reading comprehension ability may impact the quality of summaries produced by age-matched readers.

Other studies have examined the effect of reading comprehension ability on summarization. In their study Armbruster, Anderson and Ostertag (1987) pretested 5th grade participants from four classrooms by using the Gates MacGinitie test, which generates a composite reading score based on reading comprehension and vocabulary subtests. Using this score, participants were classified as low, medium or high ability readers (the authors did not disclose the cut scores used to designate the ability levels). The intact classrooms were randomly assigned to condition, and the treatment classrooms received an intervention on summarizing cause-effect passages. In the posttest phase, all participants were asked to read a social studies passage of 525 words in length and to summarize the passage. Analysis of the summaries revealed a treatment and ability effect. While the treatment group outperformed the control group, the authors also found that all participants included a significant amount of irrelevant information in their summaries. However, as compared to high ability readers low ability readers tended to include more irrelevant information and less important information.

Winograd (1984) too found effects for reading comprehension ability. The author recruited adult controls and 8th grade participants. The 8th graders were classified as either low or high ability using scores of the Stamford Achievement Test (SAT). Participants who scored below the 50th percentile were classified as low ability, while participants who scored above the 59th percentile were classified as high ability. Students scoring between the 50th and 59th percentile were eliminated from the study in order to create a buffer between the low and high ability groups. In this study too, participants were asked to summarize short expository
passages. For the analysis, the author divided the original passage into 4 quartiles and rated the idea units within each quartile for importance to the overall topic. Sentences more closely related to the topic were deemed as “highly important” while sentences least related to the topic were rated as “low importance”. As discussed earlier, results showed that poor ability participants were most impacted by serial position in the original passage. Regardless of the idea unit’s importance, poor ability participants tended to include the most idea units from quartile 1. The numbers declined steadily across all quartiles, and they included the fewest idea units from quartile 4. In contrast, the high ability readers and adults recognized that the most important idea units were in quartile 1 and 4 and included them in the summary. Importantly, good readers displayed patterns similar to the adults, but to a lesser degree. Overall, good readers outperformed the poor readers, but the adults outperformed the good reader on most measures. The finding that good readers outperformed poor readers demonstrates that reading comprehension ability does impact summarization. However, it is unclear whether the adults outperformed the good readers due to age or comprehension ability. These studies endorse skepticism surrounding findings that differences in summarization studies are uniquely attributed to age and suggest that differences may be attributed to differences in comprehension ability. To circumvent these difficulties in the current study, the participants were from a single age group and they were pretested for both reading comprehension and word reading ability.

Influences of Text Difficulty

However, studies examining both age and ability effects are limited by the fact that all of the study participants read the same passages (Brown, Day & Jones, 1983; Johnson, 1983; McConaughy, Fizhenry-Coor, & Howell, 1983; Winograd, 1984; Hare & Borchardt, 1984; Armbruster, Anderson & Ostertag, 1987; Kintsch, 1990). In these studies, groups of participants
that were more proficient comprehenders either due to age or ability, read the same passages as younger or less skilled comprehenders. Consequently, the passages were disproportionally easier for older/more skilled comprehenders than for the younger/less skilled comprehenders. Text difficulty is likely to have confounded these findings.

The authors could have controlled for text difficulty by matching the text to the comprehenders’ level. For instance, more skilled comprehenders could have been given texts that were more difficult than less skilled comprehenders. A study design which includes text-level matching is needed to determine whether reading comprehension ability improves summarization skills after text difficulty has been controlled. For instance, is an advanced 8th grade reader able to produce a better summary than a below level 8th grade reader when they are reading text matched to their reading level? In addition, this design may clarify the role of maturation in summarization. It may uncover whether an adult reader reading adult level material can produce a better summary than a school-age reader reading school-age material. However, given that the existing literature does not control for text difficulty, there is no certain evidence at present that older/more skilled comprehenders possess better summarization skills than younger/less skilled comprehenders. In the present study the interaction between text difficulty and reading ability was investigated through text leveling. In Study 1 readers at the fourth grade level summarized below level texts and at-level texts. This paradigm allowed for within person comparison of text difficulty.

In summary, the body of research on summarization has largely studied rule-based summarization methods with expository passages at approximately the fifth grade reading level. The overrepresentation of rule-based methods used with expository texts raises concern over the efficacy and generalization of this method to narrative texts. Secondly, the studies failed to
control for variance in readers’ personal characteristics such as vocabulary and comprehension ability as well as text characteristics such as text difficulty. These characteristics are likely to have confounded some of the findings. The current study controlled for limitations in text structure, reader traits, and text traits found in earlier studies.

In the present study, summarization was examined since throughout the course of schooling, students are frequently asked to summarize texts as evidence that they have read and comprehended the text. Yet, there is little agreement among teachers and students concerning the most important ideas in a passage. Schellings and van Hout-Wolters (1995) conducted a study with tenth grade students and their respective teachers in which students and teachers read expository science passages and were asked to underline word groups representing the main ideas of the text. The authors found that nearly 98 percent of all word groups were underlined by at least one participant and that no word group was underlined by all participants. Moreover, the students’ identification of main ideas was quite diverse. Students tended to differ in what they considered the most important word groups in a text. Interestingly, teachers’ ratings were not any more uniform than students’ ratings. Within group, teachers too tended to differ on what they considered the most important word groups to be used in a summary. Yet despite the frequency at which students are required to summarize, there is great ambiguity and lack of agreement among both teachers and students concerning the content of summaries. Moreover, despite the frequency at which summary writing is assigned, students are rarely given direct instruction on summarization strategies (Hill, 1991). In the lower elementary school grades, narratives comprise a large percentage of the students’ reading and as a direct result, they are frequently asked to summarize narratives. However, as evidenced above, there is a lack of empirically backed summarization strategies for narratives.
Chapter 3

**Study Rationale**

The current study used story grammar as an intervention and a strategy to guide the summarization of narrative texts in a controlled experimental study. Study 1 operationally defined a summary as writing that contains the important story parts without including the unimportant parts. It was hypothesized that story grammar is useful for guiding participants to include only the important parts of a story and to omit the unimportant parts.

Rule-based summarization techniques train the reader to include only the important parts of a text in a summary and to omit any unimportant parts or details. However, in previous studies (Kintch & Kozminsky, 1977; Brown, Day & Jones, 1983; Winograd, 1984; Mateos, Martin, Villalón, & Luna, 2008) the scoring did not measure or penalize the inclusion of unimportant information in a summary. For instance, Day, Brown & Jones (1983) questioned whether longer texts which include extra information may impact recall and summarization. However, in their scoring scheme they examined the ratings of important ideas included and the word count. At no point did they examine or account for unimportant information included in the summary. Therefore, for Study 1 a new scoring scheme was generated, which took account of both criteria: (1) the inclusion of important information and (2) the inclusion of extra information.

In addition, previous studies used a variety of unit bases for scoring summaries, with little consistency across the scoring methods. While some studies scored summaries at the sentence level (Winograd, 1983), other studies scored summaries at the word level. Interestingly, studies that scored at the word level tended to also limit the number of words allowed, directly
interfering with the number of ideas represented in the summary. (Jones, 1983; Brown, Day and Jones, 1983; Hare & Borchardt, 1984; Armbruster, Anderson and Ostertag, 1986; Jing, 1998). Departing from earlier studies that evaluated summaries based on syntactic features (number of sentences or words), the present study evaluated summaries based on the information they contained. Therefore, it seemed most fitting to score at a semantic level, such as idea units. Some earlier studies scored summaries at the semantic level but failed to provide clear information on the scoring scheme, thus thwarting replication in the present study. For instance, Brown, Day and Jones (1983) reported using “idea units” to score summaries, a method borrowed from an earlier study by Brown and Smiley (1977). Yet neither paper operationally defined “idea unit” or described a method for parsing a summary into its idea units. Armbruster, Anderson, and Ostertag (1987) also scored summaries by idea unit, which they loosely defined “…passages were parsed into idea units, which were basically independent clauses” (p. 339). Although Armbruster, Anderson, and Ostertag (1987) provided a bit more information on their scoring scheme, it did not provide enough information to replicate their scoring scheme. Therefore, a scoring scheme that borrowed from this study but more clearly defined the idea units was created for Study 1.

In order to control for some limitations of scoring found in earlier research, Study 1 parsed summaries into idea units, a meaningful unit of thought. Next, each idea was rated as either containing important information that should be included in a summary or extraneous information that should not be included in a summary. In this way, scoring reflected the content of the summary and its fidelity to only important story ideas.

Moreover, Study 1 was intended to examine reader characteristics and text features that may impact summarization. The study examined summarizing narratives among typically
developing school-age children. Specifically, Study 1 recruited fourth grade students who were native speakers of English, because earlier research found a significant shift between 2nd and 4th grade. Therefore, Study 1 investigated summarization in young readers before completion of the fourth grade (Yussen, Matthews II, Buss and Kane, 1980). In addition, previous studies found that among English language learners (ELLs) some reading processes in L2 are related to L1 (Alptekin & Ercetin, 2010) and that ELLs tend to exhibit different reading comprehension processes as compared to native speakers of English (Francis, Snow, August, Carlson, Miller & Iglesias, 2006). Participants in Study 1 were pretested for reading ability to account for the impact of readers’ characteristics on summarizing.

In addition, previous researchers failed to fully control for the impact of text difficulty on summarization as they used passages that were below the reading levels of their participants as target texts in the study. To test this effect, participants in Study 1 read and summarized both lower-level and upper level passages. Beyond leveling the passages, additional measures were taken to better control for text effects. Specifically, steps were taken to ensure that the text effects found were not related to effects a single passage that may not generalize to other passages.

Use of only a single passage to assess the effect of an instructional treatment is problematic. Results might arise from features of that particular text rather from the treatment. Suppose a text possessed an overly complex macrostructure. Failure to find significant results may not be a result of the treatment’s inefficacy, but rather a result of complexity unique to that text. Findings that may not generalize to other passages create a threat to the study’s external validity (Campbell and Stanley, 1963). In order to limit the chances of effects arising from an individual text, two texts were selected for each level of difficulty. Study 1 included two lower
level texts and two upper level texts. In addition, the passages were counterbalanced across participants at every point of data collection.

Moreover, researchers have found that various text features and aspects of the macrostructure are likely to influence the reader's ability to comprehend the text. For instance, Britton and Glynn (1982) found that text syntax and vocabulary place demands on the reader, while Meyer and Rice (1984) noted that text cohesion affects the reader. However, an author is likely to use the same style of writing across texts, and therefore writings from the same author are likely to present comparable macrostructures. Therefore, in Study 1 within-level passages were selected from writings of the same author. The two lower level passages were written by Cynthia Rylant and the two upper level passages were written by Jane Louise Curry.

Finally, in contrast to earlier studies that used contrived texts, all passages used in Study 1 were selections of authentic texts. Authentic and contrived texts differ in structure. While authentic texts are written for literary value, contrived texts are written solely for classroom instruction purposes. Contrived texts are texts typically found in classroom reading anthologies and reading programs, and are narrowly structured surrounding a given teaching point. For example, a contrived text designed to teach the identification of the main idea is likely to place the main idea in the opening sentence of the paragraph for easy identification (Hare, Rabinowitz, & Schieble, 1989). This strongly contrasts with authentic text which may place the main idea at any point in the paragraph, or at times, may neglect to overtly state the main idea at the sentence level (Palinscar & Brown, 1984). Thus, contrived texts have been found to possess a simplified macrostructure with very prominent and easily identified text features. These findings have raised controversy surrounding the use of contrived texts as a pedagogical tool due to the lack of generalization that may ensue when the reader encounters the more complex macrostructure of
an authentic text (Hare, Rabinowitz, and Schieble, 1989). Therefore, to ensure the quality of the passages and generalization, all of the passages used in Study 1 were excerpts of authentic, published literature; contrived passages were not used.

Study 1 aimed to empirically test the use of story grammar as an effective technique for summarizing narrative texts. In addition, it further clarified limitations of earlier studies concerning scoring of summaries, reader characteristics, and text features. Study 1 aimed to answer the following research questions:

1. Can story grammar be effectively used as a strategy to help students create better summaries of narrative texts than an irrelevant control treatment?

2. Does text difficulty impact the quality of the summary? Do participants generate better summaries when reading easy passages than reading more difficult passages?

3. Do readers with a better vocabulary generate better summaries than readers with a poorer vocabulary?

4. Do readers with higher reading comprehension ability generate better summaries than readers with poorer reading comprehension ability?
Chapter 4

Method

Participants

The study recruited 30 fourth grade students (18 male and 12 female) with an approximate mean age of 9.7 years, who were native speakers of English. All of the participants were Caucasian. The participants were recruited from one private school in a high SES neighborhood, with two classes at the fourth grade level. There were 15 students in each class. The primary investigator made initial contact with the school administration to introduce the study and invite them to participate. During the initial meeting, the primary investigator introduced the premise of the study and clearly stated that participation was voluntary. It was further clarified that the school was free to withdraw from the study at any point. Once the school administration and the homeroom classroom teacher agreed to participate as a study site, fliers and consent forms were mailed out to the parents via the U.S. Postal Service. To protect the students’ and their parents’ anonymity, the school coordinated the mailings. The parents were encouraged to read the flier and sign the consent form if they grant their child permission to participate. The flier explained the purpose of the study and potential benefits their child may receive from participation. It further stated that study participants will receive a $20.00 gift card to Amazon.com at the completion of the study. Importantly, both the consent form and the flier clearly guaranteed to protect the anonymity of all participants and assured the freedom to withdraw from the study at any point. Children of consenting parents returned the consent form to their classroom teacher, and in this way, the primary investigator had no direct contact with the participants’ parents. All parents but one signed and returned the consent forms.
After the parents consented, the participants assented as well. In clear and simple language, the participants were explained the extent of the study, the compensation they would receive for participation, and were told that they were free to withdraw at any point. All of the children who had returned a signed consent form assented to participate in the study.

The sections below describe the study’s assessments, materials, intervention sessions, and scoring method. All of the assessments, materials, and activities used in Study 1 were standard classroom resources and procedures typically found in elementary school classrooms.

**Materials**

**Pretest Performance on Literacy Achievement.** The school shared participants’ test scores on the following literacy-related achievement skills and cognitive abilities. These assessments were part of a school-wide testing battery administered to the participants at the end of third grade, six months prior to the beginning of the study.

1. *Stanford Achievement Test, Tenth Edition, Reading Vocabulary Subtest (SAT10-RV) (2003).* This measure is a norm-referenced vocabulary test. This multiple choice test contains 20 items assessing the meaning of words imbedded in sentences. In accordance with the testing manual the test was administered in a group setting, and participants were allowed 14 minutes for the test. Testing manual reports reliability in a range between 0.85 and 0.91 (NCS Pearson Inc., 2003). Given that the SAT 10-RV only contains 20 items and is not a very sensitive measure, scores were only used as an indicator that the treatment groups were similar on vocabulary scores. Vocabulary scores were used as evidence that the intervention, not vocabulary, could be causally related to the study’s outcome.
2. Stanford Achievement Test, Tenth Edition, Reading Comprehension Subtest (SAT10-RC, NCS Pearson Inc., 2003). This measure is a norm-referenced reading comprehension test. This multiple choice test contains 30 questions based on 6 passages of varying lengths and genres. In accordance with the testing manual the test was group administered and participants were allowed 30 minutes for the test. Testing manual reports reliability in a range between 0.85 and 0.91 (NCS Pearson Inc., 2003). In this instance too, the SAT 10-RC was used to ensure that groups were equivalent. This provided evidence that the intervention, not reading comprehension ability, could be causally related to the study’s outcome.

3. Otis-Lennon School Ability Test, Level D, Eighth Edition, Verbal (OLSAT-V, 2003). This measure is a norm-referenced test of verbal cognitive abilities. In contrast with the SAT which measures achievement, the OLSAT is designed to measure cognitive abilities that affect achievement. The verbal section of the OLSAT measures verbal comprehension and verbal reasoning. In accordance with the testing manual the test was group administered, and participants were allowed 50 minutes to complete 64 multiple choice questions. Testing manual reported reliability in a range between 0.86 and 0.92. The OLSAT-V scores were used to examine any potential influence of cognitive ability above and beyond those detected through achievement tests.

Pretest and Posttest Reading Passages. Four authentic texts were selected as the pretest and posttest passages. In order to ensure that all passages were of equivalent length, one passage was slightly abbreviated by deleting two paragraphs. Importantly, during the abbreviation process, intact paragraphs were deleted; none of the author’s word choice or sentence structure
was altered. The passages are described in Table 1 below, and the complete passages are attached in Appendix B.

Table 1
Pretest/Posttest Passage Information

<table>
<thead>
<tr>
<th>Passage Title</th>
<th>Author</th>
<th>Title of Work</th>
<th>Modified</th>
<th>Word Count</th>
<th>Lexile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henry and Mudge and Annie’s Perfect Pet</td>
<td>Rylant, C., 2001</td>
<td>Henry and Mudge and Annie’s Perfect Pet</td>
<td>No</td>
<td>579</td>
<td>380</td>
</tr>
<tr>
<td>Annie and Snowball and the Pink Surprise</td>
<td>Rylant, C., 2007</td>
<td>Annie and Snowball and the Pink Surprise</td>
<td>No</td>
<td>679</td>
<td>370</td>
</tr>
<tr>
<td>The Fight Between the Animals and Insects</td>
<td>Curry, J. L., 2003</td>
<td>Hold Up the Sky</td>
<td>No</td>
<td>546</td>
<td>710</td>
</tr>
<tr>
<td>Fox and Possum</td>
<td>Curry, J. L., 2003</td>
<td>Hold Up the Sky</td>
<td>Yes</td>
<td>632</td>
<td>730</td>
</tr>
</tbody>
</table>

Passages were selected based on their length, difficulty, and macrostructure. Text length was measured through the word-count feature in Microsoft Office. All of the passages ranged between 580-680 words ensuring that the passages were not too lengthy for the participants to read in a single session. Additionally, the passages selected were all of the same approximate lengths to control for text length as a possible confound (Hidi and Anderson, 1986). Text difficulty was measured using the Lexile framework, which incorporates both word frequency and mean sentence length in its algorithm (Stenner, 1996). The Lexile measure for each passage was obtained by uploading the passages into the Lexile Analyzer (http://www.Lexile.com). The two lower-level passages received Lexile scores of 370 and 380, placing them approximately at a second grade reading level. The two upper-level passages received Lexile scores between of 710 and 730, which placed them approximately at a fourth grade reading level (MetaMetrics, n.d.).

In an attempt to minimize confounding variables that may be introduced through text features and macrostructure, works from the same author were selected, because works of the same author are most likely to have comparable text features and macrostructures. Two works of Cynthia Rylant were selected for the lower-level passages (Rylant, 2001; Rylant 2007) and two works of Jane Louise Curry were selected for the upper-level passages (Curry, 2003). It is
important to note that Rylant’s works were published in picture-book format, but for the purposes of Study 1 all pictures were removed and the texts were re-formatted in a traditional chapter-book format. Curry’s works are Native American fables and their chapter-book format was not altered for Study 1. Summaries and elements of story for each passage are tabulated below.
Table 2
Summaries and Elements of Story for Study Passages

**Henry and Mudge and Annie’s Perfect Pet**
Henry had a pet dog named Mudge, but his cousin Annie had no pet. Henry and his parents wanted to get a pet for Annie, and decided that a bunny would be a perfect pet for her. They went to the pet store to buy the bunny. When they brought the bunny home, Annie, Henry, Mudge, and the bunny played in the yard.

  *Character with the problem:* Annie or Henry  
  *Problem:* Henry wanted to get Annie a pet OR Annie wanted a pet  
  *Solution:* Henry spoke to his parents and they decided to get Annie a bunny  
  *Falling action:* They went to the pet store to buy a bunny

**Annie and Snowball and the Pink Surprise**
Annie and Henry saw a hummingbird in the yard drinking from a petunia and wanted to find a way to attract more hummingbirds. They asked Henry’s dad for help, and he suggested that pink may attract more birds. Henry and Annie put pink things in the garden, and attracted eight hummingbirds to the garden.

  *Character with the problem:* Annie and Henry  
  *Problem:* They want to attract more hummingbirds to the garden.  
  *Solution:* They put pink things in the garden  
  *Falling action:* Hummingbirds came to the garden

**The Fight between the Animals and Insects**
One day Mountain Lion stepped on Locust, and this incident lead Locust to challenge the animals to fight the insects. Mountain Lion accepted the challenge. On the day of the battle, Mountain Lion gathered the animals and Locus gathered the insects. When they charged, the insects crawled onto the animals, stung and bit them. This caused the animals to retreat.

  *Character with the problem:* Locust  
  *Problem:* Mountain Lion stepped on Locust, so they wanted to prove who was stronger.  
  *Solution:* They decided to have war, insects versus animals.  
  *Falling action:* The insects won by biting the animals

**Fox and Possum**
Fox met Possum and wanted to eat him for dinner. Possum knew that Fox loved persimmons and distracted Fox by taking him to the persimmon trees. Possum helped Fox climb up the persimmon tree, but Fox could not climb down. So Possum crept away. The next morning Possum passed by the tree and found that the chill of the night caused Fox to freeze over.

  *Character with the problem:* Possum  
  *Problem:* Fox wanted to eat Possum  
  *Solution:* Possum distracted Fox with persimmons, and took Fox to the persimmon trees. Fox got stuck in the persimmon tree and Possum sneaked away.  
  *Falling action:* Possum returned to the tree the next morning to find Fox frozen stiff.

**Intervention Reading Passages.** Like the pretest and posttest passages, the intervention passages selected were also authentic texts. The intervention passages were selected from Sachar’s *Wayside School* series (Sachar, 1978; Sachar 1989). Sachar’s works were chosen since each chapter contains narrative with a problem and solution. Additionally, Sachar’s works are humorous and tend to appeal to young readers. The intervention passages ranged from 560-960
words; all passages were intact and were not modified in any way. Additional information on
the intervention passages can be found in Table 3 below.

<table>
<thead>
<tr>
<th>Passage Title</th>
<th>Author</th>
<th>Title of Work</th>
<th>Word Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>Sachar, L. 1978</td>
<td>Sideways Storied from Wayside School</td>
<td>564</td>
</tr>
<tr>
<td>Jason</td>
<td>Sachar, L. 1978</td>
<td>Sideways Storied from Wayside School</td>
<td>852</td>
</tr>
<tr>
<td>Paul</td>
<td>Sachar, L. 1978</td>
<td>Sideways Storied from Wayside School</td>
<td>926</td>
</tr>
<tr>
<td>Pencils</td>
<td>Sachar, L. 1989</td>
<td>Wayside School is Falling Down</td>
<td>967</td>
</tr>
</tbody>
</table>

**Procedures**

**Pretests.** Standardized measures of literacy related skills (SAT10-RV and SAT10-RC)
and cognitive abilities (OLSAT-V) used for Study 1 were part of a school-wide testing initiative
and were administered by the school six months earlier. However, the pretest and posttest
summaries were administered by the primary investigator.

Passage Summarization. Participants summarized one lower-level and one upper-level
passage to establish a baseline of the participants’ summarization skills prior to intervention.
The sequence of passages was counterbalanced across participants in a manner that half of the
participants summarized a lower-level passage first while the other half summarized an upper-
level first. This method of counterbalancing by text difficulty was included in the design to
eliminate any order effect, a threat to internal validity (Campbell and Stanley, 1963). In
addition, in an effort to eliminate any potential passage effect, Study 1 used two passages at each
level of difficulty: two lower-level passages and two upper-level passages. This design weakens
the effect of individual passage features thereby strengthening the study design. Passages were
counterbalanced a second time, so that half of the participants received one of the leveled
passages, while the other half received the second leveled passage. Counterbalanced conditions are displayed in Table 4 below.

<table>
<thead>
<tr>
<th>Counterbalanced Conditions</th>
<th>LL Passage First</th>
<th>UL Passage First</th>
</tr>
</thead>
<tbody>
<tr>
<td>LL1 – UL1</td>
<td>LL1 – LL1</td>
<td>UL1 – LL1</td>
</tr>
<tr>
<td>LL1 – UL2</td>
<td>UL1 – LL2</td>
<td></td>
</tr>
<tr>
<td>LL2 – UL1</td>
<td>UL2 – LL1</td>
<td></td>
</tr>
<tr>
<td>LL2 – UL2</td>
<td>UL2 – LL2</td>
<td></td>
</tr>
</tbody>
</table>

LL = Lower level text; UL = Upper level text

The primary investigator administered the pretest in a whole group setting in the participants’ regular classroom. At the time of pretest, the primary investigator instructed the participants to write a summary for the story that “included all of the important information but did not include any extra information.” Through the use of this language, the primary investigator imparted to the participants that a good summary includes the important parts of the story, but without any extra or unnecessary information. The primary investigator did not define “important parts of the story” in order to avoid delivering instruction to the participants prior to the study’s treatment and control interventions. There was concern that defining “the important parts of the story” at the time of pretest, would extend a degree of the treatment intervention to the control participants, and likely impact the study’s internal validity. Furthermore, the participants received no additional instructions at the time of pretest.

The participants received the counterbalanced passages one at a time, and they had access to the passages when they were summarizing (Hidi & Anderson, 1986). When the participants completed a summary for the first passage, they were presented with the second passage. The participants were untimed for this task, but no participant required longer than 40 minutes to complete both summaries. During the pretest administration, the primary investigator did not
offer the participants any support on decoding, reading comprehension, writing or summary composition. When a participant requested assistance, the directions to “write the very best summary that you can which includes all of the important information but does not include any extra information” were repeated. The homeroom classroom teacher was present during the pretest but did not offer any support or assistance to the participants.

**Intervention Sessions.** Next, the classroom teacher assigned the participants to eight groups of 3 or 4. There was an agreement between the school administration, school faculty, and the primary investigator that the study will only be conducted during the homeroom teacher’s assigned teaching time and avoid specialty teachers’ times (any subject not taught by the classroom teacher, such as: art, music, physical education, computers, science, and foreign language). The classroom teacher assigned participants to groups of 3-4 based on the participants’ academic schedules to ensure that the participants did not miss any specialty periods. Participants’ academic ability and/or literacy achievement was not considered during the group assignment. Thus, the group assignment was based on factors unrelated to the present study. After the group assignment was completed by the classroom teacher, the primary investigator randomly assigned each of the eight groups to either the treatment or control condition. There were four groups in the treatment condition and four groups in the control condition.

The primary investigator met with each group for four 30-minute sessions. Each of the group’s meetings was conducted on separate days. In an effort to eliminate intervention time as a confounding variable, the treatment and the control groups received an equal number of sessions and all sessions were equal in duration (Troia, 1999). Thus, both the treatment and control groups received an equivalent amount of intervention (Campbell and Stanley, 1963). In
addition, all sessions were conducted by the primary investigator, thus ensuring equitable pedagogy across all groups and conditions.

The intervention sessions followed a gradual release of responsibility model, an instructional scaffolding model often used to teach comprehension strategies. In this model, the instructor initially holds most of the responsibility for task completion and then gradually releases responsibility to the student until the student is fully independent. At the beginning stages the instructor assumes most of the responsibility through modeling and thinking aloud; the think aloud process is vital, where the instructor models cognitive processes to the students. In this way, a previously covert process becomes overt. In the next phase the instructor releases part of the responsibility to the student through joint practice, where task completion becomes an interactive and collaborative process between the instructor and student. In the final phase, the student works independently and receives feedback from the instructor (Pearson and Gallagher, 1983). The gradual release of responsibility approach was used in both the treatment and control intervention sessions. Figure 1 depicts the gradual release of responsibility model (adapted from Pearson and Gallagher, 1983).

Figure 1  Gradual Release of Responsibility Model
**Treatment Intervention Session.** The treatment intervention sessions provided instruction on a summarization strategy. This strategy was adapted from Williams, et al. (2002) and trained the participants on selecting only the most important pieces of information from a narrative. Based on the story grammar theory, a narrative’s most important story elements are: the character, problem, solution, and falling action, where falling action includes the story’s event that occurred after the solution. As a support for identifying these elements of story, participants were provided with four guiding questions:

- *Which character has a problem?*
- *What is the character’s problem?*
- *What was done to try and solve the problem?*
- *And then what happened?*

The participants used self-questioning to identify the important story elements. After the participants identified the important story elements, the information was used to generate a summary. Lastly, the participants were guided to use a “polish” strategy, where they reread their summary and edited as necessary to ensure coherence (Hare and Borchardt, 1984).

It is important to note, that the first guiding question in this strategy does not identify the main character, but rather the character with a problem. Similarly, the second question does not guide the summarizer to identify the main character’s problem, rather to identify the problem. The third question too, guides the readers to identify attempts at a solution. Study 1 modified the questions used in Williams, et al. (2002), where the strategy guided the participants to identify the main character, the main character’s problem, and solution that ultimately resolved the problem. These modifications were a result of the review process for selecting texts for Study 1. While selecting passages for this study, the primary investigator noticed that often authentic texts do
not follow the schematic where both the story problem and solution are those of the main character. In many authentic texts, the main character either has a problem that is solved by others or solves a different character’s problem. Rarely, did the main character have a problem and solve it too. Therefore, the guiding questions were altered to ask for the character with the problem rather than for the main character’s problem. Similarly, the third question asks about attempts (or tries) at solving a problem, because some authentic texts do not include a story solution.

Each session was divided into two segments: in the first segment participants independently read a Sachar passage and in the second segment they received strategy instruction. During the first treatment session the four guiding questions were introduced, and the group jointly composed a summary as interactive writing activity. In this session, the instructor held most of the responsibility for composing the summary. In the second session, the participants independently identified the four elements of story using the guiding questions, and then the group conferred to share answers. After the group agreed on the four elements, the instructor and the participants jointly composed a summary. This session released some responsibility to the participants, but retained a larger portion of responsibility to the instructor. In the third session the participants independently identified the important story elements, and then the group conferred to share answers. But this time, the participants individually wrote summaries, and regrouped to receive feedback. In the third session most of the responsibility was released to the participants, but the instructor retained a small portion. In the fourth and final session, the participants independently used the strategy and wrote a summary. They then regrouped to share summaries, and the instructor provided feedback. In accordance with the
gradual release of responsibility model, in this fourth and final session the participants held all of
the responsibility for task completion.

**Control Intervention Sessions.** In their explanation of experimental design Gall, Gall
and Borg (2003) note that the Hawthorne effect may cause participants in a treatment group to
artificially demonstrate gains. It is commonly believed that the Hawthorne effect may occur as a
response to the novelty of the treatment or special attention the treatment that participants receive
from the investigator (Adair, 1984), and thereby increase the participants’ performance. Studies
have found that the Hawthorne effect may yield gains even if the treatment itself is ineffective.
Therefore, to abate this effect, the present design did not rely on a null treatment for the control
condition. Instead, the control condition received an intervention too.

The control intervention taught the students a strategy for finding meaningful self-to-text
connections (Keene & Zimmerman, 1997), where the readers find a meaningful connection
between their lives and the text. Based on schema theory, a reader’s schema and past
experiences influence interpretation of the text (Anderson, Reynolds, Schallert, & Goetz, 1977),
and therefore, readers gain deeper comprehension when schema and prior knowledge are
activated (Anderson, 1984). In the present study the control participants were taught to activate
prior schema by: (1) visualizing the main character and the story, (2) thinking about their own
lives, (3) finding a connection between the story and their personal lives, (4) writing about it, and
(5) polishing the writing through rereading and editing. To prevent the control intervention from
overlapping with the treatment intervention, during the control intervention there was no
instruction or discussion on story grammar or story elements.
As in the treatment intervention, the control intervention session began with an independent read of a Sachar passage; the control groups read the same passages as the treatment groups and in the same sequence (see Table 5 below). Given that the Sachar passages contain characters of the same age as the participants (fourth grade) and take place in a familiar setting (school), participants were able to relate to the stories. Thus, these passages were particularly well-matched for teaching a self-to-text connection strategy, and prove that the passages were equally suited for strategies taught in both conditions. After the independent reading, the participants received strategy instruction using the gradual release of responsibility method.

<table>
<thead>
<tr>
<th>Session</th>
<th>Session Length</th>
<th>Passage</th>
<th>Gradual Release of Responsibility Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30 minutes</td>
<td>John</td>
<td>Modeling: investigator introduces and models the strategies</td>
</tr>
<tr>
<td>2</td>
<td>30 minutes</td>
<td>Jason</td>
<td>Joint practice: investigator and participants co-author</td>
</tr>
<tr>
<td>3</td>
<td>30 minutes</td>
<td>Paul</td>
<td>Mostly independent Practice: participants independently author with minimal guidance</td>
</tr>
<tr>
<td>4</td>
<td>30 minutes</td>
<td>Pencils</td>
<td>Independent Practice: participants independently author and receive feedback</td>
</tr>
</tbody>
</table>

The study design placed careful attention on equating the treatment and control interventions as much as possible by narrowing the differences between the interventions solely to the study of story grammar. Both interventions had equivalent designs: the experimenter met with participants in groups of 3 or 4 for four 30-minute sessions. In addition, both interventions received equitable pedagogy: the conditions independently read the same intervention passages in the same progression in the first half of the session and received intervention in the second half of the session. Moreover, both interventions were similar in design. They used the gradual release of responsibility model, required the participants to write a paragraph, and taught a polish strategy for coherence. Due to the strong similarities between the two interventions, and the use of random assignment, it is reasonable to believe that any gains that the treatment group had over
the control group can be causally related to the use of grammar story knowledge for summarizing narratives. Table 6 below outlines the similarities between the interventions.

<table>
<thead>
<tr>
<th></th>
<th>Treatment Intervention</th>
<th>Control Intervention</th>
<th>Similar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sessions</td>
<td>4</td>
<td>4</td>
<td>Yes</td>
</tr>
<tr>
<td>Duration of sessions</td>
<td>30 minutes each</td>
<td>30 minutes each</td>
<td>Yes</td>
</tr>
<tr>
<td>Passages</td>
<td>Sachar <em>Wayside School</em></td>
<td>Sachar <em>Wayside School</em></td>
<td>Yes</td>
</tr>
<tr>
<td>Pedagogical method</td>
<td>Gradual release of responsibility</td>
<td>Gradual release of responsibility</td>
<td>Yes</td>
</tr>
<tr>
<td>Writing component</td>
<td>One paragraph</td>
<td>One paragraph</td>
<td>Yes</td>
</tr>
<tr>
<td>Polish instruction</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Intervention instructor</td>
<td>Primary investigator</td>
<td>Primary investigator</td>
<td>Yes</td>
</tr>
<tr>
<td>Classroom teacher</td>
<td>Same</td>
<td>Same</td>
<td>Yes</td>
</tr>
<tr>
<td>Invention instruction</td>
<td>Story grammar</td>
<td>Schema theory</td>
<td>No</td>
</tr>
</tbody>
</table>

**Posttest.** After the final session the participants were posttested on summarizing narratives. All intervention sessions ended on a Friday, and due to scheduling conflicts and a legal holiday, posttests were given on the following Wednesday, with a 5 day delayed. This reflects a delayed post-test time frame. Therefore, gains made by either one of the conditions can be considered as evidence of maintenance and confidence that the intervention received was robust and effective (Troia, 1999). In a small room outside of the participants’ classroom participants were posttested in groups of 6-8. The passages were counterbalanced in the same manner as the pretest, and there was careful attention that each participant’s posttest passages differed from pretest passages. All other posttest procedures remained identical to the pretest procedures for summarizing passages. After completing both posttest summaries, participants received a $20.00 gift card to Amazon.com.

**Feedback.** Participants in both groups (treatment and control) did not received feedback on their pretest and posttest summaries. The participants did not receive feedback on their pretest summaries because the feedback may have served as a form of instruction for the control
participants. Furthermore, the participants did not receive feedback on their posttest summaries because the purpose was assessment rather than further training. However, during the treatment and control intervention sessions, the participants received feedback. Specifically, the level of feedback was aligned with the gradual release of responsibility model used during the intervention sessions, and the level of feedback was equivalent for the treatment and control intervention groups. However, given that this study focused on the summarizing intervention provided to the treatment group while the control group was merely implemented to prevent the Hawthorn effect, the section below details the feedback provided during the treatment intervention sessions only. However, it should be noted that the control group received equivalent feedback on generating self-to-text connections and activating schema.

In the first session, the participants received a lower degree of feedback because during the first session the instructor held most of the responsibility for task completion. Therefore, during this session, the participants received feedback at the group level, and the feedback was interwoven with instruction during the shared summary writing. During the second session, the participants independently responded to the guiding questions, so feedback was provided when the participants regrouped to share their independently constructed responses. Similar to the first session, during the second session, feedback on summary writing was interwoven with instruction during the shared summary writing. In the third session, the participants received feedback at both times of regrouping, when the participants regrouped to share: (1) responses to the guiding questions and (2) written summaries. In the fourth session, the participants received feedback that paralleled the feedback provided during the third session. However, in contrast to the third session which had two regroupings, during the fourth session there was a single regroup
during which the participants shared their responses to the guiding questions and their summaries.

In addition, the principal investigator has a post-study meeting with the school principal to review the study’s outcomes and findings. The classroom teacher was invited to join in this meeting too, but declined to attend.

**Absenteeism and Attrition**

Regardless of the condition, each participant received four intervention sessions. Over the course of the study, two controls and one treatment participant were absent from intervention sessions. Each of the participants missed a total of 2 sessions. To ensure that all participants receive the full intervention training, absentees received make-up sessions when they returned to school. Each make-up session was conducted individually, where the primary investigator met individually with the absentee to teach the material missed.

Campbell and Stanley (1963) note that it is important to document and analyze information about the participants who withdrew from the study to ensure that unequal mortality does not jeopardize the study’s internal validity. During the course of the study three participants (2 female, 1 male) withdrew from the study, and all three participants were treatment participants. One participant completed the pretests, but withdrew soon after because she did not want to participate in “extra work”. A second participant had the flu and was absent for the entire week of intervention. She did not return to school until after the posttest was administered. This participant too, completed both pretests but did not attend any intervention sessions despite intent to do so. A third participant withdrew from the study after the second intervention session. This participant had a pre-existing anxiety disorder and found the novelty
of a new instructor and environment to be too overwhelming. An anxious response to novelty is common among children with anxiety disorders (Mash & Wolfe, 2013) and does not indicate that the present study was in any way stressful to participants. The participants who withdrew from the study scored in the 41st, 69th and 97th percentile on the SAT-Total Reading. These reading scores do not represent the weakest participants in the treatment group, and therefore the attrition is not viewed as a threat to internal validity.

**Scoring Procedures**

Study 1 operationally defined a narrative summary as writing that includes the important information without extraneous or redundant information. Therefore, the scoring was designed to give credit for the important information included and to penalize for extra or redundant information. As a result, the summaries could not be scored holistically. Rather, each summary was broken down into segments, and each segment was identified as either a story element or extraneous information.

The present scoring scheme was motivated by an attempt to isolate the smallest idea unit, as guided by grammatical rules that can be easily replicated. After a comprehensive review of various types of clauses it was determined that an independent clause is the smallest unit of written language that can reliably convey a complete thought. The summary was parsed into independent clauses, and a dependent clause was joined with that adjacent independent clause to form a single unit. Moreover, when a dependent clause was clearly intended to be an independent clause but poor writing rendered it a dependent clause, it was treated as an independent clause. For example, in the sentence *The three little pigs locked the door, so huffed and puffed till the door blew down*, the second clause is a dependent clause only as a result of
poor writing; it can be assumed that the writer intended to write: \textit{The three little pigs locked the door, so he [the wolf] huffed and puffed till the door blew down.}

The treatment intervention guided the participants to identify four important story elements: (1) character, (2) problem, (3) solution, (4) and falling action. Each of these story elements had a “must contain” idea that succinctly represented the core of the story element. Most commonly, the “must contain” ideas were expressed in a single clause, but for some of the upper level passages it was expressed in multiple clauses. In addition to “must contain” ideas, each story element had “may contain” ideas too. These typically include ideas that embellish upon the “must contain”, but do not add extraneous information. While each story element had only one “must contain” idea, most elements had about 2-3 “may contain” ideas. Last, each story element had “extraneous” and “inaccurate” ideas. “Extraneous” ideas contain information that does not directly relate to the story elements, and “inaccurate” ideas alter story events or facts as reported in the text. These classes of ideas are non-exhaustive, but during the data collection process common samples were taken from the participants’ summaries. A rubric containing the full list of ideas by passage is available in Appendix E.

After the summary was parsed into clauses, each clause was identified as a “must contain”, “may contain”, and “extraneous /inaccurate” idea. A “must contain” idea received a score of 5. Most commonly, the participants expressed the “must contain” idea in a single clause, but if the “must contain” idea was spread over two clauses, one of the clauses received a score and the remaining clauses were scored as 0. “May contain” ideas were valued as neither adding nor subtracting from the quality of the summary and were therefore scored as a 0. However, “extraneous”, “redundant” or “inaccurate” ideas do detract from the summary quality, so they received a score of -1. In the case where a summary failed to include the “must contain”
idea and only included “may contain” ideas, the “may contain” ideas were treated as “extraneous” ideas and received a score of -1. Therefore, if a summary included all four “must contain” story elements but no extraneous, redundant, or inaccurate information the maximum possible scores was a 20. However, if a summary included few “must contain” ideas and many “extraneous” or “inaccurate” ideas, it received a negative score. Table 7 outlines the scoring procedures.

<table>
<thead>
<tr>
<th>Idea</th>
<th>Samples</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must contain</td>
<td>Annie and Henry put pink things in the garden.</td>
<td>5</td>
</tr>
<tr>
<td>May contain</td>
<td>They asked Henry’s dad for advice.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>They went to Annie’s room to get pink things.</td>
<td></td>
</tr>
<tr>
<td>Extraneous</td>
<td>Dad asked about the color of the petunias.</td>
<td>-1</td>
</tr>
<tr>
<td></td>
<td>Henry’s dad was building a bookcase.</td>
<td></td>
</tr>
<tr>
<td>Inaccurate</td>
<td>Annie and Henry called Mudge and Snowball came to see the hummingbirds.</td>
<td>-1</td>
</tr>
<tr>
<td>May contain without a must contain</td>
<td>Stating that they asked Henry’s Dad for help without mentioning that they put pink things in the garden.</td>
<td>-1</td>
</tr>
</tbody>
</table>

It is important to note that each clause received only one score. Thus, if a clause contained information from two idea categories, it was constrained to one category and always received the higher score. For instance, if a single clause included both “must contain” and “may contain” ideas, given that “must contain” ideas received a higher score, the clause was scored as “must contain”. Similarly, if a single unit contained both “may contain” and “extraneous” information, it received the higher score of zero for the “may contain” idea. This scoring rule was particularly relevant when summaries included “extraneous” ideas in the form of dependent clauses such as: descriptive clauses, parenthetical clauses, verb clauses, or noun clauses. Given that the aforementioned clauses are not independent, according to this scoring scheme they could
not be scored stand-alone; they were joined with an independent clause. This scoring rule prevented additional penalties for extraneous dependent clauses. A complete list of the scoring rules is available in Appendix D.

Several additional scores for each summary were generated. Initially, it was determined which story elements were included in the summary, and each story element was dichotomously scored as 1 for present and 0 for not present. Next, a total story elements score was generated by adding the number of elements in the summary. This score was on scale of 0-4, where 0 represents no elements and 4 represents all story elements. The summary also received a score for extra units and incorrect units. In these scores the number of units in each category was added for a total score of extraneous units and incorrect units, respectively. It is important to note that both the extra and the incorrect unit scores were represented in the negative range and had no ceiling; there is no theoretical limit to the number of extraneous clauses a participant may include. But throughout this study, no participant exceeded a score of -13. Lastly, a total summary score was generated by multiplying total story elements by 5 and then subtracting the extraneous units. In addition to these summary scores, summaries were also scored for the presence of a “polished” summary. This was holistically and dichotomously scored, where 1 represents a coherent summary and 0 represents an incoherent summary.

All of the summary scores mentioned above were scored at the clause level; however, in order to achieve some congruence and concurrent validity with the preexisting literature, a count of the words used in extraneous units was used as well. In addition to the extraneous unit measure, a secondary extra word count measure was added. This measure reflects the total number of words used in extraneous units (but not inaccurate units). A summary of the scores is tabulated in Table 8 below.
Two raters independently scored the participants’ summaries. The first rater was the principal investigator. During pretest and posttest summary scoring, the principal investigator was blinded to the participants’ condition, because rather than placing their names on the summaries, participants were guided to use a code. The code could only be linked to the participants’ names with a codex. The primary investigator did not have access to the codex while scoring.

The second rater was an educational practitioner with over 20 years of school-based experience as a classroom teacher, curriculum developer, and assistant principal. The rater held Master’s degrees in education and social work. In one 1.5-hour session, the primary investigator trained the second rater on using the scoring system developed for this study. At the time of training, the primary investigator provided the second rater with copies all four texts used for summarizing and the scoring materials displayed in Appendix E and F. The second rater too, was blinded to the participants’ condition. The second rater randomly selected 35% of all summaries to score. Scores of the primary investigator and the second rater were entered in an Excel worksheet, and then interrater reliability was computed in SPSS using interclass correlations. Rater agreement ranged from $r=0.86$ to 0.91 for LL summary scores and $r=0.93$ to 0.95 for UL summary scores.

<table>
<thead>
<tr>
<th>Summary Scores</th>
<th>Method</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>Dichotomously scored as 0 or 1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Problem</td>
<td>Dichotomously scored as 0 or 1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Solution</td>
<td>Dichotomously scored as 0 or 1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Falling action</td>
<td>Dichotomously scored as 0 or 1</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Total story elements</td>
<td>Sum of story elements</td>
<td>0 - 4</td>
</tr>
<tr>
<td>Extraneous units</td>
<td>Sum of the extraneous units</td>
<td>-13 - 0</td>
</tr>
<tr>
<td>Extraneous words</td>
<td>Sum of the extraneous words</td>
<td>0 - 84</td>
</tr>
<tr>
<td>Incorrect units</td>
<td>Sum of the incorrect units</td>
<td>-2 - 0</td>
</tr>
<tr>
<td>Total summary score</td>
<td>5 (total story elements) –(</td>
<td>extraneous units + incorrect units</td>
</tr>
<tr>
<td>Polish</td>
<td>Dichotomously scored as 0 or 1</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>
Chapter 5

Results

To strengthen the experimental design, pretest data were collected to identify and control for any preexisting between-group differences (Campbell and Stanley, 1963). The first analyses were conducted to examine pretest data.

Literacy Skills

The participants’ SAT and OLSAT scores were examined to rule-out any group differences in literacy-related skills that may impact summarization. Scores for the SAT-RV, SAT-RC, and OLSAT-V are reported in Table 9 below. An additional score for Stanford Achievement Test – Reading Total (SAT-RT) was generated by Pearson’s scoring services by combining the SAT-RV and SAT-RC scores. Descriptives of the participants’ scores revealed that, overall, the participants formed a strong cohort with good literacy skills. The majority of participants scored above the 75th percentile on most pretests.

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
<th>Above 75th PR</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAT-RV</td>
<td>670</td>
<td>587-725</td>
<td>17.4</td>
<td>82</td>
<td>29-99</td>
<td>16.9</td>
<td>67%</td>
</tr>
<tr>
<td>SAT-RC</td>
<td>679</td>
<td>603-739</td>
<td>39.3</td>
<td>84</td>
<td>34-99</td>
<td>18.6</td>
<td>64%</td>
</tr>
<tr>
<td>SAT-RT</td>
<td>676</td>
<td>607-750</td>
<td>36.2</td>
<td>85</td>
<td>39-99</td>
<td>17.4</td>
<td>75%</td>
</tr>
<tr>
<td>OLSAT-V</td>
<td>622</td>
<td>580-697</td>
<td>32.0</td>
<td>75</td>
<td>43-99</td>
<td>18.4</td>
<td>57%</td>
</tr>
</tbody>
</table>

N = 28 participants tested
SAT-RV= Stanford Achievement Test Reading Vocabulary; SAT-RC= Stanford Achievement Test Reading Comprehension; SAT-RT=Stanford Achievement Test Reading Total; OLSAT-V=Otis-Lennon School Ability Test Verbal
The pretest data were further analyzed to determine whether the conditions differed significantly on any of these variables. In order to account for correlations between tests and to prevent a type I error inflation, a one way-multivariate analysis of variance (MANOVA) was used. Scaled scores were entered into the model. A visual inspection of the pretest data revealed that the distributions were not normally distributed. The distributions tended to display bi-modal features, which was generated by a larger clustering of high achieving students at the upper tail and a smaller clustering of low achieving students near the lower tail. The distributions also tended to present thick upper tails, which may be attributed to the participants’ high scores that formed a partial ceiling effect (see Table 8). These features violate the MANOVA assumption of a normal distribution. Therefore, of the four multivariate tests calculated by SPSS, Pillai’s Trace is particularly well fitted for this data because it is most conservative and most robust. In addition it is least susceptible to the violation of MANOVA assumptions found in these data (Olson, 1976). Results indicate that the control condition tended to outperform the treatment condition on most measures, but the conditions did not significantly differ on any of the measures (Pillai’s Trace = 0.181, p=0.31). Given the lack of significance on the multivariate test, univariate between-subjects effects were not considered. Results demonstrate that the groups did not differ on literacy-related skills. Results are tabulated in Table 10.
Table 10
MANONA: Literacy Skills by Condition

<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th></th>
<th>Control</th>
<th></th>
<th>Pillai’s Trace</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>SAT-RV</td>
<td>630-725</td>
<td>657</td>
<td>35.7</td>
<td>587-702</td>
<td>682</td>
<td>34.4</td>
</tr>
<tr>
<td>SAT-RC</td>
<td>603-739</td>
<td>676</td>
<td>45.0</td>
<td>629-739</td>
<td>682</td>
<td>34.1</td>
</tr>
<tr>
<td>SAT-TR</td>
<td>607-725</td>
<td>669</td>
<td>36.8</td>
<td>634-750</td>
<td>683</td>
<td>35.4</td>
</tr>
<tr>
<td>OLSAT-V</td>
<td>609-699</td>
<td>619</td>
<td>30.6</td>
<td>634-699</td>
<td>626</td>
<td>34.0</td>
</tr>
</tbody>
</table>

*=p < 0.05, ** = p <0.01, ***=p <0.001
N = 14 participants in each group
SAT-RV= Stanford Achievement Test Reading Vocabulary; SAT-RC= Stanford Achievement Test Reading Comprehension; SAT-RT=Stanford Achievement Test Reading Total; OLSAT-V=Otis-Lennon School Ability Test Verbal

Pretest Summaries

Next, the pretest summarizing responses were analyzed. First, the lower-level (LL) and the upper-level (UL) pretest summary scores were correlated using a Pearson’s correlation. Results revealed that the two scores for extraneous information (measured by units and word count) were highly and significantly correlated; LL extraneous measures correlated at \( r = 0.93, \) \( p = 0.00 \) and UL extraneous measures correlated at \( r = 0.94 \) at \( p = 0.00 \). The correlations neared a perfect correlation of 1, and thus indicate that the two measure the same variable. This correlation further shows that the present scoring of extraneous information at the clause level is essentially equivalent to the word-level measure used in previous studies. Given that these scores measure the same variable, extraneous word count was dropped from all future analyses, and only the clause count was used. In addition, the total story elements consistently tended to correlate more strongly with the total summary score (LL \( r = 0.776 \) at \( p = 0.000; \) UL \( r = 0.946 \) at \( p = 0.000 \)) than the extraneous units measure (LL \( r = -0.267 \) at \( p =0.154 ; \) UL \( r = -0.005 \) at \( p =0.978 \)\(^1\) across both levels of text difficulty. This is unsurprising given that five points were given for each story element, but only one point was taken per extraneous unit.

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\(^1\)The negative correlations are explained by the fact that extraneous units was scored as a negative measure, while total story elements was scored as a positive measure.
Similar to the pretest literacy scores, the summary pretest data were also analyzed using a one-way MANOVA. The model examined whether the two conditions differed on any summary measure at the time of pretest. Given that one of the study’s independent variables is text difficulty, LL and UL texts were entered in separate models. Although the control group tended to outperform the treatment group on most measures, results indicated that the groups did not significantly differ on any measure for either text (LL Pillai’s Trace = 0.157, \( p = 0.0209 \); UL Pillai’s Trace = 0.171, \( p = 0.175 \)). The primary investigator was unconcerned that the Levene’s test of equality was significant on UL total story elements (\( F = 5.329, \ p < 0.05 \)), because Pillai’s Trace is robust enough to handle unequal variances (Olson, 1976). Given the lack of significance on the multivariate test, univariate between-subjects effects were not considered.

Results demonstrate that the groups did not differ on any pretest summary measure. Results are tabulated in Table 11.

<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>LL Total Summary Score</td>
<td>Range 0-12, Mean 6.1, SD 3.8</td>
<td>Range 2-14, Mean 9.0, SD 4.1</td>
</tr>
<tr>
<td>LL Total Story Elements</td>
<td>Range 1-3, Mean 1.87, SD 0.8</td>
<td>Range 1-3, Mean 2.47, SD 0.6</td>
</tr>
<tr>
<td>LL Extraneous Units</td>
<td>Range -9-0, Mean -3.07, SD 2.1</td>
<td>Range -13-0, Mean -3.13, SD 3.2</td>
</tr>
<tr>
<td>UL Total Summary Score</td>
<td>Range -4-15, Mean 3.8, SD 6.1</td>
<td>Range -2-15, Mean 8.53, SD 5.0</td>
</tr>
<tr>
<td>UL Total Story Elements</td>
<td>Range 0-3, Mean 1.3, SD 1.2</td>
<td>Range 0-3, Mean 2.07, SD 0.9</td>
</tr>
<tr>
<td>UL Extraneous Units</td>
<td>Range -5-0, Mean -2.4, SD 1.9</td>
<td>Range -7-0, Mean -1.67, SD 1.9</td>
</tr>
</tbody>
</table>

* \( p < 0.05 \), ** \( p < 0.01 \), *** \( p < 0.001 \), NS = not significant
N = 15 participants in each group; Maximum Score = 20 points
LL=Lower Level Text; UL=Upper Level Text

Once it was determined that the treatment and control conditions did not differ significantly on pretest summary measures, all further pretests analyses of the data were collapsed across conditions.
Threats to Validity: Passage Effects and Order Effects

As noted earlier, passage effects may be generated through passage features such as syntax, word-choice, coherence, and macrostructure. Therefore, passage effects on student performance were examined separately for the two LL and two UL passages using two separate one-way MANOVA models. The model examined whether the two passages within a given level of difficulty differed on any summary measure at the time of pretest. Results indicated that neither the LL passages nor the UL passages varied significantly on any within level measure (LL Pillai’s Trace = 0.071, p = 0.583; UL Pillai’s Trace = 0.298, p = 0.298). Results also revealed that the Levene’s test of equality was significant on LL total summary score ($F = 6.636, p = 0.016$) and the LL total story elements ($F = 5.146, p = 0.031$). A visual inspection revealed that both variables did not display normal distributions; LL total summary displayed a uniform distribution, while LL total story elements displayed a strong negative. Notwithstanding these issues in the distributions, there is strong confidence in the results because Pillai’s Trace is robust enough to handle these MANOVA violations (Olson, 1976). Given the lack of significance on the multivariate test, univariate within level effects were not considered. Results demonstrate that within level, none of the passages differed on any pretest summary measure and therefore it can be assumed that there are no passage effects. Given these results data were collapsed across passages within level for all future analyses. Results are tabulated in Table 12.
Table 12
MANONA: Passage Effects

<table>
<thead>
<tr>
<th></th>
<th>Total Summary Score</th>
<th>Total Story Elements</th>
<th>Extraneous Units</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Range</td>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>LL Passages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Henry and Mudge and Annie’s Perfect Pet</td>
<td>14</td>
<td>4-13</td>
<td>8.1</td>
<td>3.1</td>
<td>1-3</td>
<td>2.1</td>
<td>0.7</td>
</tr>
<tr>
<td>Annie and Snowball and the Pink Surprise</td>
<td>16</td>
<td>0-15</td>
<td>7.0</td>
<td>5.0</td>
<td>1-3</td>
<td>2.2</td>
<td>0.9</td>
</tr>
<tr>
<td>UL Passages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Fight between the Insects and Animals</td>
<td>15</td>
<td>-3-15</td>
<td>7.5</td>
<td>5.9</td>
<td>0-3</td>
<td>1.8</td>
<td>1.1</td>
</tr>
<tr>
<td>Fox and Possum</td>
<td>15</td>
<td>-4-15</td>
<td>4.9</td>
<td>5.9</td>
<td>0-3</td>
<td>1.5</td>
<td>1.1</td>
</tr>
</tbody>
</table>

*=p < 0.05, ** = p <0.01, ***=p <0.001
Maximum Score = 20 points
LL=Lower Level Text; UL=Upper Level Text

Next, order effects were examined to determine whether the order in which the participants read the passages impacted their summaries. Essentially, order effects examined a fatigue factor, that is, whether the performance on a passage was impacted based on whether it was summarized first or second in a sequence. Using a one-way MANOVA, order effects were examined by comparing participants who read an LL passage first against participants who read an LL passage second. The same analysis was repeated for the UL passages. Results indicated that order did not impact performance on either the LL or the UL passages (LL Pillai’s Trace = 0.126, p = 0.311; UL Pillai’s Trace = 0.01, p = 0.915). Given the lack of significance on the multivariate test, univariate effects were not considered. Results demonstrate that order did not impact summarization; the ordered passages did not differ on pretest summary measures, and therefore it can be assumed that there are no order effects. Results are tabulated in Table 13.
Impact of text difficulty

Given that each participant read one LL and one UL passage, a paired $t$-test was used on all three summary measures; a paired $t$-test is particularly well suited for this analysis because it controls for within participant variance. Results demonstrated that across levels, the passages only significantly differed on total story elements ($t = 2.5, p = 0.016, d=0.52$) and was trending for extraneous units ($t = -2.0, p = 0.052, d=0.49$), indicating that text difficulty impacts summarization. The moderate effect size of story elements ($d=0.52$) is noteworthy. Further examination of these results and descriptives (Table 14 and Figure 2) reveals that while the participants tended to include a greater number of story elements in the LL passages, they also tended to include a greater number of extraneous units. Given that one point was subtracted for every extraneous unit included in the summary, the higher rate of extraneous units on the LL passages decreased the participants’ LL total summary scores. This explains the lack of significance on the total summary scores between the two levels of difficulty.
Table 14
Paired t-test: Text Difficulty

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
<th>LL Mean</th>
<th>SD</th>
<th>Range</th>
<th>UL Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Summary Score</td>
<td>0-15</td>
<td>7.5</td>
<td>4.2</td>
<td>-4-15</td>
<td>6.2</td>
<td>6.0</td>
<td>1.2</td>
<td>0.259</td>
<td>0.26</td>
</tr>
<tr>
<td>Total Story Elements</td>
<td>1-3</td>
<td>2.2</td>
<td>0.8</td>
<td>0-3</td>
<td>1.7</td>
<td>1.1</td>
<td>2.5*</td>
<td>0.016*</td>
<td>0.52</td>
</tr>
<tr>
<td>Extraneous Units</td>
<td>-13-0</td>
<td>-3.1</td>
<td>2.7</td>
<td>-7-0</td>
<td>-2.0</td>
<td>1.9</td>
<td>-2.0</td>
<td>0.052</td>
<td>0.49</td>
</tr>
</tbody>
</table>

*=p < 0.05, ** = p <0.01, ***=p <0.001
N= 30 participants; Maximum Score = 20 points
LL=Lower Level Text; UL=Upper Level Text

Additionally, the pretest data were examined to determine which story elements participants were most successful at identifying and which elements presented greatest difficulty.
Figure 2 displays that at pretest across both levels of text, participants most easily identified the problem and solution. In addition, across both level of text falling action was more difficult. Importantly, in all cases but one, participants failed to identify the character.

**Posttest Data**

The participants were posttested five days after all of the intervention sessions were completed. Gain scores were calculated by subtracting the pretest score from the posttest score. For most summary scores the gains scores reflected growth in a given measure from pretest to posttest. Thus, a gains score of 3 reflected that the participant’s score improved by 3 points. However, for the extraneous units scores the gain score quantifies the degree by which extraneous units were further reduced. Thus a gain score of 4 reflects that the participant included four fewer extraneous units on the posttest summary as compared to the pretest. All further analyses were computed using gain scores.

Both the treatment and control interventions were delivered to participants in groups of 3-4. When participants are trained in groups, a group effect is generated which may interact with the overall efficacy of the treatment. Therefore it must be statistically controlled (Raudenbush & Bryk, 2002). To account for group effects, a randomized block design was employed. This design allows for participants to be blocked into groups and then randomly assigned to condition. Grouping is entered into the statistical model as a factor, and as a penalty, one degree of freedom is lost for each group. These data were analyzed using a two-factorial MANOVA, where condition accounted for one factor and groups nested within condition accounted for the second factor. As displayed in Figure 3 below, it is important to note that groups within condition
tended to vary quite a bit. However, there was a clear trend displaying that the treatment condition outperformed the control condition.

In a general linear model with multiple predictors, the predictors may not be completely independent but may have some shared variance. Therefore, most linear models use Type III sum of squares, which considers the largest effect first and then calculates the shared variance for all subsequent effects. In contrast, when using Type I sum of squares, the effects are calculated in the order that they are entered into the model, without regard to the size of the effects. Moreover, Type I sum of squares does not account for shared variance, and therefore can only be
used with predictors that are independent of each other (SAS Institute Inc., 2004). The groups tended to vary greatly not only between conditions, but within condition as well. Yet, given that participants were assigned to groups based on scheduling concerns unrelated to the variables being studied, differences between the groups are therefore unrelated. If a Type III sum of squares is used, the unrelated group differences would account for a larger portion of the variance and therefore weaken the condition effect, where experimentally manipulated differences ought to emerge. In addition, given that students were assigned to groups based on scheduling needs but the groups were randomly assigned to condition, the group effects and condition effects were considered to be completely independent of each other. Therefore, in the two-factorial MANOVAs, Type I sum of squares was used.

Posttest summary gains were analyzed using a two-factorial MANOVA. The model examined whether the participants placed in groups within conditions differed in gains after intervention. Moreover, similar to pretest analyses, LL and UL gains were entered in separate models. Results demonstrated that there was a significant effect for condition on both the LL and UL passages (LL Pillai’s Trace = 0.431, p=0.026; UL Pillai’s Trace = 0.437, p=0.018). Given the significant finding on the multivariate test, univariate effects were further considered. LL univariate results found significant differences in total summary gains ($F = 3.95, p = 0.009$, $\eta^2 = 0.61$) and in total story elements gains ($F = 4.46, p = 0.005, \eta^2 = 0.63$) but not in extraneous units gains ($F = 1.04, p = 0.436$). UL univariate results found significant differences in extraneous units gains ($F = 3.94, p = 0.008, \eta^2 = 0.59$), a trend in total summary score gains ($F = 2.15, p = 0.088, \eta^2 = 0.44$) and no significant results for total story elements gains ($F = 1.30, p = 0.302$) Results demonstrate that overall the treatment condition outperformed the control condition on both LL and UL passages. Additional univariate comparisons revealed that
differences favoring the treatment condition on the LL passages were driven by the ability to identify more story elements, but differences in the UL were driven by the ability to minimize the number of extraneous units. This trend parallels the pretest results that students tended to add more extraneous units on LL passages, but experienced more difficulty identifying story elements on the UL passages. Results are tabulated in Table 15.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Range</td>
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<td>Lower Level Passages</td>
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<td></td>
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</tr>
<tr>
<td>Total Story Elements</td>
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<td>-1-3</td>
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<tr>
<td>Extraneous Units</td>
<td>12</td>
<td>-4-9</td>
</tr>
<tr>
<td>Upper Level Passages</td>
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<td>-9-20</td>
</tr>
<tr>
<td>Total Summary Score</td>
<td>13</td>
<td>-1-4</td>
</tr>
<tr>
<td>Total Story Elements</td>
<td>13</td>
<td>-4-4</td>
</tr>
</tbody>
</table>

*=p < 0.05, ** = p < 0.01, ***=p <0.001
Maximum Score = 20 points
LL=Lower Level Text; UL=Upper Level Text

Additional analysis of the posttest data by story elements revealed the areas of growth and areas of struggle. Figure 4 displays posttest and gain scores. The figure shows that on LL posttest scores, treatment participants outperformed the control participants on some of the LL story elements. However, in UL posttests, the treatment participants outperformed the control participants on all story elements. Interestingly, across both levels of difficulty the greatest treatment gains were in identifying the character. In addition, participants tended to identify a greater number of elements in the LL passages than in the UL passages and both conditions reached a ceiling on LL problem and neared a ceiling on LL falling action. However, when gains scores were examined, it was evident that the treatment condition outperformed the control
condition on all story elements on both passages, save for falling action on the LL. Except for falling action on the LL, the control participants made virtually no gains at all. However, Figure 4 also shows that across both levels of text difficulty, the treatment participants made the smallest gains on the story solution.

![Figure 4. Story Elements Total Scores on the Posttest and Gain Scores](image-url)

**Figure 4.** Story Elements Total Scores on the Posttest and Gain Scores
LL=Lower Level Text; UL=Upper Level Text
Summaries were also evaluated for coherence. In both conditions, participants were instructed to “polish” their writing by rereading the summaries to ensure that their writing “makes sense” and edit as needed in instances of incoherence. It is important to note that in both conditions the participants were reminded to polish but did not receive instruction on how to polish. At the time of pretest, 11/29 participants (37.9%) failed to polish the LL summaries and 9/29 participants (31.0%) failed to polish the UL summaries. However, at posttest, both conditions polished at a considerably improved rate. For the LL passages, only 2/12 of the treatment participants (16.7%) and 2/14 of the control participants (14.3%) failed to polish. In the UL passages, 4/12 of the treatment participants (33.3%) and 4/14 of the control participants (28.6%) failed to polish. The rate of failure to polish was higher at pretest than at posttest across both conditions, and both conditions increased the polish rate at posttest. These results show that little difference was observed across conditions, however, given that both conditions received polish training (refer to Table 6), these results were expected.

Lastly, the scoring scheme accounted for inaccurate information as well. Summaries containing inaccurate or false information were penalized (refer to Table 7). At the time of pretest, 5/29 participants (17.2%) included inaccurate information in the LL summaries and 4/29 participants (13.8%) included inaccurate information in the UL summaries. At posttest, both conditions continued to include inaccurate information at comparable rates. For the LL passages, 3/12 of the treatment participants (25.0%) and 2/14 of the control participants (14.3%) included inaccurate information. In the UL passages, 6/12 of the treatment participants (50.0%) and 3/14 of the control participants (21.4%) included inaccurate information. It was surprising to find that the treatment condition included a greater number of inaccurate statements at posttest as compared to the control condition. But, given that neither of the treatments trained participants
to avoid inaccuracies, perhaps lower cognitive abilities and previously acquired literacy skills impacted the reporting of inaccurate information in the summaries.

Finally, paralleling the earlier analyses conducted on pretest scores, the impact of literacy skills on summary scores was examined at posttest too. This study hypothesized that literacy skills may impact summarizing ability, and as earlier noted, SAT-TR was found to predict pretest scores on LL summaries, whereas OLSAT-V was found to predict pretest scores on UL summaries. To test for these effects at posttest, literacy skill measures were correlated with the posttest summary measures using a Pearson’s correlation. Results showed that none of the literacy skill measures correlated significantly with posttest summary scores at either level of text difficulty, and therefore further analyses were not conducted.
Chapter 6

Discussion

The purpose of Study 1 was to experimentally manipulate instruction on summarizing narrative texts and examine the effect of reader and text characteristics on summarization. Findings for each of the four hypotheses are discussed below.

Reader Characteristics

Study 1 examined the impact of the reader’s characteristics on summarization. Based on earlier research it was hypothesized that vocabulary (Pressley, 2000) and comprehension ability (Winograd, 1984; Armbruster, Anderson, & Ostertag, 1987) would influence summarization. During pretest and posttest analyses the vocabulary of participants did not significantly contribute towards their ability to summarize. However, vocabulary was measured using the SAT-RV which contains only 20 items and may not be a sensitive measure. It is tenable that a more sensitive vocabulary measure, might prove to be a significant predictor of summarizing ability. Moreover, reading ability was measured through the SAT-RT, an achievement measure, while cognitive verbal ability was measured through the OLSAT-V. Pretest results showed that SAT-RT predicted performance on the lower level passages, while the OLSAT-V predicted performance on the upper level passages. This trend suggests that achievement is a good predictor for easy texts that are below grade level, but cognitive ability is a predictor for more challenging at grade level texts. However, these findings were limited to pretest data. At posttest none of the reader characteristics significantly impacted summarization. The treatment effect was robust enough to wash-out any effects of reader characteristics observed at pretest. This finding ruled-out reader characteristics as a possible alternative hypothesis for the observed
differences between the conditions at the conclusion of the study. These findings further imply that above all predictors, instruction on summarization techniques accounts for the greatest amount of variance and is the most effective cause for improving summaries.

**Text Difficulty**

Study 1 hypothesized that text difficulty would impact summarization. Studying the impact of text difficulty is of particular importance given that previous research often used below grade level passages when studying summarization. Most commonly, the passages ranged between the 5th and 8th grade reading level, never exceeding an 8th grade level. Yet the participants ranged from 3rd grade age through adult. In these designs, many participants were summarizing passages that were well below their reading level, rendering the passages at a very easy level. As expected, results of Study 1 found that text difficulty did impact summarization, where even at pretest participants were able to correctly identify more story elements on LL passages as compared to UL passages. This raises concern surrounding the findings of earlier studies that suggest an age effect for summarization. Based on the present findings, an increase in summarizing ability may not be related to age, but rather to ease of text (Brown, Day & Jones, 1983; Kintch, 1990). However, an unexpected finding was that while participants tended to identify a greater number of story elements on lower level passages, they also tended to include a greater number of extraneous units. Including the important parts alongside the unimportant ideas more closely resembles a total recall, where the reader recalls all of the story information. It appears that the participants were recalling lower level passages completely instead of summarizing.
Earlier studies examined the relationship between total recall and summarization (Brown, Day & Jones, 1983; Winograd, 1984; Armbruster, Anderson & Ostertag, 1986; Rinehart, Stahl, & Ericson, 1986). Some found that total recall impacted summarization, explaining that readers must first remember the passage contents in order to select the important information. Other studies found that summarization impacted total recall, explaining that readers may use the story grammar elements as “pegs” to recreate the narrative’s structure, and then proceed to fill in all the details (Yussen, Mathews II, Buss, & Kane, 1980; Johnson, 1983; McConaughy, Fizhenry-Coor, & Howell, 1983; Meyer & Rice, 1984). Summarization requires that the reader remember only a few pieces of information while total recall requires the reader to remember a greater amount of information. Thus, total recall places greater demands on memory (Schunk, 2004), and increases cognitive load. However, in addition to memory, task difficulty is another variable that generates cognitive load; more complex tasks generate more cognitive load as compared to simpler tasks, even when no memory is required (Pass, Kenkl, and Sweller, 2003).

In Study 1 the upper level passages and lower level passages differed not only in reading difficulty, but also in structure. The upper level passages contained more complex story designs; they tended to include more than one problem and multistep solutions. This presented a challenge, because at times, participants selected a minor problem to report or failed to report the (multistep) solution in its entirety. The added cognitive load generated by a complex story structure may have resulted in overall poorer memory for upper level texts, including poorer memory for story elements as well as story extraneous information (story details). This may explain the participants’ reduced number of extraneous information in upper level texts. In contrast, the simpler story structure of the lower level passages reduced cognitive load, allowing
for greater total recall of extraneous details. Based on results from Study 1, it is tenable that the relationship between summarization and total recall is mediated by the difficulty level of the text.

**Story Grammar Intervention**

Based on earlier research, it was hypothesized that story grammar knowledge would be a fitting framework for teaching students to summarize narratives (McConaughy, Fizhenry-Coor, & Howell, 1983; Meyer & Rice, 1984). In Study 1 the treatment condition received a story grammar intervention, while the control condition received an unrelated treatment on activating schema and generating self-to-text connections. Posttest results demonstrated that participants in the treatment condition outperformed the control condition in summarizing all passages, despite the fact that at pretest, the treatment condition had slightly, but not significantly, lower means than the control group.

Further analysis revealed that at pretest, the participants had the greatest difficulty identifying the story character followed by difficulty with the falling action. It is interesting that all summaries written without the benefit of the treatment intervention (i.e., all pretest summaries and control posttest summaries) failed to correctly identify the story character that had a problem. They tended to either omit this story element entirely or identify the main character instead of identifying the character with the problem. Moreover, participants experiencing difficulty with the falling action tended to include humorous or cute information instead of the story’s falling action. Participants who did not receive the intervention tended to experience less difficulty identifying the problem and solution as compared to identifying the character and falling action. In contrast, participants who received intervention, were able to easily identify the
character and made gains in identifying the falling action, but, they experienced the smallest gains on identifying the story solution.

Based on these findings, it appears that the intervention was supportive in helping participants understand that a summary ought to include the character and falling action. Once the participants knew to include the character and the falling action, they had little difficulty correctly identifying these elements and including them in a summary. This contrasts with the solution. The data suggest that at pretest, the participants knew that the story solution is important information to include in a summary, but they struggled to correctly identify it. What they needed but were not provided, was instruction on how to identify the solution, particularly in the harder UL passages where they had more difficulty identifying the problem and solution.

In Study 1, a summary was operationally defined as writing that contains the most important information while not including any extraneous information. Therefore, in addition to scoring story elements included in the summaries, the study scored the extraneous units as well. Results revealed that at posttest participants in the treatment condition tended to include fewer extraneous units as compared to participants in the control condition on both texts. However it only reached significance on the UL passages. Another finding was that participants in both conditions and at both test points tended to include more extraneous units in the LL summaries as compared to the UL summaries. This suggests that ease of LL texts increased the likelihood of reporting extraneous information.

Previous research addressed summary length as a possible contributing factor to summary quality. However, earlier studies also failed to penalize for extraneous or redundant information included in a summary (see earlier discussions in the Study Rationale and Scoring sections). Therefore, increasing a summary in length would also increase the possibility of
including important story information without penalty. In this way, increasing length served to either maintain the summary quality or increase it. However, in the present scoring scheme, five points were awarded for every “must contain” idea unit included in the summary and no points were awarded for any “may contain” idea unit. In this way, the highest possible summary score was a 20, and it could have been achieved through a summary containing only 4 “must contain” idea units. Increasing summary length with “may contain” ideas would have kept the summary score steady at 20. In contrast, if a participant increased summary length by included extraneous information, then points were taken, thereby reducing the summary score. Thus, in Study 1 summary length was controlled through the scoring method, and was not viewed as a possible confound for overall summary quality.

According to the scoring scheme, summaries were also evaluated for inaccurate ideas and for coherence (“polish”). These measures were not analyzed statistically because only an exceedingly small number of summaries included inaccurate information or lacked coherence at the time of posttest. However, while scoring the posttest summaries it was observed anecdotally that participants in the treatment condition generated coherent summaries, but they were somewhat formulaic and read as a “fill in the blank” exercise with prepared prompts extracted from the intervention’s guiding questions. For instance, summaries tended to introduce and outright state that a character had a problem before stating the actual problem. However, in typical writing a problem is not typically introduced. As shown below, in Sample 1 the phrase “the problem is” is unnecessary. Similarly, in the Sample 2 the writer did not need to state that: “Locust had a problem”. In addition, the summaries contained “choppy” writing which may have been abated by inserting transition words or phrases. Below are two samples of treatment posttest summaries:
Sample 1

“Fox and Possum are the main characters in the story. The problem is Fox wants to eat Possum. Possum tried to solve the problem by leaving {Fox} in a tree. Then he walked out of his house the morning and saw Fox frozen.”

Sample 2

“Locust has a problem. It all started when a mountain lion stepped on him. They got really mad at each other. That’s when the war began, insects against animals. The war had started. Not tricky Coyote {he} waited while the other{s} started forward, heard the first howl then turned and ran.”

Here, prompts extracted from the guiding questions have been bolded and suggested transition words or phrases were inserted in underlined print:

Revised Sample 1

“Fox and Possum are the main characters in the story. The problem is Fox wants to eat Possum. So Possum tried to solve the problem by leaving {Fox} in a tree to freeze overnight. Then he walked out of his house the morning and saw Fox frozen.”

Revised Sample 2

“Locust has a problem. It all started when a mountain lion stepped on him. Next, they called each other names and got really mad at each other. That’s when the war began, insects against animals. The war had started. But, not for tricky Coyote. {He} waited while the other{s} started forward, and when he heard the first howl, he then turned and ran.”

Formulaic writing may have been generated as an unintended consequence of the intervention. The intervention guided participants to break down the narrative and include only the most important story elements in a summary. This process may have fragmented the narrative, and rejoining the elements in a summary may have interfered with the natural flow of written language. However, given that coherence was dichotomously scored, this difference was not detected in quantitative analyses. Future research may improve the intervention by including instruction on editing summaries and then including a more sensitive polish measure in the scoring scheme.
Study 1 examined the impact of reader characteristics and text difficulty on summarizing ability. In addition, it experimentally examined using story grammar knowledge as an intervention for summarizing narratives. The study found that text difficulty significantly impacted the participants’ ability to summarize narrative texts. In addition, results showed that story grammar knowledge can be effectively used to teach students to summarize narratives. This intervention was limited to improving participants’ awareness of the types of story information that should be included in a narrative summary. However, it did not adequately support participants who struggled to identify correctly the important story information. This is specifically applicable to the story solution. At pretest, the participants knew to report the story solution in the summaries, but failed to be able to correctly identify the story solution. After the intervention, they made little gain in correctly identifying and including the story solution in their summaries.

Noting the impact of text difficulty on the identification of story elements and the difficulty the participants experienced in identifying the story solution, a second study was conducted. Study 2 examined how readers identify the story solutions and the factors that impact it.
Chapter 7

Literature Review

Study 2: Identifying the Problem and Solution in Narratives

In Study 1, fourth grade participants received four 30-minute intervention sessions on summarizing narratives. In that study, a summary was operationally defined as a piece of writing that contains all of the important information without extraneous or redundant information. Aligned with this definition, participants were taught to identify the important information of a narrative through story grammar knowledge and, for the purposes of summarizing, to recognize story details as extraneous. In addition, to better understand the impact of text difficulty on summarization, participants summarized a lower level (LL) and an upper level (UL) texts. Results revealed that participants who received the intervention treatment outperformed the control participants on summarizing LL and UL texts. However, the effects of the treatment differed by text level.

For lower level texts, treatment participants increased the total number of correctly identified story elements in their summaries. Specifically, they reached a ceiling on identifying the problem (100%) and neared a ceiling on the character and the falling action (83%). In contrast, the controls neared a ceiling on the problem alone (92%). However, despite their gains in identifying a greater number of story elements in LL passages, the treatment participants continued to include extraneous information in their summaries at a rate that did not differ from the control group. This indicates that while members of the treatment group improved their ability to include story element information in LL summaries, they did not improve their ability to minimize extraneous information.
This finding may be attributed to the lower cognitive demands placed on working memory when reading an LL text. The LL text’s ease may have reduced cognitive load and consequently freed up working memory, thereby enabling the readers to allocate greater cognitive resources to story details. As a result, when LL texts were summarized, the summaries contained important information alongside extraneous details. Possibly, the participants approached the LL summary task as a total recall task, not a summarizing task.

Earlier research corroborates this finding and supports this explanation. Similar to Study 1’s finding, a study found that 4th and 6th grade students reading at grade level and above grade level texts better recalled easier texts (Cote, Goldman, & Saul, 1998). The inclusion of extra information in a summary warrants attention too, because it may be an indication of a reader’s somewhat less-developed text comprehension. Silven and Vauras (1992) used the inclusion of extraneous information in gist learning as a discriminating factor between on grade level and poor readers. After six weeks of intervention, during which seven text-processing strategies were taught, participants made gains in five of the seven text-processing strategies. Importantly, they showed no improvement in identifying unimportant information. As in Study 1, Silven and Vauras (1992) found that the inclusion of extraneous information is a difficult to remediate habit. These studies indicate that the inclusion of extraneous information in summaries requires further investigation.

Beyond the difficulty in reducing extraneous information, Study 1 demonstrated that despite gains in overall summary quality, the participants experienced continued difficulty in correctly identifying some of the story elements. As noted earlier, at posttest greater than 80% of participants were able to correctly identify the character, problem, and falling action in LL passages. In contrast, after a modest 17% gain from pretest to posttest, only 50% were able to
correctly identify the story’s solution. This finding suggests that despite the ease of LL texts, readers may need an intervention to correctly identify the story’s solution.

In UL texts, the treatment participants presented a higher mean for the number of story elements included in posttest summaries as compared to pretest summaries, as supported by the positive mean gains score for story elements listed in Table 19 above. This contrasts with the control participants, who displayed a negative mean for UL story element gain scores, indicating that the control participants’ decreased the number of story elements reported in their summaries from pretest to posttest. Importantly, as with the LL passages, the participants demonstrated greater difficulty in identifying the story solution above all other story elements; at posttest, only 46% of the treatment participants were able to correctly identify the story’s solution. In this instance too, of all story elements, the solution displayed the most depressed gains at posttest. And notably, across both conditions (treatment and control) the solution also had the highest regression rates, where the participants were able to correctly identify the solution at pretest, were unable to sustain correct identification at posttest. The regression rate indicates that in addition to the difficulty in correctly identifying the solution, performance may be unstable, difficult to sustain, and difficult to master.

Taken together, these data suggest that regardless of the text’s difficulty, fourth grade readers struggle to correctly identify the story’s solution. When compared to other story elements, the solution displayed the smallest gains across both conditions and levels of text difficulty, suggesting that the identification of a story solution may be a difficult-to-remediate skill. Therefore, Study 2 was designed to focus on fourth grade readers' identification of the story solution. Although the participants struggled most with the solution and displayed good gains in identifying the story problem, Study 2’s focus was not uniquely limited to identification of the
solution. Given that the story’s solution tends to directly respond to the story’s problem, this study also explored the identification of the story’s solution alongside the story’s problem.

It is important to note that Study 1 participants in the treatment condition received instruction on the types of information that should be included in a good summary. Specifically, the intervention guided them to include all of the story elements and eliminate extraneous information. While the treatment intervention provided instruction on including the story elements in summaries, it did not provide instruction on correctly identifying these elements. It is likely that the participants believed that they had included a story solution in the summaries, but in reality they misidentified the solution. Based on these findings, it is important to investigate an intervention on correctly identifying the story’s problem and solution. However, it is complicated by the fact that there is little previous research on the process of identifying story elements, and therefore little is known about this skill. When searching through prior research, a single study was found to empirically test an intervention specifically tailored for identifying a problem and solution. However, in that case, the study examined the problem and solution in expository social studies texts, not narratives (Armbruster, Anderson, & Ostertag, 1987). Noting the dearth of research in this area, Study 2 was designed to uncover the processes readers typically use to identify story elements during online processing and factors that may impact it. In particular, participants were asked to report their online processes through verbal reports generated during a focused think aloud. It was expected that outcomes of the participants’ verbal reports would indicate the processes readers typically use to correctly identify story elements, and that this information may be used to build an intervention to be empirically examined in future studies.
Earlier research on summarizing provides additional support for the difficulty readers encounter when identifying and selecting information to include in a summary. Brown and Day (1983) studied the summarizing ability of college English instructors using a range of measures and a think aloud protocol. Specifically, the authors interviewed two of the instructors on methods they used to teach summarization, and then asked the instructors to summarize a passage using a think aloud protocol. Results from the interview revealed that college instructors verbally reported a shocking lack of knowledge of the metacognitive processes required for summarizing, but when asked to summarize, they displayed effective use of summarizing rules at the automatic processing level. Results from this study indicate that lecturers may have perceived summaries as an end product, but had little knowledge of the process involved in generating it. It appears that summarizing was perceived as a natural skill that students are naturally predisposed to acquire without direct instruction (Bereiter & Scardamalia, 1987), evidenced by the fact that the lecturers themselves were able to summarize, and furthermore assigned and graded summarizing tasks, but they failed to teach it. These findings bring support for Study 2’s purpose: to further investigate the cognitive processes involved in identifying story elements for the purpose of generating an effective and coherent summary, and to debunk the myth that it is a naturally acquired skill that develops without instruction. Specifically, Study 2 was intended to add to the existing body of research on summarizing by investigating factors that impact elementary age students' identification of the story problem and solution. Results for this study were expected to be used in future research to generate an intervention for struggling summarizers.
Understanding Story Grammar as a Structure for Stories

In Study 1, it was argued that research has largely adopted story grammar as the principal structure for narrative texts. In story grammar theory, important elements coalesce to form a story (Johnson, 1983), and although theorists may disagree on the number of elements and their labels, at the most reduced form, theories agree on four basic elements: character, problem, solution, and falling action (or reaction) (McConaughy, Fizhenry-Coor, & Howell 1983; Meyer & Rice, 1984; Baumann & Bergeron, 1993). However, story grammar theory does not address the relationship between story elements and how these elements integrate to form a story.

Black and Bower (1980) explain that stories focus on a character’s attempts at solving a critical problem. In most stories, the character executes a series of actions, which include failed attempts, before a solution is reached. In fact, much of a story’s text describes plans and counter-plans, fronts, feints, decoys, con-games, cover-stories and other sorts of deception that a character must overcome before a solution is reached. When an attempt at the solution is foiled, it generally yields a minor problem that the character needs to solve before resuming the pursuit of a solution for the critical problem. For example, in the traditional tale Cinderella, Cinderella seeks to go to the ball and dance with the prince. However, she is faced with a minor problem: she has no dress appropriate to wear to the ball. This problem is solved when her bird-friends sew her dress, but the Ugly Stepsisters foil this solution by ripping the newly sewn dress. This event forms another minor problem. Now, Cinderella must once again find a solution for a minor problem before resuming her ultimate pursuit of the critical problem: dancing with the prince at the ball.
Story grammar’s structure for narratives suggests that stories contain a single problem and a single solution. However, when reviewing authentic childhood literature for Study 1, it was apparent that the overwhelming majority of authentic children’s literature does not adhere to this structure. Authentic childhood literature tends to include a critical problem along with numerous minor problems. In addition, Black and Bower (1980) explain that often there are several attempts at solving the critical problem and the solution is likely to be a multi-step solution containing several actions. Yet, story maps and story grammar-based interventions continue to prompt students to identify the story problem and the solution, using singular terms (Idol, 1987; Idol & Croll, 1987; Boulineau, Fore III, Hagan-Burke, & Burke, 2004). Study 1 too, used this over-simplified structure for stories by guiding the participants to identify a single problem and a single solution in the story.

Baumann and Bergeron (1993) somewhat corrected for this over-simplification by directing their participants to identify a single problem and a single solution but also guided the participants to identify major story events in the story. Baumann and Bergeron’s (1993) story map included a section for major story events under the heading “what happened?” and participants were guided to include “things that happened” and “what was done to try and solve the problem.” (pp. 415) Although this section of the story map allowed the participants to include information concerning minor problems and foiled solutions, it did not explicitly tell them to do so.

Story grammar is limited by the fact that it fails to account for the multiple problems and multiple events leading to a solution. As Black and Bower (1980) explain, story grammar tends to be best applied to stories containing a single character, a single problem, and a single solution. Therefore, story grammar does not generalize well to stories containing multiple protagonists,
conflicting goals, dead ends, and failed attempts at a solution. This explains the difficulty encountered in selecting texts that adhered to a story grammar structure for Study 1 and the difficulty participants experienced in correctly identifying the story solution. It is possible that participants experienced difficulty in correctly identifying the story solution because they were asked to reduce a multi-step solution into a single statement. Yet, despite this limitation, Study 1 used story grammar as the framework for summarizing because of its ability to encapsulate the most important aspects of a story in a manner that fourth grade students can easily understand and apply. It was not anticipated that the simplicity of story grammar might limit the participants’ ability to correctly identify the most important information in a story. Black and Bower (1980) suggest eight self-questioning prompts to support narrative summaries. These prompts appear to be better generalized to authentic texts. However, the prompts are far too complex to adequately support school-age students.

Adding to the complexity, a story’s problems are infrequently explicitly stated in the text. Rather, they are inferred by the reader (Long & Golding, 1993). Likewise, the story solution is infrequently explicitly stated in the text. Given that it is unlikely for an author to explicitly state the story’s critical problem and its solution, the story elements must be inferred through unfolding events or dialog. Inferring these story elements is a gradual process in which the reader may identify segments of text information concerning the critical problem or solution spread across a number of sentences in the story. As the reader encounters text information, the reader makes inferences concerning its contribution to the story’s critical problem or solution, and the inference is retained in the reader’s memory. As the reader progresses through the text additional information is acquired, and if the new information is found to be related to a common story element, then the reader generates an inference to join the new information with previously
read information. This process forms a mental network for related text information. For instance, if a reader encounters a text segment related to the story solution, through inference, this segment will be linked to other segments relating to the solution. These inference networks may link related segments across a text that do not necessarily immediately precede or succeed the segment to which they are linked. A study confirmed that, as compared to other text structures, narratives made greater demands on readers’ inferencing and that narratives more commonly required the reader to reactivate previously read sentences for reference (Lemaire, Mandin, Dessus & Denhiere, 2005).

The discussion above suggests that the reader uses inference to join related text statements to form a network in his/her memory, and then generates additional inferences based on the network (as a whole). For instance, a reader may infer that text statements may be related to the story problem and therefore joins these statements in a network. Then the reader uses this network to identify the story’s critical problem. A similar but separate network may be formed for statements containing information related to the solution. However, inferences are also dependent on a reader’s prior knowledge (Graesser, Singer, & Trabasso, 1994) and therefore are subjective, given that each reader has a different scope of prior knowledge. Therefore, it follows that that identifying the story problem or solution through inferences may be subjective too. This may be especially applicable to stories in which the reader needs to distinguish the critical problem from minor problems or the solution from a series of failed attempts. Differences across readers’ prior knowledge may contribute towards differences in judgment used to identify the critical problem or story solution. Noting that judgment is needed to identify these elements indicates that there is a need to investigate how readers make these judgements.
Assigning Importance

Notwithstanding judgment used in the identification of story elements, judging text statements for their importance to the overall passage is a requisite skill for summarizing. The need to evaluate the importance of text statements was imbedded in Study 1’s operational definition of a summary as a text that includes “all of the important parts, without including the unimportant parts.” In accordance with this view, a good summarizer evaluates each text statement for importance, and text statements containing story elements information are rated with highest importance and are therefore included in the summary. Similarly, by assigning importance the reader identifies text statements of low importance and excludes them from the summary. For this study, assigning importance is particularly relevant, as it is likely to inform how a reader designates one of the many story problems as the critical problem and distinguishes the events contributing towards the solution from all other story events. In addition, results from Study 1 showed that the intervention was ineffective in guiding the participants to reduce extra information from LL summaries. Understanding how readers assign importance during reading may inform why the participants continued to report low-importance ideas in their summaries after intervention.

Earlier studies deduced readers’ importance ratings of narrative text statements, but largely did so through offline retelling tasks. However, studies on assigning importance during reading (online processes) used expository texts as the target passages. Therefore, Study 2 will draw on studies conducted with expository texts and extend the findings to assigning importance in narratives.
Johnston and Afflerbach (1985) noted that assigning importance is a necessary prerequisite for identifying the main idea. Afflerbach (1986) further explains: “The assignment of importance to text was crucial for constructing main idea statements. Through the assignment of importance processes, readers organized the information, and the text was reduced to a more manageable size, as text elements deemed important were retained, while others were excluded” (page 19). And importantly, the identification of a main idea is part of the larger process of summarizing, and thus constructing a main idea is an important aspect of summarizing (Johnston & Afflerbach, 1985). Essentially, the authors describe a three-step process, where the reader assigns importance, identifies the main idea, and then uses the main idea to summarize the passage. However, the literature has not reached a consensus on a single criterion readers use to assign importance. Studies suggest that readers use a variety of factors to assign importance, including: contextual knowledge, knowledge of text structure, author’s perspective, reader’s goal, affect, or inferencing (Afflerbach, 1986; Presley & Afflerbach, 1995; Guthrie, Britten, & Barker, 1991).

However, the literature does offer convincing evidence to suggest that assigning importance may be most closely supported by text markings. Guthrie, Britten, & Barker (1991) manipulated the structure of expository texts to determine the impact of text presentation on assigning importance. For this study, the authors experimentally manipulated text-markings by reorganizing the same content into three different structures: (1) prose, (2) directory with subtitles, or (3) table with column and row headings. Results found that readers of well-marked structures such as directories were better at assigning importance. In addition, readers who used text markings such as titles and headers to guide a targeted reading were more efficient than
readers who linearly read through the entire text without discretion. The authors concluded that
text marking supported the importance assigned to text segments.

Given that text markings are generally absent in narratives, it is important to note that
assigning importance may be considerably more challenging when reading stories as compared
to expository texts. It follows that when reading stories, readers are somewhat less supported in
determining importance as compared to readers of expository texts. Based on these findings, it
may be easier to understand the finding that 4th and 5th grade readers of authentic narrative texts
used judgment when thinking aloud only 2% of the time, where judgement was defined as judging
the appropriateness, effectiveness, difficulty or importance of text ideas and text features
(Meyers, Lytle, Pallandino, Devenpeck & Green, 1990). These are necessary steps for assigning
importance. This difficulty may be compounded by the fact that stories are less likely to
explicitly state the main ideas, such as the story problem and solution (see earlier discussion;
Long, Golding, & Graesser, 1992). Readers’ habits may play a role too. Although assigning
importance to text statements is important to overall passage comprehension, it is plausible that
readers of narratives may be in the habit of overlooking assigning importance to text statements
and instead focus more on processing other aspects of the text, such as affective reaction (Miall
& Kuiken, 2001). Therefore, due to attributes inherent in story structure and readers’ habits, it is
possible that narrative readers are less likely to assign importance during online processing and
focus more on affective reactions. This is likely to increase the difficulty of generating a good
summary and underscores the need to study assigning importance in narrative texts during online
processing.

In addition, there is evidence to suggest that assigning importance to text ideas may be
subjective (Silven & Vauras, 1992). Studies found assigning importance to be subjectively
related to reader’s goals for reading, reader’s biases, and readers’ interests (see Black & Bower, 1980). Afflerbach (1986) found that background knowledge too impacted assigning importance. In a repeated measures study, the authors recruited four anthropology and four chemistry doctoral students to read anthropology and chemistry texts. By design, the participants read both within-discipline and out-of-discipline texts. Unsurprisingly, the study found an interaction between content familiarity and main idea construction. By extension, it is likely that readers of the same text may differently assign importance based on individual factors, such as background knowledge. The subjectivity inherent in determining the importance of text statements indicates the need for research examining the process.

Put together, assigning importance is a necessary skill for identifying a text’s main ideas and, by extension, summarizing. However, empirically studying the process may be complicated by the finding that it is a subjective process based on the reader’s prior knowledge. Therefore, readers of the same text may assign importance differently. Furthermore, assigning importance for story statements is comparatively more difficult than assigning importance to expository text statements, given that stories tend to provide fewer explicit text markings which weakens supports for assigning importance. These difficulties suggest that narrative readers may not assign importance at the same rate as readers of other genres, and instead, may focus attention on affective components of the text. However, in stories containing multiple story events, assigning importance to text statements is necessary to identify the critical problem and the events that ultimately result in a solution. Therefore, the current study empirically assessed the readers’ processes for assigning importance to story statements using a focused think aloud protocol. To address these difficulties, Study 2 examined how readers assign importance to narrative text
statements through an author created task where the participants assigned importance to pre-selected text statements on a 5-point scale.

**Knowledge of Story Structure**

In addition to inferring and assigning importance during reading, a reader’s ability to identify important story elements may be influenced by the mental representation a reader constructs for the text. Kintch and van Dijk (1978) explain that each passage contains a microstructure and macrostructure. The microstructure is comprised of propositions through which the author explicitly imparts information to the reader at the sentence level. During microstructure-based comprehension, the reader is focused on local coherence of the text, comprehending the present proposition, and how it may relate to the immediately succeeding propositions (see Singer, Graesser, & Trabasso, 1994). In contrast, the macrostructure is a single mental representation of the text as a whole. In macrostructure-based comprehension, the reader comprehends aspects of the text that are not expressed at the sentence level, but rather are understood from the text as a whole. Tasks such as identifying the main idea or summarizing occur at the macrostructure level, where comprehension of the entire text is needed.

Comprehension tasks based on text structure also require an understanding of the entire text at the macrostructure level. Therefore, it is possible that for readers to correctly identify elements of story such as the problem and solution, it may be necessary for them to first read through the entire text. For instance a reader may be better able distinguish between the critical and minor story problems only after the reader can understand the roles that each of these problems play in the story as a whole. Similarly, a reader may be better able to isolate the events that successfully led to the story solution from events that yielded a dead-end (Black & Bowers,
1980) after comprehending the story at the macrostructure level. Study 2 empirically tested whether reading through a story as an uninterrupted, whole unit better supports readers in correctly identifying the story problem and solution.

Van Dijk and Kintch (1983) further explain that macrostructure representations occur at two levels: the textbase and situation model. The textbase is a "close to text" representation, where a reader links all of the text's explicitly stated information derived from the propositions into a single, coherent representation. In contrast, a situation model is constructed when a reader embellishes upon the textbase through inferences, and integrates prior knowledge to improve the text representation. Put differently, "[a] textbase captures the text-internal, local and global, meaning of a text, the situation model integrates this text meaning with the reader's prior knowledge relevant to the text" (Stromoso, Bratten, & Samuelson, 2003).

The literature presents an extensive and an in-depth discussion surrounding the mental processes readers use to create a situation model. Knowledge-based inferences are used to build a situation model. These inferences are generated through the reader’s knowledge, most commonly referred to as background knowledge (Magliano, Trabasso, & Graesser, 1999). As a reader progresses through a text, the reader attempts to generate explanations for story events; however, these explanations are rarely explicitly explained in the text. Instead, the reader may infer explanations by using prior knowledge. For instance, the text for the traditional tale of *The Three Little Pigs* may not explicitly state why the Wolf wanted to enter the little pigs’ houses. However, with support of background knowledge the reader may infer the character’s motive and correctly conclude that the wolf wanted to eat the pigs.
Knowledge of text structure is an example of background knowledge that may be retrieved from long-term memory (Graesser, Singer, & Trabasso, 1994) and may be particularly supportive when building a situation model for a story. For instance, knowledge of story structure may provide the reader with a structure through which to understand that a story’s most important parts are the problem and the events that yield a solution. A reader with a better developed knowledge of story structure may be better able to focus on these most important aspects of a story, and in so doing, is better able to retain the most important parts while quickly discarding the less important parts. Empirical research too, has shown that training readers in story structure improves overall comprehension for the text (Baumann & Bergeron, 1993; Idol & Croll, 1987; Idol, 1987; Boulineau, Fore III, Hagan-Burke, & Burke, 2004). Along these lines, Study 1 found that knowledge of story grammar can be used to improve summary quality.

Knowledge of story structure is a form of prior knowledge that may be particularly supportive to a reader in correctly identifying the critical problem and solution. Specifically, with better developed knowledge of story structure, a reader may be aware that stories may contain several minor problems in addition to the critical problem. The reader may also understand that characters tend to engage in several failed attempts before a solution is achieved. In addition, readers can more easily generate inferences when story events reflect a typical script that is already familiar to them (Graesser, Singer, & Trabasso, 1994). By extension, it can be inferred that readers with greater exposure to a wider range of stories are likely to develop greater familiarity with different (story) scripts and thus may be better able to identify story elements across texts. Study 2 aimed to empirically test whether a better developed knowledge of story structure or greater exposure to stories impacts a reader’s ability to correctly identify the critical problem and the events leading to the solution.
In this study, text exposure was measured using a Title Recognition Task, where readers were asked to identify titles they recognize from a list of authentic and foil titles. This task has been empirically tested and has shown to be a reliable measure of readers’ print exposure (Cunningham & Stanovich, 1992). Beyond print exposure, Study 2 also sought to measure the participants’ knowledge of story structure.

Knowledge of story structure supports both readers and speakers: it supports a reader’s comprehension whereas it supports a speaker’s expression. Therefore, measures of story structure are reviewed in the literacy and language research, and these two bodies of research use similar methods of measurement. The two most common formats include retelling a story and generating a story, typically measured through the Test of Narrative Language (Gillam & Pearson, 2004), Index of Narrative Complexity (Petersen, Gillam, & Gillam, 2008), and the Renfew Bus Story (Glasgow & Cowley, 1994). Story structure can also be measured through scrambled stories and cloze activities. (For a more detailed review, see Page & Stewart, 1985.) However, speakers and readers use story structure very differently; while speakers use it expressively to generate a story, readers use it receptively to understand a story. Yet, all of the measures listed above assess story structure generatively, where the test-taker is expected to produce a story in a spoken or written format. While this generative format of assessment may be directly related to how speakers use story structure to support expression, it does not appear to be directly aligned with the reader’s use of story structure for comprehension.

In contrast to the aforementioned assessments of story structure, Baumann and Bergeron (1993) used four author-created tasks to assess participants’ knowledge of story structure and key elements in a text. Across all tasks, participants were asked to identify elements in stories in a receptive manner, but were not asked to generate stories. This approach appears to be better
aligned with readers' use of story structure, and therefore may be a better fitted measure to use in Study 2. However, Baumann and Bergeron (1993) designed these tasks for first grade participants, and these tasks would be too simple for Study 2 participants. Therefore, to assess knowledge of story structure in a manner that is most useful for readers, Study 2 used author-created tasks adapted from Baumann and Bergeron (1993).

**Reporting Online Processing**

As earlier noted, there is a lack of research on processes readers use to identify the story solution. Furthermore, in the research reviewed, no study empirically tested an intervention to support the *correct* identification of the story solution. Therefore, one of the purposes for Study 2 was to uncover the online processes that readers typically use to identify the story solution and other factors that may impact it.

Traditionally, studies that examined online processing have used a think aloud protocol. Kucan and Beck (1997) state that studies use a think aloud protocol for two general purposes: (1) to provide insight into the processes that expert readers use, with the intention to identify useful strategies and (2) to allow examination into the processes that poor readers use, with the intention to devise matched interventions to better support them. In Study 2, a think aloud was used in order to gain insight into readers’ processes for identifying the story problem and solution, with the intention to use this information to design an intervention directly aimed at supporting readers who struggle with *correctly* identifying story elements.

Since 1980, Ericsson and Simon have written a series of articles and books that provide a detailed account of the think aloud methodology and how it can be used to examining readers’ online processes for text comprehension (Pressley and Afflerback, 1995). Pressely and
Afflerbach (1995) reviewed and summarized Ericsson and Simon’s recommendations. Based on Ericsson and Simon’s works, Pressley and Afflerbach concluded that think alouds, are designed to reveal the contents of the shot-term memory\(^2\). They also suggest best practices for designing a think aloud protocol, including: (1) directing participants to reveal the contents of their short-term memory free of interpretation, (2) conducting a think aloud on tasks participants have not yet mastered, (3) understanding that a think aloud is best suited for ideas that are retained in the short-term memory for longer periods of time, (4) avoid directing participants to generalize across think aloud trials, (5) avoid training participants because think aloud is a natural process, (6) understanding that the quality of a think aloud verbal report may be related to the participants’ verbal ability, (7) realizing that verbal reports are unique to each individual participant, and (9) coding verbal reports into categories through the use of a reliable system.

In the sections below, each of the these best practices recommended by Ericsson and Simon are addressed and applied to the current study. Beyond Ericsson and Simon’s works, additional studies that used a think aloud protocol are reviewed and are used to design the think aloud for the current study.

Importantly, Ericsson and Simon note that a think aloud may be open-ended or focused. Most of the empirical think aloud studies reviewed used an open-ended think aloud, during which participants were free to report any process they engaged in while reading a text. However, for the purposes of this study, a focused think aloud was used, during which the participants were guided to specifically think aloud about a text’s problem, solution, and

\(^2\) In their works, Ericsson and Simon state that a think aloud is used to reveal the contents of the short-term memory. But later works indicate that a think is used to reveal the content of the working memory. Therefore, the “short-term memory” is used when discussing Ericsson and Simon’s works, but the term “working memory” is used in all other portions of this paper.
important ideas. Although less common than an open-ended think aloud, a focused think aloud is considered an appropriate use of the protocol. In addition, a focused think aloud was chosen for this study to ensure that the participants’ verbal reports contained information that could be used to understand readers’ online processes for identifying the story problem, solution, and important parts.

**Target Passages**

Study 1 critiqued previous research that used simple passages to study summarization, and drew on earlier research to demonstrate that text features impact comprehension (Kintch, 1991; Meyer & Penland, 1982). Therefore, for Study 1 authentic texts that more nearly replicated the types of texts fourth grade readers are likely to encounter were selected. Similarly, Study 2 continued used authentic text to further strengthen Study 2’s design.

To the extent that an author includes a greater number of details or events in a story, the text increases in length. Necessarily, shorter texts contain fewer details and story events, ultimately yielding a text with considerably fewer text ideas expressed in fewer text statements. The decreased number of ideas in a shortened text increases the probability that a disproportionately greater percentage of text ideas are included in the story’s causal chain, when compared to longer texts. And the inclusion of a story idea in the causal chain impacts the offline processing of the text statement containing that idea. For instance, if a text statement is included in the causal chain, it increases the likelihood that the statement will also be included in an offline summary (van den Broek & Trabasso, 1986). Given that shorter texts present fewer text ideas, it follows that readers of shorter, simpler texts are likely to engage in online reading processes that differ from readers of longer texts.
Pressley and Afflerbach (1995) note that think aloud studies traditionally use short texts that do not adequately reflect the authentic texts school-age children naturally read, and note: “[Still,] this is not a very satisfactory state of affairs in a world in which people so often read material of varied length – from short articles to books. There definitely is a need for on-line study of reading processes when people read long pieces (p.138).” The authors’ concern is well reflected in the literature reviewed for this study, where some studies examining online processing used short passages, roughly one paragraph in length (Cote, Goldman, & Saul, 1998; Magliano, Trabasso, & Graesser, 1999; Laing & Kamhi, 2002; Suh & Trabasso, 1993; Long, Golding, & Graesser, 1992). To improve upon the design of previous research, Study 2 used authentic texts with a text-length that is appropriate for fourth grade readers.

Beyond text length, text difficulty too plays a central role in text processing. This is particularly relevant in think aloud studies, where readers are encouraged to verbally report the contents of their working memory as they progress through the text. However, when reading below-level texts, processing is automatic and, therefore, readers cannot adequately report the contents of their working memory (Pressley & Afflerbach, 1995). In contrast, when readers are engaged with texts that are too difficult, the readers may be too focused on word reading and therefore unable to report online comprehension processes. For instance, Cote, Goldman, & Saul (1998) conducted a think aloud study with at-level and above-level passages. They found that, when reading above-level passages, participants were likely to report problems at the word level (word reading or vocabulary) and were unlikely to report text elaborations or inferences. Taken together, texts matched to reader ability are most likely to yield verbal reports concerning comprehension processes in a think aloud protocol. However, only a few studies used target texts appropriately matched to reader ability (Olshavsky, 1976; Meyers, Lytle, Pallandino,
Devenpeck & Green, 1990; Johnston & Afflerbach, 1985; and Schellings, Aarnoutse, & van Leeuwe, 2006).

Study 1 further examined the impact of text difficulty by using it as an independent variable in the study's analyses. In Study 1, each participant read one LL and one UL text at each point of assessment. Results found that text difficulty played a significant role in text processing; participants were better able to correctly identify story elements in summaries of LL texts as compared to UL texts. This indicates that text difficulty impacts readers’ processing of the text, and that across levels of text difficulty, readers may have differently processed the texts. Therefore, to better understand the impact of text difficulty on readers’ processes, it is important to examine this impact through readers’ online processes.

In addition, the LL texts were at the second grade reading level, only two grade levels below the participants’ reading level. Thus, the lower-level texts may have been somewhat easier to process, but were unlikely processed with automaticity. Moreover, the participants’ difficulty in identifying the story solution further indicates that they had not yet reached mastery and were therefore unlikely to process the texts automatically. It is possible that Pressley and Afflerbach’s (1995) concerns regarding automatic processing of LL texts applies to texts that are considerably below the participant’s reading ability, as in instances where undergraduate participants read passages on a first or second grade reading level (Suh & Trabasso, 1993; Magliano, Trabasso, and Graesser, 1999). Yet, concerns about automatic processing are unlikely to apply to the LL texts that were used in Study 2. Noting the difficulty in earlier research and the findings from Study 1, Study 2 continued to use text difficulty as an independent variable. Across all conditions, the participants read one lower level and one upper level text.
Offline and Pretest Measures in Think Aloud Protocol

Reading involves many co-occurring cognitive processes that take place during and after reading. Offline processes that occur after reading are measured using a wide range of tasks, such as—but not limited to—questions, reflections, essays, and summaries. In contrast, processes that occur during reading, online processes, are covert and therefore difficult to measure. Research examining online processing has a long tradition of using think aloud protocol, in which the participants are trained to pause at intervals to verbally report the contents of their working memory, free of interpretation. The researcher then analyzes these verbal reports to gain a better understanding of the online processes. In their seminal book, Pressley and Afflerbach (1995) wrote extensively on the use of think aloud protocol as it applies to reading research.

There is an extensive body of research using think aloud protocol to investigate online reading processes. Although a great number of these studies have closely adhered to the recommended methods of think aloud protocol suggested by experts in the field (Pressley & Afflerbach, 1995; Afflerbach, 2002), some of the studies neglected to incorporate traditionally accepted methods for rigorous research (Campbell & Stanley, 1963). Specifically, some studies failed to design effective outcome measures.

Think aloud studies have examined and drawn conclusions on a wide range of factors impacting reading processes such as: text styles (Guthrie, Britton, & Barker, 1991), reader ability (Schellings, Aarnoutse, and van Leeuwe, 2006), impact of prior knowledge (Cote, Goldman, & Saul, 1998), and perspective (Kaakinen & Hyona, 2005). A portion of think aloud studies reviewed drew inferences concerning the efficacy of participants’ online comprehension process...
without adequately assessing comprehension of the text as an outcome variable (Meyers, Lytle, Pallandino, Devenpeck & Green, 1990; Guthrie, Britten, & Barker, 1991; Cote, Goldman & Saul, 1998; Magliano, Trabasso, & Graesser, 1999; Schellings, Aarnoutse, & Leeuwe, 2006).

Yet, without measuring text comprehension as an outcome variable, it is difficult to argue that participants’ online processes supported comprehension. Evidence supporting the need of a strong comprehension outcome variable can be seen in Long and Golding (1993). In this study, the authors examined the readers’ automatic generation of the story’s goals during online processing. In this study, undergraduates read simple, below-level narrative passages, each containing approximately 11-16 sentences. However, each word in the passage was presented separately on a screen, 50 ms apart. A lexical decision task was used at the end of each sentence to estimate automatic goal generation. But importantly, the participants considerably underperformed on this study’s offline comprehension measure. Despite the texts’ primary grade reading level and easy readability, the college students correctly responded to a mere 61% percent of literal, text-based comprehension questions, indicating that comprehension processes may have been significantly impeded by the passage presentation. Yet, despite the low comprehension scores, the authors proceeded to draw conclusions concerning readers’ online automatic goal generation. This finding suggests that when studying online processes it is important to measure comprehension of the text as an offline process, to ensure that the reader has fully comprehended the passage. Only after it has been verified that the reader’s comprehension for the text is intact, can the researcher then proceed to draw conclusions regarding the extent to which the online processes were supportive. This finding may be applicable to studies investigating online processing through a think aloud protocol.
In addition, Afflerbach (2002) calls for think aloud studies to collect objective behavioral data beyond the verbal reports of participants. Some think aloud studies did so, but used weak outcome variables that do not accurately reflect good passage comprehension, such as a single, close-ended (rather than open-ended) question (Gueraud, Harmon, & Peracchi, 2005), lexical decisions task (Long, Golding, & Graesser, 1992), or latencies (Gurthrie, Britton, and Barker, 1991; Dopkins, 1996). A considerable number of the studies reviewed used retell as a comprehension measure (Meyers, Lytle, Pallandino, Devenpeck, & Green, 1990; Cote, Goldman, & Saul, 1999; Kendeou, Muis, & Fulton, 2011; van den Broek, Lorch, Linderholm, & Gustafson, 2001; Magliano, Trabassao, & Graesser, 1999). However, retell may be viewed as a weak indication of comprehension in that it scores a reader’s ability to recall all text information, including the unnecessary details. However, recalling text details does not reflect intact comprehension. In addition, most recall tasks are scored based on a count of the number of text ideas recalled. In this way, the recall score does not distinguish between types of text ideas recalled; key ideas of the text and unnecessary details are equated. This type of scoring system makes it possible for a reader to receive a “good” recall score even if the reader only recalled text details and failed to comprehend the key ideas in text. Possibly, it is for this reason that retell can be classified as “knowledge” or “remember,” the lowest-ranked thinking skill on the Bloom’s Taxonomy (Krathwohl, 2002).

In addition, recall is also inefficient. To facilitate the participants’ ability to read the text in one research session, studies have often favored the use of short texts. Assessing a reader’s recall of short texts is a reasonable expectation; the texts are short and therefore contain few story events and few story details. In contrast, authentic texts that readers typically read (such as novels) are considerably longer, with many story events and a plethora of details. It would
unreasonable to expect a reader to fully recall all novel events and it is furthermore inefficient for a reader to tax memory in this way. In contrast to earlier research, Study 2 was intended to validate the findings from the online verbal reports by use of strong, efficient comprehension measures specifically designed to capture the participants’ comprehension of important story elements. Furthermore, these story comprehension measures were intended to be used to evaluate the efficacy of the readers’ online verbal reports.

Although readers begin processing a text online, they continue to process the text offline too (Pressley & Afflerbach, 1995). Graesser, Singer, and Trabasso (1994) further explain that readers continue to generate a range of inferences during offline processing. In fact, studies on conflicting texts found that readers retained discredited information during reading and during immediate free recall. Only in later offline comprehension tasks did the readers remove discredited information from their mental representation for the text (Wilkes and Reynolds, 1999). Johnston and Afflerbach’s (1985) findings concur. Their study found that expert readers, too, continued to infer and process the text after reading. This role of continued text processing in the offline stage was of particular relevance to Study 2.

In online processing, readers take in text information in a piecemeal fashion, but once the reading is complete, readers can then understand the story as a whole and differently evaluate their identification of the story problem and solution. It is possible that after processing the text as a single, coherent unit, readers may continue to process the text offline and think differently about their identification of story elements. To account for this possibility, in the current study, offline tasks again asked readers to rate story statements for their importance and identify the story’s problem and solution.
As stated above, there is a need to include strong offline comprehension measures in a think aloud study, to ensure that the readers comprehended the text. In addition, these offline tasks can double as calibration measures to evaluate whether the readers’ online processes supported text comprehension. In Study 2, offline tasks were designed to be used as an outcome measure to assess text comprehension and as a calibrator to evaluate the efficacy of participants’ online processes. By using strong outcome measures, Study 2 aimed to further refine the use of think aloud protocol in literacy research. In addition, Study 2 sought to further refine think aloud methods by using comprehensive pretest measures too.

Beyond random assignment, pretesting further strengthens an experimental design, in verifying that there are no preexisting differences between the study groups at the study’s onset (Campbell & Stanley, 1963). By establishing that the groups are truly equivalent at study onset, preexisting group differences can be ruled out as a competing hypothesis. However, pretesting for reading ability plays a particularly important role in all think aloud studies, experimental and non-experimental studies. In think aloud studies, participants are asked to generate verbal reports while reading and the verbal reports are later used by investigators to generate inferences concerning the participants’ online text processing. However, ahead of conducting a think aloud, it is important for investigators to ascertain that the participants can read and comprehend the text. There is empirical evidence showing that verbal reports of good comprehenders and less skilled comprehenders differ (Schellings, Aarnoutse, and van Leeuwe, 2006), indicating that if participants cannot read or comprehend the target text, it will drastically impact their verbal reports.
Nevertheless, some experimental and non-experimental think aloud studies have neglected to pretest participants on reading ability (Baumann, Siefert-Kessell & Jones, 1992; Cote & Goldman, 1999; Wolfe & Goldman, 2005), while other studies used less than rigorous methods for pretesting participants (Silven & Vauras, 1992; Cote, Goldman, & Saul, 1998; Crain-Theroson, Lippman & McClendon-Mugnuson, 1997). Only four of all studies reviewed adequately pretested participants for reading ability to ensure on-level reading as an inclusionary criterion for participating in the study (Meyers, Lytle, Pallandino, Devenpeck, & Green, 1990; Schellings, Aarnoutse, & van Leeuwe, 2006; Laing & Kamhi, 2002; Olshavsky, 1976). Borrowing on this method, Study 2, pretested participants to ensure on-level reading and passage comprehension. Additionally, participants were pretested for their exposure to narrative texts and prior knowledge of story structure.

The Think Aloud Protocol

Engaging participants in thinking aloud to reveal online cognitive processes has been applied to many areas of education and psychology research. Pressley and Afflerbach (1995) reviewed the body of literature where a think aloud protocol was used in reading research and prescribed an effective model for using think aloud protocol in reading studies. Study 2 used Pressley and Afflerbach’s (1995) model for think aloud protocol.

Think aloud protocol is a method used by investigators to better understand online cognitive processing. In reading research, this method can support a better understanding of how readers process text while they are reading the text. This contrasts with offline tasks that support investigators in measuring a reader’s comprehension for the text after reading. In a think aloud protocol, participants read a passage aloud and stop at predetermined intervals to verbally report
the contents of their working memory. Once the participant completes thinking aloud, the
participant resumes reading the text aloud until the next stopping point, where once more, the
participant thinks aloud. This pattern is repeated until the passage is completed. Yet, there
appears to be variation in the literature on the interval length for inserting stopping points in the
text.

In addition, for the verbal reports to meaningfully contribute to a growing understanding
of online processing, it is important for participants to strictly report the contents of their
working memory and text processing without interpreting the information. However, verbally
reporting cognitive processes free of interpretation is a challenging task for most participants.
Therefore, despite the recommendations by Ericsson and Simon, Pressley and Afflerbach (1995)
recommend training participants on thinking aloud before they engage with the target passage.
Yet, in this instance too, there appears to be little agreement on the types and degree of training
that best support participants in thinking aloud. Noting that there is a lack of consistency across
think aloud studies on the interval length for stopping points and training, the current study drew
on previous research to provide a rationale for this study’s think aloud design.

**Think Aloud Stopping Point.** In a think aloud protocol for reading, symbols are
embedded in the text signaling the participant to stop and verbally report cognitive processes
(Pressley & Afflerbach, 1995). However, there are concerns that the “mandate” to report a think
aloud at fixed intervals in a text may cause readers to perform cognitive processes that do not
occur in natural, uninterrupted reading (Graesser, Singer & Trabasso, 1994). During natural
reading, readers may be passively reading for portions of the text to gather information and
therefore, may have no process to report. However, the mandate to verbally report a cognitive
process at every stopping point may interfere with the natural reading process and may explain
why studies have found that readers frequently retell or paraphrase the text during think alouds. When a reader has no process to report, but is mandated to do so, paraphrasing text information is likely the simplest recourse. It seems quite easy for a reader to retell or paraphrase the most recently read text segment when asked to report a cognitive process in lieu of one.

In addition, there is some concern that stopping frequently may interfere with text comprehension by disjointing the text or distracting the reader. In response to concerns surrounding think aloud methodology, Afflerbach (1986) experimentally manipulated the stopping points in a text, to examine whether stopping points may impede comprehension. The author examined the latencies of two expert readers’ verbal reports in a prompted condition, where stopping points were assigned, and in an unprompted condition where the participants were directed to think aloud where they felt necessary. The prompted stopping points only occurred between sentences; however, in the unprompted condition, the participants thought aloud at intersentence and intrasentence intervals. The author reported no significant differences between any of the conditions. Based on these findings, the author concluded that assigning stopping points in a think aloud text does not impede comprehension.

Still, studies have used varying interval lengths for thinking aloud stopping points. Overwhelmingly, studies have included a stopping point at the end of each sentence (Crain-Theroson, Lippman & McClendon-Mugnuson, 1997; Kendeou, Muis, & Fulton, 2011; Cote, Goldman, & Saul, 1998; Meyers, Lytle, Pallandino, Devenpeck, & Green, 1990; Kaakinen & Hyona, 2005; van den Broek, Lorch, Linderholm, & Gustafson, 2001; Wolfe & Goldman, 2005; Suh & Trabasso, 1993). However, other studies have used longer intervals. Studies have included a stopping point between every two sentences (Blanc, Kendeou, van den Broek, & Broulliet, 2008), intermittently after a group of sentences (Stromoso, Bratten, & Samuelson,
2003), at the end of each paragraph (Johnston & Afflerbach, 1985; Schellings, Aarnoutse, & van Leeuwe, 2006), or halfway through the text (Baumann, Siefert-Kessell & Jones, 1992). Schellings, Aarnoutse, & van Leeuwe (2006) justified stopping points at the end of every paragraph as natural breaking points in the text.

As previously stated, the objective of Study 2 was to better understand readers’ identification of the story problem and solution as a macrostructure comprehension task dependent on story structure. Thus, it is likely that identifying natural breakpoints in the texts that align with the story’s structure may be most effective. Therefore, Study 2 used natural breakpoints in the text as stopping point to eliciting think aloud verbal reports; however, instead of using paragraphing as natural break points, stopping points were inserted at natural breaking points as guided by the story’s structure. In most instances, a stopping point was inserted at the end of an event, as defined by Thorndyke (1977). This design enabled participants to think aloud on longer segments, and stop to think aloud at natural breaks in the text. Minimizing the number of stopping points was expected to support the participants in generating more meaningful verbal reports and thereby reduce the number of paraphrase/recall statements that may function as placeholders. It was expected that this design would yield more qualitatively meaningful verbal reports.

**Think Aloud Training.** In an effective think aloud, participants report the contents of their working memory as they are processing the text. Especially for young children, verbally reporting cognitive processes may be a challenging task. Therefore, it is recommended that participants be trained on thinking aloud prior to engaging with the target text (Pressley & Afflerbach, 1995; Afflerbach, 2002). Earlier studies trained participants to think aloud using a wide range of techniques. Study 2 drew on the methods of two previous studies that trained
participants to think aloud through modeling (Crain-Therose, Lippman & McClendon-Mugnuson, 1997) and practice phases (Schellings, Aarnoutse, & van Leeuwe, 2006). During the first phase, the modeling phase, the participants observed the investigator pausing at stopping points to think aloud. In the second phase, the practice phase, the participants practiced thinking aloud and the investigator provided feedback. In the third and final phase, the participants thought aloud using the target texts. This three-phase model is aligned with the gradual release of responsibility model (Pearson & Gallagher, 1983). Initially the investigator holds all of the responsibility for task completion in the modeling phase. Next, in the training phase, the participant and the investigator share responsibility for the task: the participant thinks aloud as the investigator provides feedback and provides further support. In the final phase, the participant holds all of the responsibility for task completion by independently thinking aloud with the target passages, without feedback or support from the investigator. This model can effectively train readers on thinking aloud.

In addition, verbal reports are best suited for research and analysis when they accurately reflect the contents of working memory, free of interpretation (Pressley & Afflerbach, 1995). Therefore, in the current study, the participants were encouraged to use “I statement” when thinking aloud. “I statements” begin with the word “I” and are used to generate a first-person-perspective statement. In the training phase, the investigator also provided several “I statements” stems that may be particularly helpful when thinking aloud such as: “I’m thinking that” or “I get it”. Embedding “I statements” in the think aloud training has not been used in previous research, but it was hypothesized that “I statements,” may support participants in using a first-person perspective to express cognitive processes, and in this way avoid interpreting their thoughts.
Think Aloud Control Condition. Thinking aloud during reading may affect the natural reading process, as evidenced from a study showing greater comprehension gains in the think aloud condition compared to the control condition (Ward & Traweek, 1993). Silven and Vauras (1992), too, found that participants’ use of reading comprehension strategies improved as a result of thinking aloud. Based on these studies, it is plausible to conclude that readers may improve their comprehension of the target passages while thinking aloud, because thinking aloud increases monitoring (Baumann, Siefert-Kessell, & Jones, 1992). On the other hand, other studies found no significant differences between think aloud and control conditions (Guthrie, Britten, & Barker, 1991; Crain-Theroson, Lippman, McClendon-Mugnuson, 1997). In view of the different findings across studies, Study 2 included two control conditions to evaluate the effects of thinking aloud on offline identification of story elements. In the first control condition participants engaged in a silent read first condition. In this condition, the participants silently read through the text without thinking aloud and then completed the same offline tasks as did participants in the think aloud conditions. The second control condition was designed to control for the added exposure that participants in the think aloud read twice condition may have received. Therefore, in a second control condition, the participants read the text silently and then reread the text silently before completing the offline tasks. In all conditions, the control participants read one LL and one UL text in counterbalanced format.
Chapter 8

**Study Rationale**

This study was designed to extend findings from Study 1 on summarizing narratives in order to further explore the difficulty participants experienced in correctly identifying the critical story problem and the events leading to the story solution. Specifically, this study used a think aloud protocol to understand readers’ cognitive processes and examine factors that may contribute towards correct identification of the problem and solutions such as: knowledge of story structure, exposure to narrative texts, assigning importance to text statements, and text difficulty.

Fourth grade participants with intact speech, reading ability, and reading comprehension were recruited to participate. All participants were pretested to measure their knowledge of story structure and exposure to narrative text. These measures were used to better understand whether knowledge of story structure or exposure to text supports readers in correctly identifying the story problem and solution. Next, participants were randomly assigned to a treatment or control group. The treatment group participated in two think aloud conditions: a read once condition (think aloud only) and a read twice condition (think aloud reread). In the treatment, read once condition (think aloud only), the participants thought aloud as the text was read for the first time. However, this may fragment the readers’ understanding of the text as a single unit, which may interfere with identification of the story problem and solution. Therefore, in the treatment read twice condition (think aloud reread) participants first silently read through the entire text and then reread the text with a think aloud. It was hypothesized that reading through the text first silently in an uninterrupted fashion supports readers in better understanding the story as a
cohesive whole, and thereby allows them to generate a greater number of verbal reports concerning the story’s important ideas, problem, and solution during the subsequent think aloud. However, to assess possible comprehension advantages readers may experience from thinking aloud and exposure to text, two control conditions were included to silently read the text in an uninterrupted manner and without thinking aloud: (1) control read once condition (silently read once only) and (2) control read twice condition (silent read once and then reread).

In Study 1, text difficulty impacted the participants’ ability to correctly identify story elements. Therefore, Study 2 was designed to examine the impact of text difficulty too. In all conditions (read once vs. read twice) participants read one lower level and one upper level text. To allow comparisons between Study 1 results and Study 2 results, the same passages were used across both studies. Moreover, after reading the texts, all study participants in all conditions engaged in the same sequence of offline measures. The offline measures were designed to ensure that participants comprehended the texts and to function as calibration measures to evaluate the efficacy of the verbal reports. The offline measures were further used to evaluate whether thinking aloud provides participants with added comprehension benefits above and beyond silent, independent reading. This study aimed to answer the following study questions:

**Study Questions**

1. Does reading through a text before rereading the text in a think aloud protocol improve readers’ identification of the story problem, solution, and important ideas on online and offline comprehension as compared to thinking aloud as a text is read for the first time? Will reading through a text before rereading the text in a think aloud protocol support
readers in generating a greater number of verbal reports on the story problem, solution, and important ideas as compared to thinking aloud as a text is read for the first time?

2. Are on-level readers with a better-developed knowledge of story structure or greater print exposure able to correctly identify the problem, solution, and important ideas as compared to on-level readers with a weaker knowledge of story structure or less print exposure?

3. Will students who think aloud while reading a text outperform control students who read the texts silently on offline comprehension measures?

4. Will readers generate a greater number of think aloud verbal reports on the story problem, solution, and important ideas when reading a lower level text as compared to an upper level text?
Chapter 9

Method

Participants

Study 2 recruited 47 typically developing fourth grade students (17= male and 29= female), approximately 9.68 years of age, who were native speakers of English. All of the participants were Caucasian. Study 2 participants were recruited from a different school than Study 1 participants. Study 2 participants attended a neighborhood private school located in a mixed middle class and upper-middle class neighborhood. The school had three fourth-grade classes, and participants were recruited from each of the three classes. Each fourth grade class had approximately 20 students.

To ensure that text difficulty did not interfere with the participants’ verbal reports and offline outcomes, only students capable of reading texts at or above a fourth grade equivalent were invited to participate in this study. Participants’ reading ability was determined through the pretest measures described below. As in Study 1, struggling readers and students receiving special education services or literacy supports were not invited to participate. In addition, only native speakers of English were recruited.

To begin the recruitment process, the principal investigator (PI) approached the school principal to introduce the study and explain its purpose, design, and time commitments. In a detailed conversation, the PI discussed procedures on obtaining parental consent, child assent, and protection of anonymity. Importantly, the principal was informed that participation in the study is entirely voluntary and that the principal has a reserved right to suspend the study at any point. Once the principal designated the school as a research site for this study, parental consent
forms were distributed. They were given to all fourth grade students, so that the PI could access student data to determine eligibility to participate in the study (such as English Language Learner status and special education status). Students willing to participate were encouraged to return signed consents within a week’s time. After parental consent was obtained, the participants were assented. In accordance with the CUNY IRB mandate for this study, participants were assented at the beginning of each study session. Parental consent forms, as well as participant assent forms, state that participation in the study is strictly voluntary and that participants are free to withdraw from the study at any time without incurring penalty. Additionally, participants and their parents were guaranteed anonymity and confidentiality. Copies of the IRB-approved parental consent and child assent forms can be found in Appendix A.

Attrition

Participant assent was obtained from all participants whose parents signed the consent form. None of the participants withdrew from the study, and therefore there was no attrition.

Materials

Pretest Instruments.

1. Test of Word Reading Efficiency (TOWRE, Torgesen, Wagner, & Rashotte, 1999).

This measure is a normed, standardized assessment designed to measure word-reading ability. The TOWRE contains a subtest for sight word reading and a subtest for decodable word reading, measured by reading of nonwords. In accordance with the testing manual, the TOWRE was individually administrated with 45 seconds allowed for each subtest. The TOWRE has a reliability of $r=0.90$ (Torgesen et al., 1999). Results from this assessment were used to verify that participants can read at the fourth grade reading level, thereby preventing word-reading difficulty
from influencing online processing of the target texts. TOWRE word-reading scores were used as inclusionary criteria for participating in the study, where students scoring above -1SD (or above the 15\textsuperscript{th} percentile) were considered to be reading at the fourth grade reading level. All of the participants who returned signed consent forms met these criteria, and therefore, none of the participants were excluded from participation based on word-reading scores on the TOWRE.

2. *Iowa Test of Basic Skills, Reading Comprehension subtest (ITBS, Dunbar et al., 2008)*. This measure is a norm-referenced reading comprehension test. This multiple choice test contains 41 questions based on eight passages of varying lengths and genres. In accordance with the testing manual, the test was administered in a group setting and participants were allotted 55 minutes for the test, divided across two sessions. Reliability for this subtest is high, at $K-R_{20} = 0.90$ (Dunbar et al., 2008). Participants who scored above -1SD of the mean were invited to participate in this study. These ITBS scores were used to ensure that the participants could comprehend a leveled fourth grade text. Reading comprehension scores were used as inclusionary criteria for participating in Study 2. One participant was excluded from the study for failing to meet this criterion.

3. *Clinical Evaluations of Language Fundamentals, Fourth Edition, Formulated Sentences Subtest (CELF, Semel, Wiig, & Secord, 2003)*. This measure is a standardized, norm-referenced assessment of spontaneously generated speech. The Formulated Sentences subtest is designed to measure acceptable use of grammatical, semantic, and, syntactic rules in self-generated speech. In this subtest, participants are asked to spontaneously self-generate a sentence using a given word and a related picture. During scoring, participants’ sentences are evaluated for correct grammatical, semantic, and syntactic form. For each sentence, participants may receive a score ranging from 0-2. Sentence scores are totaled, and the total is converted to a
normed score. This subtest has an overall reliability of $r=0.86$ (Semelet et al., 2003). In accordance with the testing manual, this is a self-paced, individually administered assessment. However, total administration time did not exceed ten minutes. Because Study 2 required participants to think aloud through verbal reports, the CELF was used to assess participants’ speech fluency (Afflerbach, 2002). To ensure that all participants presented good speech fluency, only participants who scored above -1SD were invited to continue with the study. Speech fluency scores were used as an inclusionary criterion for Study 2. Two participants were excluded from the study for failing to meet this criterion.

4. **Title Recognition Task (TRT, Cunningham and Stanovich, 1992)**. This measure is a task designed to measure print exposure. This task requires participants to identify book titles they recognize from a list of authentic and foil book titles. Readers with greater print exposure are more likely to correctly distinguish a greater number of authentic book titles from foil book titles. However, to accurately predict print exposure in the participant population, it is important that the authentic titles reflect present-day reading selections of fourth grade students. Therefore, an updated Title Recognition Task was created. The updated TRT replicated the assessment design and scoring system used by Cunningham and Stanovich (1992), but included recently published authentic titles.

To develop the TRT, five teachers from two comparable schools were asked to provide titles of books their students read for pleasure. The teachers were asked to avoid suggesting titles used as texts in classroom lessons. In addition, teachers were encouraged to recommend titles that are moderately popular to avoid the possibility that a participant with low print exposure may recognize a title due to over-popularization of the book, as may happen with popular series (e.g., *The Hardy Boys*) and movie adaptations (e.g., *Harry Potter*). The teachers
were also guided to avoid recommending obscure or dated titles that would be difficult for readers with more print exposure to recognize. Teacher recommendations were pooled and duplicate titles were removed. Next, 39 authentic titles were selected from the pool. The author then selected 6 foil titles from Cunningham and Stanovich’s 1992 Title Recognition Task.

The participants were instructed to place a check near the titles they recognized as “real titles”. They were also informed that the task contains “fake titles”, so that guessing would be easily detected. Participants received one point for each authentic title identified, but lost one point for every foil title identified. A sample of this task can be found in Appendix F.

Cunningham and Stanovich (1991) tested the reliability of the Title Recognition Task. They calculated reliability by examining the internal consistency for the authentic titles (α=0.82). Given that the TRT used in this study was updated, reliability was recalculated using Cronbach’s alpha. The reliability of the authentic titles was α=0.84.

5. Knowledge of Narrative Story Structure Task (KNSST). This task is an author-created task designed to measure the participants’ prior knowledge of story structure. Specifically, this task measures the ability to discuss story structure at the meta-level, when it is not contextualized in a specific story. It also measures the ability to identify story elements when contextualized in a story, and evaluate how well the passage reflects story structure.

The KNSST contains three sections. Embedded in the task are instructions for each of the three sections, and during administration, the instructions were read aloud to the students as they appear on the task. The task and instructions can be found in Appendix F.

The first section consists of one open-ended question, prompting the participant to name the elements of story. To complete this section, participants self-generated the story elements
labels. This section measures decontextualized knowledge of story structure rather than knowledge of story elements in a specific story. Therefore, naming “character” as a story element yields credit, whereas naming “the wolf” as a story element does not yield credit, since the wolf is merely a character in a specific story.

In the first section, story elements according to story grammar theory are the targeted responses: character, setting, problem, solution, and falling action. Elements of story according to other theories of narrative structure (e.g., discourse theory) such as: conflict, resolution, rising action, or climax, are also scored as correct. However, elements related to written format are not scored as correct, such as: title, chapter, or paragraphs. Given that the ability to self-generate the elements of a story in a decontextualized format reflects a more advanced level of knowledge, correct responses in this section are more heavily weighted in the total score, so five points are given for every correctly named story element.

The second and the third sections of this task use six of Aesop’s fables, adapted to simplify the language. The adapted versions of the fables were retrieved from English Microdot (http://englishmicrodot.blogspot.com) and have been further adapted by the study author. The second section contains three items. Each item consists of a fable, and the elements of story are listed below the fable. The fables are read aloud by the investigator and the participant is encouraged to follow along in print. After each fable is read, the participant is directed to place a check mark near each story element that can be found in the fable in the second part. In the third part, the participant is directed to place a check mark near the each story element missing from the fable. Below, actual items from the task are shown as samples. The complete task and the scoring key are available in Appendix F.
In the sample below, the fable contains all elements of story except for the setting, because the setting is not explicitly stated in the text. Therefore, a participant would receive one point for every story element identified, but lose one point for a misidentified story element (i.e. setting). As is seen in Appendix F, all three fables used in the second section of the this task did not explicitly state the setting, but explicitly stated all of the other story elements. Thus, in order to achieve a perfect score in this section, for each fable participants were expected to place a check mark near the story elements: character, problem, solution, and falling action.

A Wolf in Sheep’s Clothing

A wolf had a hard time getting sheep to eat because the shepherd and his dog were always watching the sheep carefully. One day the wolf found the skin of a sheep. He put it on and walked right up to the sheep. For a long time, he was able to make friends with sheep and lead them away.

Then wolf would take off his disguise and laugh and say, “Appearances are deceptive!” Then he would eat the sheep.

Which element(s) can be found in this story?

_____ Character  _____ Setting  _____ Problem
_____ Solution  _____ Falling Action (or Reaction)

In the instructions for the third section, the participant is told that “good stories” are stories that contain all of the story elements. In this section too, the participant follows along in print as fables are read aloud by the investigator. After listening to each of the three stories, the participant is asked to indicate if it is a “good story,” and indicate which story elements may be missing from the fable, if any. For instance, in the sample below the fable is missing a setting and therefore should not be identified as a “good story”. As seen in Appendix F, across the three fables used in the third section, two of the fables did not explicitly state the solution and all three of the fables did not explicitly state the setting. Thus, to receive a perfect score on this section,
the participants were expected to indicate that the solution was missing from two of the fables, the setting was missing from all three fables. Therefore, none of the fables was a “good story”.

*The Goose with the Golden Eggs*

_One day a farmer saw that there was a strange egg in the nest of his goose. He looked closer and saw that it was made of pure gold. Every day, the goose laid another gold egg, and the farmer became very rich by selling the eggs. But one day, the farmer became greedy and decided to get all the gold at once by killing the goose. He killed the goose and cut it open, but there were no golden eggs inside._

_The man’s wife said, “Greed often reaches too far.”_

Do you think this is a good story, containing all story elements?  □ yes  □ no

If you do not think this is a good story, please check off which story element(s) may be missing:

_____ Character  _____ Setting  _____ Problem
_____ Solution  _____ Falling Action (or Reaction)
_____ None. All story elements are present

In part one, five points were awarded for every element of story named. But in parts two and three, one correct point was awarded for every correctly identified element. For a total Knowledge of Narrative Story Structure Task (KNSST) score, points were added across sections one, two, and three. Sections two and three assessed a reader’s knowledge of story structure as it may be contextualized within six different stories. As opposed to assessments used in other studies where knowledge of story structure was assessed by having participants generate a story using speech, the KNSST assesses knowledge of story structure in a written format supportive to readers, through the identification of story elements in an existing compositions. This better reflects how readers use story structure to support comprehension. The task, script, scoring key, and scoring system are provided in Appendix F.
6. Prior Knowledge of Individual Texts (PKoIT). This task measured the participants’ prior knowledge of the target passages used in this study. As previously noted, Study 2 used the same lower-lever (LL) and upper-level (UL) passages used in Study 1. The two LL passages are part of Rylant’s *Henry and Mudge* and *Annie and Snowball* series. Given that these series use a predictable and repetitive story structure along with repeating sets of characters, increased exposure to these texts may significantly impact a participant’s comprehension and verbal reports while thinking aloud. Similarly, the two UL passages are Native American folk tales, which too, contain recognizable and unique text features likely to impact comprehension, and by extension, verbal reports. Specifically, folk tales tend to personify animals, support the underdog, and teach a lesson. During Study 1, this personification was a source of confusion for some participants. Because increased familiarity with folk tales might be expected to impact a participant’s verbal reports, in Study 2, participants were pretested on their knowledge of folk tales. For these tasks, the participants were told to list everything they know about the *Henry and Mudge* series, *Annie and Snowball* series, and folk tales. A sample of this task can be found in Appendix F.

In these open-ended prior knowledge tasks, participant responses may reflect different degrees of knowledge. Therefore, participant responses were coded as reflecting cursory knowledge, basic knowledge, or in-depth knowledge. A fuller rubric describing the criteria for cursory, basic, and in-depth knowledge is provided in Appendix H. One point was awarded for each response reflecting cursory knowledge, two points were awarded for basic knowledge, and three points were awarded for in-depth knowledge. All points were added, yielding a total score.

**Target Passages.** As in Study 1, the passages were all selections of authentic texts designed to closely resemble the types of texts elementary school readers would typically
encounter. Additionally, the passages selected were all of the same approximate lengths, ranging from 540-680 words. However, in order to control for passage length (Hidi & Anderson, 1986), one passage was slightly abbreviated by deleting two paragraphs. During the abbreviation process, every effort was made to retain the integrity of the narrative passage. Only intact paragraphs were deleted, and none of the author’s word choices or sentence structures was altered. Text difficulty was measured using the Lexile framework, which incorporates both word frequency and mean sentence length in its algorithm (Stenner, 1996). The Lexile measure for each passage was obtained by uploading the passages into the Lexile Analyzer (http://www.Lexile.com). The two lower-level passages received Lexile scores of 370 and 380, placing them approximately at a second grade reading level. The two upper-level passages received Lexile scores of 710 and 730, which placed them approximately at a fourth grade reading level (MetaMetrics, n.d.).

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</tbody>
</table>

Each of the target passages contains a primary problem and a solution. In addition, all of the target passages, except for one, contain at least one minor problem, a failed attempt and a dead end event. As earlier mentioned, Black and Bowers (1980) defined failed attempts as a character’s actions that fail to solve the problem and dead end events as events in the story that
do not contribute to the causal chain. Summaries and descriptions of the passages’ structures are tabulated in Table 17 below.

Table 17
Summaries and Elements of Story for Study Passages

<table>
<thead>
<tr>
<th>Henry and Mudge and Annie’s Perfect Pet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henry had a pet dog named Mudge, but his cousin Annie had no pet. Henry and his parents wanted to get a pet for Annie, and decided that a bunny would be a perfect pet for her. They went to the pet store to buy the bunny. When they brought the bunny home, Annie, Henry, Mudge, and the bunny played in the yard.</td>
</tr>
<tr>
<td><strong>Primary Problem:</strong> Henry wanted to get Annie a pet OR Annie wanted a pet</td>
</tr>
<tr>
<td><strong>Solution:</strong> Henry and his parents got Annie a bunny</td>
</tr>
<tr>
<td><strong>Minor Problems:</strong> Annie could not get a pet dog (like Mudge) because no one would be home to walk it.</td>
</tr>
<tr>
<td><strong>Failed Attempts:</strong> Failed suggestions for a pet (a mouse, a turtle, a bird)</td>
</tr>
<tr>
<td><strong>Dead End Events:</strong> Henry’s memories of Mudge as a young puppy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annie and Snowball and the Pink Surprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annie and Henry saw a hummingbird in the yard drinking from a petunia and wanted to find a way to attract more hummingbirds. They ask Henry’s dad for help, and he suggested that pink may attract more birds. Henry and Annie put pink things in the garden, which attracted eight hummingbirds to the garden.</td>
</tr>
<tr>
<td><strong>Primary Problem:</strong> Henry and Annie wanted to attract more hummingbirds to the garden.</td>
</tr>
<tr>
<td><strong>Solution:</strong> They put pink things in the garden</td>
</tr>
<tr>
<td><strong>Minor Problem:</strong> Annie had no more allowance money to purchase additional petunias</td>
</tr>
<tr>
<td><strong>Failed Attempts:</strong> Dad’s suggestion to place more petunias in the yard</td>
</tr>
<tr>
<td><strong>Dead End Events:</strong> Dad built a crooked bookcase</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Fight between the Insects and Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>One day Mountain Lion stepped on Locust, and this incident lead Locust to challenge the animals to fight the insects. Mountain Lion accepted the challenge. On the day of the battle, Mountain Lion gathered animals and Locus gathered insects. When they charged, the insects crawled onto the animals, stung and bit them. This caused the animals to retreat.</td>
</tr>
<tr>
<td><strong>Primary Problem:</strong> Mountain Lion stepped on Locust and therefore they wanted to prove who was stronger</td>
</tr>
<tr>
<td><strong>Solution:</strong> They decided to have war, insects versus animals.</td>
</tr>
<tr>
<td><strong>Minor Problem:</strong> Mountain Lion and Locust were name-calling</td>
</tr>
<tr>
<td><strong>Failed Attempts:</strong> None</td>
</tr>
<tr>
<td><strong>Dead End Events:</strong> Coyote surveyed the insects’ team and reported back to Mountain Lion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fox and Possum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fox met Possum and wanted to eat him for dinner. Possum knew that Fox loved persimmons, so Possum distracted Fox by taking him to the persimmon trees. Possum helped Fox climb up the persimmon tree, but Fox could not climb down. So Possum crept away. The next morning Possum passed by the tree and found that the chill of the night caused Fox to freeze over.</td>
</tr>
<tr>
<td><strong>Primary Problem:</strong> Fox wanted to eat Possum</td>
</tr>
<tr>
<td><strong>Solution:</strong> Possum distracted Fox with persimmons, and took Fox to the persimmon trees. Fox got stuck in the persimmon tree and Possum sneaked away.</td>
</tr>
<tr>
<td><strong>Minor Problem:</strong> (1) Possum was the only one who knew where the persimmon trees are located, and he did not want to share that information with any of the animals. (2) Fox was unsure whether he should eat Possum or follow Possum to the persimmon trees</td>
</tr>
<tr>
<td><strong>Failed Attempt:</strong> Possum went up into the tree to get persimmons for Fox, but this only saved his life for a short while.</td>
</tr>
<tr>
<td><strong>Dead End Events:</strong> Descriptive segments of the text</td>
</tr>
</tbody>
</table>
For use in Study 2, thirteen stopping points were inserted in the texts. Each stopping point was signaled by a ▲. As earlier discussed, stopping points were inserted at natural breaks in the storyline, and frequently at the end of events, as defined by Thorndike (1977). A copy of the texts with embedded stopping points can be found in Appendix B.

**Offline Tasks.**

*Problem-Solution Identification Task (PSID).* In this offline task, an open-ended question prompted participants to identify the story’s critical problem and the solution in a written response. In addition, the participants were also prompted to provide a rationale justifying their identification. This was an untimed task, and the participants had access to the text, so that memory for text did not interfere with the ability to successfully complete the task (Hidi & Anderson, 1986).

*Assigning Importance Task (AIT).* This task was designed to measure how readers assign importance to text statements. In previous research, participants were asked to rate every text statement for its importance to the text as a whole; however, this was generally conducted in research using shorter texts. Study 2 used longer texts, so rating each text statement would have been tedious and time consuming. Instead, for each target passage, 15 text segments were selected. Some of the selected segments contained story element information. These text segments were regarded as important, but to varying degrees. For instance, an attempt that resulted in a solution is clearly more important than a failed attempt. Other text segments contained descriptive details, so were considered to be of no importance to the overall passage. All text segments were directly copied from the text and were not altered, except in the case where the segment contained pronouns, but did not contain character names. In these cases, the
first pronoun was replaced with the character’s name, and all other parts of the text segments remained unaltered.

To complete this task, the participants rated these 15 text statements for their importance using a five-point Likert scale (0-4), where 0 represented unimportant, 1 represents a little important and 4 represents very important. In addition, participants were asked to identify whether the text segment contained a story detail. A copy of this task and scoring key can be found in Appendix F. Reliability for this task was measured, and results found that the instrument displayed good internal consistency (α= 0.76).

**Procedures**

After the signed parental consent forms were collected, a meeting was set with the school principal and classroom teachers to create a testing schedule that did not interfere with regular school scheduling. During this meeting, the school designated a small, private working area where the investigator worked with participants individually.

After the scheduling and space concerns were addressed, willing participants were assented. In accordance with the CUNY IRB mandate for this study, participants were assented at the beginning of each study session. Next, pretest data were collected on all study participants. Pretest measures for comprehension (ITBS) were part of a school-wide assessment initiative conducted two weeks prior to the onset of Study 2. The ITBS was administered by school personnel and scores were shared with the study investigator. Pretest measures for word-reading ability (TOWRE) and oral fluency (CELF4) were administered by the study investigator in an individual setting and in compliance with the testing manual procedures. Only participants presenting the ability to read words, comprehend texts, and demonstrate oral fluency at a fourth
grade equivalent level were invited to continue in the study. All additional pretest measures (TRT, KNSST, and PKoIT) were administered in a classroom setting. Given that the TRT, KNSST, and PKoIT contain scripted directions and individually constructed written responses, there was no need for individual administration. Next, using a lottery system, participants were randomly assigned to the treatment or control groups.

In a repeated measures design, the treatment students participated in two think aloud conditions: a read once condition and a read twice condition. In the read once condition, participants thought aloud during their initial reading of the text in the fashion described below. In contrast, in the read twice condition, the participants first silently read through the entire text and then reread the text using a think aloud protocol. The uninterrupted, silent read through in the read twice condition was intended to support the readers’ processing of the story as a unified whole before examining its individual components such as the problem and solution. In contrast, in the read once condition participants thought aloud during the initial read through, and as a result they thought about story elements in the course of reading the story for the first time. It is hypothesized that when participants read a text in the read twice condition, they will generate a greater number of verbal reports on the story's problem, solution and important parts as compared to participants reading a text in the read once condition. The two read conditions were counterbalanced across participants, in a way that half of the treatment participants began with the read once condition and half of the participants began with the read twice condition. Furthermore, in each condition, the participants read one LL and one UL passage. Passage order, too, was counterbalanced across participants. In this way, half of the participants began with an LL passage and half of the participants began with a UL passage. In addition, given that there are two LL and UL passages, passages were counterbalanced a third time. For instance,
half of the participants read LL1, while half of the participants read LL2. The three counterbalancing measures yielded 16 distinct sequences, and therefore would be overly complex to view in a tabulated format. Thus, only the first two counterbalanced measures are tabulated below.

<table>
<thead>
<tr>
<th>Counterbalanced Think Aloud Read Conditions</th>
<th>First Condition</th>
<th>Second Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read Once: LL, UL</td>
<td>Read Twice: UL, LL</td>
<td></td>
</tr>
<tr>
<td>Read Once: UL, LL</td>
<td>Read Twice: LL, UL</td>
<td></td>
</tr>
<tr>
<td>Read Twice: LL, UL</td>
<td>Read Once: UL, LL</td>
<td></td>
</tr>
<tr>
<td>Read Twice: UL, LL</td>
<td>Read Once: LL, UL</td>
<td></td>
</tr>
</tbody>
</table>

LL= lower level text; UL= upper level text

Using a repeated measures design, the control participants partook in two read conditions as well: read once condition and read twice condition. The read once condition followed a typical classroom approach, where the participants silently read the passages and then completed the offline tasks. In the read twice condition, the participants read the story silently, reread the story silently a second time, and then completed the offline tasks. The control read twice condition was designed to control for any added benefit the treatment participants in the read twice condition may have gained through repeated readings of the text. Counterbalancing for the control condition mimicked the counterbalancing method in the treatment condition.

As earlier stated, thinking aloud effectively can be challenging for readers, and therefore, the treatment participants were trained to think aloud. The training included two phases: a modeling phase and a practice phase. In the modeling phase, the investigator modeled thinking aloud as the participants observed. During the practice phase, participants practiced thinking aloud as they received feedback and redirection from the investigator.
Both training passages (modeling and practice) were adapted Aesop’s fables, reworded to simplify the language. The adapted passages were retrieved from Kidpages (http://www.kidpages.com). The modeling passage contained 183 words and 15 sentences, and the practice passage contained 156 words and 6 sentences. Although stopping points were inserted at natural breaks in the texts of the target passages, in the training passages stopping points were inserted at the end of each sentence. Scripts and copies of the training texts can be found in Appendix G. During the modeling phase, the investigator said:

*During our time together, I will be asking you to read stories out loud to me. However, as you are reading, I will ask you to stop and tell me what you are thinking too. This is called “thinking aloud.” When readers think aloud, it helps me understand what readers are thinking while they are reading.*

*In the stories we will be reading, you will find triangles (▲) embedded in the text. The triangles are a sign that you should stop to think aloud and tell me what you are thinking. When you are thinking aloud, try to use "I statements". "I statements" are statements that begin with the word "I". It may sound something like “I’m thinking that...” Or “I get it...”*

*Over the next few days, I will be asking you to read several stories and stop to think aloud. Stories may have many problems, but I would like you to think about the story’s main problem. In addition, stories may contain many attempts at a solution, but I would like you to think about the solution that worked to solve the problem. As you are reading the stories, you should ask yourself “what is the main problem in this story?” and “what solution worked to solve the story’s problem?” Also, stories contain important*
information and unimportant information such as details. As you are reading, you should think about the important parts of the story. When you reach a part of the story you feel is important, let me know.

That was a lot of instructions. Let's go over the main points now. As you read each story, I would like you to think about the main story problem, the solution that worked, and the important parts in the story. In these stories, you will see embedded triangles. The triangles signal you to stop and think aloud about the problem, solution, and important parts of the story. You should also explain why you think these text segments may be related to the story problem and solution or why they may be important. Please try to begin your think alouds with the word “I.”

I have also prepared a sheet to help you along, in case you forget the instructions.

Before you begin thinking aloud, we will practice a bit. First, I will model how I think aloud. Then, we will practice together. Once we are done with the practice, you will read more stories.

I will now model a think aloud for you. During this time, you can follow along as I read. Try to pay close attention to how I think aloud about the problem, solution and important parts of the text.

After the modeling phase, the participants entered the practice phase. During this phase, the investigator provided participants with feedback on their ability to adhere to methods for thinking aloud, but did not provide feedback regarding the contents of the verbal reports. Specifically, participants received feedback on pausing at stopping points, focusing verbal reports, and using “I statements”. The participants did not receive feedback on whether they
correctly identified the problem, solution, or important parts. In addition, if a participant failed to provide a verbal report at a stop point, investigator prompted the participants to think aloud. During the practice phase of the training, the investigator said:

*Earlier, I modeled how I thought aloud and you listened carefully as I did so. Now, you are going to have a chance to practice thinking aloud as you read.*

*Please read this practice story aloud. As you are reading, please try to think about the main story problem and the solution that worked. Remember to also think about the important parts of the story. When you reach a triangle, please stop to tell me what you are thinking. It is best to use “I statements” when thinking aloud. I will keep the strategy sheet here, so you can use it.*

*I will also let you know how you are doing. Are you ready to begin?*

After the training, the participants began thinking aloud with the target passages. Although some studies favored presenting segments of the text individually by use of flash cards (Wolfe & Goldman, 2005; Magliano, Trabasso, & Graesser, 1999; van den Broek, Lorch, Linderholm, & Gustafson, 2001) or computer screens (Guthrie, Britten, & Barker, 1991; Cote, Goldman & Saul, 1998; Kaakinena & Hyona, 2005), Study 2 preserved the text’s natural presentation. The texts were presented on standard-size paper and retained standard prose format and paragraphing. The text’s authentic presentation was maintained to most closely simulate the natural reading experience.

Before beginning the think aloud, the participants were informed that these think alouds will be digitally recorded. In addition, to further focus the participants, there was a brief mention of the offline comprehension tasks. The experimenter said:
That was a great practice. Now we will use longer stories. I will ask you to think aloud in the same way you did during the practice paragraph, but some things will be different.

Now, I will be digitally recording as you read stories and think aloud. I will be recording the session to help me understand what readers are thinking while they read. I cannot write as fast as you speak. So I will record it, and then, after you are gone, I can play it back slowly and write it all down. But, no one will know it is your recording. Your name will not be found anywhere on the recording. Also, remember, you are not being graded on anything we do here.

Also, this time, I will not be giving you any feedback on the way you read or think aloud, except to tell you “good job.”

When you are done reading the story and thinking aloud, I will ask you to identify the story problem and solution. Even if the story has many problems and many solutions, I will ask you to focus on the main problem and the solution that worked. I will also ask you to explain your thoughts. So as you are reading, try to gather information about the main story problem and the solution that worked.

Please read the story aloud. As you are reading, please try to think about the main story problem, the solution that worked. Remember to also think about the important parts of the story. When you reach a triangle, please stop to tell me what you are thinking. It is best to use “I statements” when thinking aloud. I will keep the strategy sheet here, so you can use it.

Any questions? Let’s get started.
At the beginning of each subsequent session, the experimenter provided a similar, but abbreviated, set of instructions:

*Remember how you read passages aloud last time? We will continue to do so today.*

*Please read the story aloud. As you are reading, please try to think about the main story problem and the solution that worked. Remember to also think about the important parts of the story. You will be asked about these after you finish reading. When you reach a triangle, please stop to tell me what you are thinking. It is best to use “I statements” when thinking aloud. I will keep the strategy sheet here, so you can use it.*

Okay. Let’s get started.

In the think aloud reread condition, the instructions were slightly modified to reflect the study’s condition. The experiment said “*Please read the story quietly to yourself. When you are done, please reread the story out loud.*” The rest of the instructions remained the same.

In the control read once condition, the participants read the text silently and then completed the offline tasks. However, they were prompted to think about the story’s main problem and solution as they read. The investigator said:

*Please read the story quietly to yourself. Please be sure to read carefully. When you are done reading the story, I will ask you to identify the story problem and the story solution. Remember that stories can have many problems, but I will ask you to focus on the story’s main problem. Stories can also have many attempts at a solution, but I will ask you to focus on the solution that worked. I will also ask you to explain your answer. I will also*
ask you about the important parts of the text. So as you are reading, try to gather
information about the main story problem, the solution that worked, and important parts.

Any questions? Let’s begin.

In the control read twice condition, the participants read the text silently, and then reread
the text silently before completing the offline task. This condition was intended to control for
the added benefit of repeated exposure to the text that may result from the treatment read twice
condition. Like in the control read once condition, participants in the control read twice
condition were prompted to think about the story’s main problem and solution as they read. The
investigator said:

Please read the story quietly to yourself. When you are done, please go back to the
beginning of the story and read the story, in its entirety, a second time. Please be sure to
read carefully. When you are done reading the story, I will ask you to identify the story
problem and the story solution. Remember that stories can have many problems, but I
will ask you to focus on the story’s main problem. Stories can also have many attempts
at a solution, but I will ask you to focus on the solution that worked. I will also ask you
to explain your answer. I will also ask you about the important parts of the text. So as
you are reading, try to gather information about the main story problem, the solution that
worked, and important parts.

Any questions? Let’s begin.

After reading each of the four target texts, participants in all groups completed the related
offline tasks. All participants in all conditions followed the same procedures for the offline
tasks. First, the participants completed the Problem Solution Identification Task (PSID), in
which they were asked to identify the story problem and the story solution. In addition, they provided a rationale justifying their identification. Based on recommendations by Hidi and Anderson (1986), participants had access to the text during this task, to avoid memory decay as a possible confounding variable. Experimenter said:

*You did a great job reading that story! Thank you.*

*As you read the story, you were thinking about the story problem and story solution. Here, I will ask you to retell the main story problem and the solution that worked. Try to tell only the problem and solution without including extra story events. I will also ask you to explain why you think this is the story problem and solution.*

*Remember, that stories often have many problems so please tell the main story problem that the characters are trying to solve. And why do you think this is the story problem? In addition, stories often have many attempts at a solution that may not work, so try to tell only the solution that worked to solve the problem. Why do you think this is the story's solution? Any questions? Okay. Let’s get started.*

In the final offline task (Assigning Importance Task), participants rated text segments for their overall importance to the text. For this task, fifteen text segments of either one or two sentences in length were selected. Using a five point Likert scale, participants rated each segment for its importance to the overall story and then identify whether the segment reflects a text detail. The participants were told:

*Now, I would like you to think about the story, its important parts and its unimportant parts. On these sheets, you will see 15 segments from the story you just read. Please read each segment and think about how important that segment is to the overall*
storyline. Think “if I didn’t have this piece of information, could the story continue?” or “if the author did not include this information, would I still be able to understand the story?” If you answered “no” to any of these questions, then the text segment is very important to the overall storyline. If the segment contains details only, it is probably unimportant.

First, read each text segment. Next to each segment, you will find a scale that goes from 0 to 4. If the segment is not important at all, please circle the 0. If the segment is of little importance, please circle a 1. If the segment is extremely important, circle 4. You can also use the numbers 2 and 3 to describe the segment’s importance. Next you will be asked to determine if the segment is a detail. If you feel the segment contains a story detail, mark the box labeled “yes”. If you do not think it is a detail, mark the box labeled “no”.

As you are completing the task, you can look back at the story and use as much time as you need.

Any questions? Okay. Let’s begin.

For additional clarity, the study procedures are summarized in Table 19, below.
Table 19
Summary of Study Procedures

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment (Think Aloud)</th>
<th>Control (Silent Read)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Repeated measures, same participants</td>
<td>Repeated measures, same participants</td>
</tr>
<tr>
<td>Read Conditions</td>
<td>Read Once: Think Aloud Only</td>
<td>Read Once: Silent read through Think Aloud</td>
</tr>
<tr>
<td></td>
<td>Read Twice: Silent read through Think Aloud</td>
<td>Read Twice: Silent read through and reread silently</td>
</tr>
<tr>
<td>Texts</td>
<td>LL, UL</td>
<td>LL, UL</td>
</tr>
<tr>
<td>Offline tasks</td>
<td>PSID AIT</td>
<td>PSID AIT</td>
</tr>
</tbody>
</table>

LL = Lower level text;  UL = Upper level text; PSID = Problem solution identification task; AIT=Assigning importance task

Scoring

Pretest data collected through commercially available tests (TOWRE, ITBS, and CELF4) were scored in accordance with the procedures outlined in the testing manuals. In addition, the Title Recognition Task, Knowledge of Narrative Story Structure Task, and the Prior Knowledge Tasks were scored as described above.

Verbal reports generated by the participants as they thought aloud were transcribed. After transcription, raters assigned each verbal report to categories that most closely described its contents: problem, solution, importance and other. It is important to note that the verbal reports were assigned to categories based on the participants’ self-reporting while thinking aloud, and that accuracy was not scored. Therefore, if a participant indicated that a given text segment contained information related to the problem, then the verbal report was assigned to the problem category, even if in reality, the segment did not contain information related to the story’s problem.
“Problem” is a category for all verbal reports in which the participants indicated that the text segment contained information related to the story problem. Similarly, “solution” is a category for all verbal reports in which the participants indicated that the text segment contained information related to the story solution. Next, within each category, verbal reports were tallied to generate a total number of problem-related verbal reports and the total number of solution-related verbal reports per participant per text.

In addition to coding the verbal reports for their relatedness to the story problem and solution, each verbal report was also coded for importance. A verbal report that identified a segment as containing important story information was coded as “important” by the raters. Verbal reports containing information regarding low importance or unimportance were coded as “unimportant”. In this instance too, verbal reports in each category were tallied per participant per text. However, it is possible that within a single verbal report, a participant may have discussed the problem or solution in addition to un/importance. Thus, a single verbal report may be dually coded for membership in the importance category and either the problem or solution categories. Verbal reports that were neither related to the problem, the solution, nor importance were coded as “other”. The “other” category was a catch-all category for verbal reports in which participants did not self-report that a text segment was important or did not relate the text segment to the problem and solution, but rather self-reported other cognitive processes such as: restating, summarizing story events, making predictions, questioning the author, and drawing conclusions about characters’ motives. Verbal reports that contained inaccurate information were also coded as “other”. Each of the verbal reports was dichotomously scored as 1 or 0, for each of the five coding categories (“problem”, “solution”, “important”, “not important”, and “other”). Therefore, each verbal report received a total of 5 codings, one for each category. If a verbal
report was coded as 1, it indicated membership in the category. If the verbal report was coded as 0 it indicated that there was no membership in the category. Therefore, if a verbal report was coded as 1 in the problem category, it indicated that during that verbal report the participant self-reported that the text segment contained information related to the story problem. Similarly, if a verbal report was coded as 0 in the problem category, it indicated that during that verbal report the participant self-reported that the text segment did not contain information related to the story problem.

The verbal reports were coded by two raters. The first rater was the principal investigator. The principal investigator coded all of the verbal reports and entered the codes in a Microsoft Excel spreadsheet. The principal investigator was blinded to the participants’ read condition, because during audio recording and transcription, there was no indication whether the participant was thinking aloud in the read once or read twice condition.

In addition, the principal investigator trained an independent rater (IR) to code the verbal reports. The IR was a research assistant at the Graduate Center, and held a Master’s degree in an education-related field. The principal investigator met with the IR twice to discuss the purpose for Study 2, discuss the target texts used, and describe coding procedures for the verbal reports. Each session was one hour long. At the end of the two training sessions, the principal investigator provided the IR with transcripts of the participants’ verbal reports (transcribed in a Microsoft Access database) and a blank Microsoft Excel worksheet template for entering the verbal report codings. Next, the IR independently coded 100% of the verbal reports using the same coding system as the principal investigator and entered all of the codes in a Microsoft Excel spreadsheet. Next, the raters’ codes were compared using Microsoft Office Spreadsheet
The raters reached agreement on 93% of all ratings. Then, the raters met to reach a consensus on responses scored differently. Consensus was reached on all verbal reports.

**Problem Solution Identification Task (PSID).** This task was an offline task designed to probe the participants about the story’s critical problem and solution. In contrast to the verbal reports, where the categories were assigned based on the participants’ self-reporting, in this task, participants’ responses were scored for accuracy. In addition, during this task the participants were asked to justify their identification of the story problem and solution. Identification of the story problem and solution drew on the summary scoring method used in Study 1; however, it was modified in two ways to fit the present task.

First, responses of expert readers were used to validate the scoring rubric. Five adults (3 = male; 2 = female), had a mean age of 37.6 years, and all completed at least four years of post-secondary education. Four of the five adults held Masters Degrees or higher. None of the adults were educators or held degree in a literacy-related field such as journalism or library sciences, and therefore had limited experience with story grammar and identifying story elements.

The investigator trained the adults on story grammar. During the training, each of the four story elements used in Study 1 were operationally defined. Next, the adults read three training passages and independently identified the elements of story in each story. Then, they regrouped to share responses. The investigator facilitated the regroup discussion by drawing attention to the operational definitions and ensuring that the identification of the elements was aligned with the operational definitions. However, the investigator neither passed judgment on the adults’ responses nor evaluated their responses as either “correct” or “incorrect”. Study 2 target passages were not used as the adult training passages, but the adult training presented
similar text structure to Study 2’s target passages. Two of the training passages were taken from the *Henry and Mudge* series and were at an approximate second grade reading level. One passage was a Native American folktale and was at an approximate fourth grade reading level. The script for the adult training sessions and the training passages are available in Appendix G.

Next, the adults were asked to read the four target passages used in Study 2 and independently identify the story elements. Then the adults regrouped to share their responses and reached a consensus for each of the story elements in all passages. The investigator did not facilitate the consensus conversations for the target passages to avoid influencing the adult responses. One of the adult participants was asked to act as the group scribe to transcribe the consensus responses.

Although the adults were trained to identify all four story elements used in Story 1, only the problem and solution are relevant to Study 2. Therefore, the remaining conversation will focus uniquely on the problem and solution for the target passages. A comparison of the adult responses and the investigator’s responses are tabulated in Tables 20 and 21. It should be noted that the adult responses in these tables were transcribed exactly as they appeared on the adult response sheet. This especially applies to the adult consensus recorded by the group scribe. Therefore, it may be useful to read the individual adult responses first in order to understand how they inform the adult consensus response.

The adult responses showed great overlap with the investigator’s identification of the story elements in the target passages. There was only one instance where the adult consensus differed from the investigator’s response, in the identification of the problem for The Fight between the Animals and Insects. For this story, the adults indicated that the story problem is
that “Locust wanted to defeat Lion, but he couldn’t do it on his own.” The investigator identified the story problem as “Mountain Lion stepped on Locust.” When these responses are contextualized within the story, the investigator’s response may be viewed as a more event-based identification of the problem. The event is explicitly stated in the text, “He did not see Locust sleeping in the shade under a young redbud tree, and he stepped on him.” In contrast, adult consensus response may be viewed as an inferential identification of the problem, inferring about character motives. The text states, "I am too small to fight you one-to-one, but if you will choose a team from your people, I will choose one from mine. We can hold the match on the flat fields down below.” As opposed to simply honing in on story events, the adults focused on character motives, an inferential process (Grasser, Singer, & Trabasso, 1994). These findings are aligned with McConaughy, Fizheny-Coor, & Howell (1983) who found that, as compared to fifth graders, adults were more likely to use character motive in a social-inference schema to summarize passages. In contrast, fifth graders used a causal-inferential schema, a schema that focuses more narrowly on the causal sequence of events in the story. Based on this research, it was expected that the fourth grade participants in this study would use a causal-inference approach to identify the story problem, as identified by the study investigator, and not a social-inference approach to identify the problem, as the adults had suggested. However, during scoring, both identifications of the problem were considered correct.
<table>
<thead>
<tr>
<th>Passage</th>
<th>Individual Adult Response</th>
<th>Adult Consensus</th>
<th>Investigator Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henry and Mudge and Annie’s Perfect Pet</td>
<td>(1) She wanted a pet.</td>
<td>Annie wanted a</td>
<td>Henry wanted to get Annie a pet OR Annie</td>
</tr>
<tr>
<td></td>
<td>(2) Wanted a perfect pet for her but no one home to care for it.</td>
<td>pet.</td>
<td>wants a pet.</td>
</tr>
<tr>
<td></td>
<td>(3) She didn’t have a pet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) Wished she had a dog/pet, but father worked so no one could care for the dog.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) She wanted a pet.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annie and Snowball and the Pink Surprise</td>
<td>(1) They wanted more hummingbirds in Annie’s garden.</td>
<td>They wanted more hummingbirds.</td>
<td>Annie wanted to attract more hummingbirds to her garden.</td>
</tr>
<tr>
<td></td>
<td>(2) Wanted more hummingbirds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) Wanted to attract more birds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) How to get hummingbirds to come to garden.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) They wanted to attract more hummingbirds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Fight between the Animals and Insects</td>
<td>(1) Locust was too small to fight Lion himself.</td>
<td>Locust wanted to defeat Lion, but he couldn’t do it on his own.</td>
<td>Mountain lion stepped on Locust.</td>
</tr>
<tr>
<td></td>
<td>(2) Fighting about letting Mountain Lion pass or not to prove strength.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) Felt disrespected by the Lion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) Locust got into a fight with Lion, but Locust couldn’t beat Lion on his own.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) Mountain Lion wanted to fight Locust because he disobeyed him. Locust wanted to stand up to Mountain Lion, but he couldn’t do by himself.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fox and Possum</td>
<td>(1) The fox wanted to eat him.</td>
<td>Fox wanted to eat him.</td>
<td>Fox wanted to eat Possum.</td>
</tr>
<tr>
<td></td>
<td>(2) Fox wanted to eat him.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) Fox wanted to eat him.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) Don’t get eaten.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) He didn’t want to get eaten by the Fox</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 21
Comparison of Adult and Investigator Identification of the Solution

<table>
<thead>
<tr>
<th>Passage</th>
<th>Individual Adult Response</th>
<th>Adult Consensus</th>
<th>Investigator Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henry and Mudge and Annie’s Perfect Pet</td>
<td>(1) She got a bunny.</td>
<td>Got a bunny.</td>
<td>Henry spoke to his parents and they decided to get Annie a bunny.</td>
</tr>
<tr>
<td></td>
<td>(2) Henry and family buy her a bunny – easy to care for and perfect for Annie’s style.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) Got a pet bunny.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) Bought a bunny.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) Henry got her a bunny.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annie and Snowball and the Pink Surprise</td>
<td>(1) They added pink to their garden and more hummingbirds came.</td>
<td>Pink stuff brought hummingbirds.</td>
<td>They placed pink things in the garden</td>
</tr>
<tr>
<td></td>
<td>(2) Brought pink items into yard and hummingbirds came.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) Pink stuff</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) Put lots of pink stuff in garden.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) They colored the garden in pink.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Fight between the Insects and Animals</td>
<td>(1) He suggested a battle instead and recruited all of the insects to fight the animals.</td>
<td>Suggested battle. Insects fought animals as teams.</td>
<td>They decided to have a war of insects versus animals</td>
</tr>
<tr>
<td></td>
<td>(2) Animals fought insects. Insects won.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) Have a fight with teams</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) Challenged him to a team fight.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) Coyote got Mount Lion’s army together. The insects got together.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fox and Possum</td>
<td>(1) He tricked the fox to follow him to the persimmon tree and climb up and then he ran away.</td>
<td>Possum took Fox to persimmon tree. Tricked Fox to climb tree/got stuck there. Possum escaped.</td>
<td>Possum distracts Fox by making him smell his paw</td>
</tr>
<tr>
<td></td>
<td>(2) Got Fox to climb the tree, stuck there. Possum escaped.</td>
<td></td>
<td>Possum takes Fox to the persimmon tree</td>
</tr>
<tr>
<td></td>
<td>(3) Took him to his food stock and helped him climb the tree to escape.</td>
<td></td>
<td>While Fox was in the tree, Possum snuck away</td>
</tr>
<tr>
<td></td>
<td>(4) Raised paw, so Fox smelled persimmons, buying time. And led him to the tree</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) He went up the persimmon tree. He helped Fox up. He escaped.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As discussed earlier, a story contains one critical problem, typically not explicitly stated in the text, but rather inferred by the reader. In contrast, stories may include several attempts that may partially support the solution or fail entirely. Thus, it is hypothesized that readers may be able to generate a concise statement reflecting the story problem, but a complete account of
the story's solution may include several statements reflecting a chain of events. Scoring of the PSID was intended to reflect this difference.

In Study 1 scoring, the summaries were parsed into idea units for coding. Next, the content of each idea unit was examined to determine whether it contained story element information. In the rubric, each story element had one "must contain" and multiple "may contain" criteria. The “must contain” criterion reflected the story elements’ most essential information in its most concise form, and each "may contain" reflected story element information related to the "must contain." The “may contain” information tended to enhance the “must contain”, but was not integral to the narrative. Each story element had one "must contain" idea, but multiple "may contain" ideas. In their writing, participants were credited with five points for every "must contain" idea unit and no credit for any "may contain" idea units. In contrast, participants lost a point for extraneous, redundant, or inaccurate idea units included in their summaries.

Similar to Study 1 scoring, in Study 2 the Problem-Solution Identification Tasks (PSID) were scored for "must contain" ideas related to the story problem. The participants received credit for the problem "must contain" and no credit for the "may contain" problem statements. When scoring the PSID solution, participants received five points for the "must contain," which reflects the event (or chain of events) that ultimately yielded the solution. However, in contrast to Study 1 scoring where participants received no credit for "may contain" ideas, in Study 2 participants received one point for every "may contain" solution idea. This modification to the scoring is in response to a limitation listed in the Discussion section for Study 1, above. There, it was anecdotally noted that summaries that included "may contain" ideas tended to present fuller accounts of the solution. However, given that in Study 1 “may contain” ideas received no credit,
this qualitative difference was not reflected in the summary’s total score. Participants with fuller, more accurate summaries received the same score as participants who summarized by including only the most basic information, yielding a formulaic summary. This limitation was corrected in the revised Problem-Solution Identification Tasks (PSID) scoring method.

The PSID contains two scores, one for the problem and one for the solution. The PSID-problem score was dichotomously scored, where a 1 reflects correct identification of the problem and a 0 reflects the lack thereof. The PSID-solution was scored continuously. Five points were awarded for inclusion of the “must contain” idea and one point was awarded for every “may contain” idea. Inclusion of the "may contain" ideas without the "must contain idea" received no credit at all. In addition, during accuracy scoring of the participants’ identification of the story solution (only), one point was lost for every detail or inaccurate statement included.

Similar to the interrater process describe above, all of the Problem-Solution Identification Tasks (PSID) were scored by the principal investigator and the IR, both blinded to condition. Similar to the process described above, the principal investigator met with the IR for training purposes. At the end of the end of the training session, the principal investigator provided the IR with all the materials needed for scoring, the transcribed PSID responses (entered in a Microsoft Access database), and a Microsoft Excel worksheet template for entering scores. After the training session, the IR independently rated 100% of the participants’ PSID responses and entered the scores in the Microsoft Excel worksheet provided. Next, the Microsoft Office Spreadsheet Compare add-in was used to compare the raters’ scores and calculate agreement. The raters reached agreement on 83% of all ratings. Then, the raters met to reach a consensus on responses scored differently, and consensus was reached for all responses. During the consensus meeting, it was found that many of the between-raters differences emerged through an
unintentional shifting of columns in one of the Excel worksheet. Without this technical error, the agreement could have been considerably higher.

**Assigning Importance Task (AIT).** This task contains 15 text segments. For each LL text, nine of the text segments contained story element information, whereas the remaining six contained story detail information. For each UL text, ten of the text segments contained story element information, whereas the remaining five contained story detail information. Text segments with “must contain” or “may contain” ideas were deemed important. Otherwise, they were deemed not important. (See the Method section in Study 1 for operational definitions for “must contain” and “must contain” statements. Additionally, a full list of “must contain” and “may contain” statements is available in Appendix E.)

“Must contain” statements are the most important text statements, and therefore were deemed as “very important”. Statements containing “must contain” story element information (“very important”) rated as a 3 or 4 were scored as correct. Similarly, “may contain” statements are of lower importance, and therefore were identified as “a little important”. For statements with “must contain” information (“a little important”), ratings of 1 or 2 were scored as correct. Finally, story details were deemed “not important”. For statements containing a story detail (“not important”) a rating of 0 was scored as correct. Therefore, although the participants rated statements on a five-point Likert scale (0-4), during scoring, the scale was collapsed into three categories: “not important” (rating of 0), “a little important (ratings of 1,2), and “very important” (ratings of 3,4).

Next, each item was dichotomously scored as “correct” or “not correct”. If the participant correctly rated the item, the items was scored as “correct”. However, if the
participant did not correctly rate the item, then it was scored as “incorrect”. For instance, if a participant correctly rated a statement containing a story detail as “not important” (rating of 0), then the participant received a score of 1 for that item. If a participant incorrectly rated a statement containing a story detail as “a little important” (rating of 1 or 2) or “very important” (rating of 3 or 4), then the participant received a score of 0 for that item. A score of 1 was given for every correct answer and a score of 0 was given for every incorrect answer. Next, within passage, scores for all items were added for a total score. Thus, for this task, a score of 15 was the highest possible score.

**Design and Data Analysis**

Study 2 included: inclusionary (pretest) measures, within-subjects factors, between-subjects factors, and covariate measures. The inclusionary measures were used to ensure that all study participants had the literacy and speech fluency skills that would enable them to complete the tasks. To be included in Study 2, participants were required to score above -1SD of the national mean on all inclusionary pretest measures. The Test of Word Reading Efficiency (TOWRE) was used to measure word reading, Iowa Test of Basic Skills (ITBS) Reading Comprehension subtest was used to measure reading comprehension, and Clinical Evaluation of Language Fundamentals (CELF) Formulated Sentences subtest was used to measure speech fluency. Student outcomes on these three inclusionary measures were reviewed, and data of students scoring below -1SD were excluded from all study analyses. In addition, study participants completed the author-created Prior Knowledge of Individual Text for Henry and Mudge texts (PKoIT-HM) and Folktales (PKoIT-FT). As described above, these tasks are open ended and designed to screen the participants for familiarity with Study 2’s target texts at the study’s onset.
Additionally, the Title Recognition Task (TRT) and the Knowledge of Narrative Story Structure Task (KNSST) were administered as pretests, to measure participants’ exposure to narrative texts and knowledge of narrative structure.

After the participants were randomly assigned to the treatment or control groups (think aloud vs. silent reading), comparisons of means analyses were conducted on all inclusionary measures and pretest measures to rule out any preexisting between-groups differences. In addition, the Clinical Evaluation of Language Fundamentals (CELF), Title Recognition Task (TRT), and Knowledge of Narrative Story Structure Task (KNSST) were used as covariates in Study 2 analyses.

The repeated measures aspect of this study yielded two within-subjects factors for all analyses: text level and read condition. The text level factor indicates LL text versus UL text. The read condition factor indicates a read once condition versus a read twice condition. In the treatment group (think aloud group), participants in the read once condition thought aloud while reading and read the text one time only. Participants in the treatment read twice condition read the text silently first, and then reread the text in a think aloud protocol. The control (silent read group) read once condition was a “typical classroom approach” condition, where the participants read the text silently one time. In the control read twice condition, participants read the text silently and then reread the text silently a second time.

Analyses examining verbal reports generated while thinking aloud by the treatment group included two additional within-subject factors: (1) importance (“important” coded verbal reports vs. “not important” coded verbal reports) and (2) story elements (“problem” coded verbal reports vs. “solution” coded verbal reports). The importance factor indicated the difference between
participants’ verbal reports that were coded as “important” versus verbal reports that were coded as “not important”. The story elements factor indicated verbal reports that were coded as “problem” versus those coded as “solution”.

Study 2 also contained a treatment (think aloud) and control (silent read) group. This yielded the only between-subjects factor: group. The treatment group thought aloud about texts in the read once and read twice conditions. Similarly, the control group also read texts silently in the read once and read twice conditions. The between-subjects factor was only entered in models examining outcomes of offline tasks, given that these were the only tasks completed by both groups. (The control group (silent read group) did not think aloud, so no online outcomes were available for this group.)

Participant online and offline outcomes were analyzed separately. Participants’ online outcomes (verbal reports) were examined in two models, using a repeated measures multivariate analysis of variance (RM-MANOVA). The first analysis of online outcomes examined participants’ identification of text segments as “important” or “not important” to the overall text. In this model, three factors were considered: (1) text level (LL vs. UL), (2) read condition (read once vs. read twice), and (3) importance (important vs. not important). The second analysis of online outcomes examined participants’ designation of text segments as related to the text’s problem or solution. In this model, too, three factors were considered: (1) text level (LL vs. UL), (2) read condition (read once vs. read twice), and (3) story element (problem vs. solution). In addition, given that online think alouds were only conducted with participants assigned to the treatment group, the Title Recognition Task (TRT) was not entered as a covariate in the models to correct for the significant between groups difference found for this measure.
A second group of analyses were conducted for offline outcomes. Offline measures consisted of two tasks: (1) Assigning Importance Task (AIT) and (2) Problem-Solution Identification Task (PSID). Assigning Importance Task (AIT) outcomes were continuous, and like the online outcomes, AIT outcomes were analyzed using a repeated measures multivariate analysis. This analysis included three factors, where two of the factors were within-subject factors and one factor was a between-subjects factor. The two within-subject factors were: (1) text level (LL vs. UL) and (2) read condition (read once vs. read twice). Group (treatment vs. control) was entered as the between-subjects factor. In addition, given that this analysis examined between-group differences, and an earlier analysis found that there were significant between-group differences on the Title Recognition Task (TRT) pretest measure at the study’s onset, Title Recognition Task (TRT) scores were entered into this model as a covariate.

In the offline Problem Solution Identification (PSID) task, participants identified the text’s problem and the text’s solution. However, participants’ identification of the problem (PSID-Problem) was scored dichotomously as “correct” or “incorrect”. In contrast, participants’ identification of the solution (PSID-Solution) was scored continuously. (See the Method section for greater detail on the PSID scoring procedures.) Hierarchical linear modeling (HLM) was identified as an appropriate model that can be used to analyze dichotomous data with a repeated measures design and two factors. However, given that the PSID-Problem is a dichotomous variable and PSID-Solution is a continuous variable, these outcome scores could not be entered in the same model. Instead, they were entered into two separate HLM models. In each HLM model three factors were entered: (1) text level (LL vs. UL), (2) read condition (read once vs. read twice), and (3) group (treatment vs. control). In addition, a text level by read condition interaction was entered in each HLM model.
In the next set of analyses, covariates were used. Two sets of analyses were conducted using covariates. The first analysis examined the treatment participants’ verbal reports in a manner similar to the RM-MANOVA described above. However, in this analysis a repeated measures multivariate analysis of covariance (RM-MANCOVA) was used and the Title Recognition Task (TRT) and Knowledge of Narrative Story Structure (KNSST) were entered as covariates into the model.

In the second set of analyses, the “other” verbal reports generated by treatment participants while thinking aloud were analyzed. As earlier noted, the “other” category was a catch-all category for verbal reports where participants did not self-report a text segment’s importance or relatedness to the problem and solution, but rather self-reported other cognitive processes and such as: restating, summarizing story events, making predictions, questioning the author, and drawing conclusions about characters’ motives. Participants’ “other” verbal reports were analyzed using a repeated measures multivariate analysis of covariance (RM-MANCOVA), where two factors and one covariate was entered into the model. In this model, text level (LL vs. UL) and read condition (read once vs. read twice) were entered into the model as factors, and scores on the Clinical Evaluation of Language Fundamentals (CELF) were entered as a covariate. The number of “other” verbal reports was entered as the dependent variable. In a second analysis, the impact of speech fluency (measured through the CELF) on “other” coded verbal reports was examined through a regression analysis. Similar to the RM-MANCOVA describe above, in this analysis, CELF scores were entered as a predictor, text level (LL vs. UL) and read condition (read once vs. read twice) were entered as factors, and “other” coded verbal reports were entered as the outcome variable.
In the final analysis, participants’ online and offline outcomes were correlated to determine if online verbal reports and offline scores were related.
Chapter 10

Results

Characteristics of Participants and Treatment Groups

Pretest data were examined to identify and, if necessary, rule-out any preexisting between-group differences (Campbell and Stanley, 1963). Therefore, analyses were run to examine all pretest data for between-group differences.

Speech Fluency and Literacy Skills. Participants’ TOWRE, ITBS, and CELF scores were examined to ensure that all participants met the inclusion criteria for this study. Three 4th grade participants scored below 1 standard deviation (-1SD) of the national mean on at least one of the inclusionary measures (TOWRE, ITBS, and CELF), and therefore, these participants’ data were excluded from the study. Forty-four 4th grade participants remained in the study (23=treatment; 21=control). Participants’ scores for the TOWRE, ITBS and CELF are reported in Table 22 below. Descriptives of the participants’ scores show that, overall, the participants were a strong cohort with good speech fluency and literacy skills. Greater than 73% of the participants scored above the 50th percentile on all three tests measuring inclusionary criteria. In addition, greater than 67% of the participants scored above the 70th percentile on the TOWRE and ITBS.

Table 22
Descriptive Statistics on Pretest Scores: Test of Word Reading Efficiency (TOWRE), Iowa Test of Basic Skills (ITBS), and Clinical Evaluation of Language Fundamentals (CELF)

<table>
<thead>
<tr>
<th>Test</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
<th>Mean</th>
<th>Range</th>
<th>SD</th>
<th>Above 50th PR</th>
<th>Above 70th PR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOWRE</td>
<td>44</td>
<td>116.09</td>
<td>96-146</td>
<td>10.84</td>
<td>80.64</td>
<td>39-99</td>
<td>17.20</td>
<td>89%</td>
<td>86%</td>
</tr>
<tr>
<td>ITBS</td>
<td>44</td>
<td>226.48</td>
<td>184-279</td>
<td>22.32</td>
<td>74.11</td>
<td>28-99</td>
<td>17.37</td>
<td>73%</td>
<td>33%</td>
</tr>
<tr>
<td>CELF</td>
<td>44</td>
<td>10.84</td>
<td>7-14</td>
<td>1.89</td>
<td>59.64</td>
<td>16-91</td>
<td>21.70</td>
<td>93%</td>
<td>67%</td>
</tr>
</tbody>
</table>

TOWRE = Test of Word Reading Efficiency; ITBS = Iowa Test of Basic Skills; CELF = Clinical Evaluation of Language Fundamentals
Although the participants were randomly assigned to groups, the pretest data were analyzed to determine whether the treatment and control participants differed significantly on any pretest measures at the study’s onset. Given that pretest measures of speech fluency and literacy skills are unlikely to be truly independent of each other, they were analyzed using a one-way multivariate analysis of variance (MANOVA), where group membership (treatment vs. control) was entered as a factor and test scores (CELF, ITBS, and TOWRE) were entered as the dependent variables. Scaled scores were entered into the model, despite the fact that scaled scores are more difficult to interpret than percentile ranks, because scaled scores are independent whereas percentile ranks are not (Crocker & Algina, 2006). Inspection of the data showed that they were normally distributed and met the assumptions for parametric analysis. Results showed that the treatment group had somewhat higher means and narrower standard deviations on the speech fluency and literacy skill pretest measures, as compared to the control group, but the groups did not differ significantly. Results are displayed in Table 23 below.

<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th>Control</th>
<th>Multivariate Test</th>
<th>Univariate Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>TOWRE</td>
<td>44</td>
<td>117.78</td>
<td>7.85</td>
<td>115.10</td>
</tr>
<tr>
<td>CELF</td>
<td>44</td>
<td>11.09</td>
<td>2.15</td>
<td>10.62</td>
</tr>
<tr>
<td>ITBS</td>
<td>44</td>
<td>230.17</td>
<td>21.25</td>
<td>222.43</td>
</tr>
</tbody>
</table>

* = p < 0.05, ** = p < 0.01, *** = p < 0.001, NS = not significant

TOWRE = Text of Word Reading Efficiency; ITBS = Iowa Test of Basic Skills; CELF = Clinical Evaluation of Language Fundamentals

**Narrative Measures.** The remaining pretests were designed to measure participants’ exposure to narratives, knowledge of narrative structure, and exposure to the target narrative texts used in the study. The Title Recognition Task (TRT) examined participants’ exposure to narrative texts, while the Knowledge of Narrative Story Structure Task (KNSST) measured
participants’ knowledge of story elements. The Prior Knowledge of Individual Text (PKoIT) tasks measured participants’ familiarity with the target texts used in this study.

According to theory, it is possible that outcomes on the Title Recognition Task (TRT) and Knowledge of Narrative Story Structure Task (KNSST) tasks may not be truly independent, because it is possible that as readers increase their exposure to narrative texts, they also acquire a better understanding of narrative structure. Therefore, a Pearson correlation was used to examine whether these two measures were related. A visual inspection of the data revealed that the data were linearly related and met all of the assumptions needed for a Pearson correlation. Results showed that the two measures were weakly correlated and that the correlation failed to reach significance ($r=0.292, p = 0.54$). The weak and not significant correlation between these two measures indicates that the two measures are likely to measure different constructs, and therefore, in the following analyses both measures were entered as covariates into a single model.

However, given that this set of narrative pretests (TRT and KNSST) measures related bodies of knowledge, between-group differences on these pretest measures were analyzed using a one-way multivariate analysis of variance (MANOVA), which allows for shared variance. Inspection of the data showed that the data were normally distributed and met the assumptions of MANOVA. Results of the multivariate test showed that the groups did differ significantly on these measures. Univariate analyses showed that the groups only differ significantly on the Title Recognition Task (TRT), where the treatment group significantly outperformed the control group on exposure to narratives. Therefore, to control for preexisting between-group differences, the Title Recognition Task (TRT) was used as a covariate in all between-group analyses. Results are displayed in Table 24 below.
Table 24
MANONA: Pretest Narrative Measures by Group

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Control</th>
<th>Multivariate Tests</th>
<th>Univariate Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>TRT</td>
<td>23</td>
<td>17.83</td>
<td>5.03</td>
</tr>
<tr>
<td>KNSST</td>
<td>23</td>
<td>33.57</td>
<td>10.78</td>
</tr>
</tbody>
</table>

*p < 0.05, ** = p < 0.01, ***=p <0.001, NS = not significant

Maximum TRT score = 39; Maximum KNSST score = 41

TRT=Title Recognition Task; KNSST = Knowledge of Narrative Story Structure Tasks

The remaining pretest measures, Prior Knowledge of Individual Texts (PKoIT-HM and PKoIT-FT), served as screening measures to ensure that participants’ prior knowledge of the target texts used in this study did not differ significantly across groups. However, these two measures were not expected to share variance, because a reader’s prior knowledge of Henry and Mudge texts is unlikely to be related to a readers’ prior knowledge of folktales. Given that outcomes on the Prior Knowledge of Individual Texts (PKoIT) tasks were not assumed to be related to each other, between-group differences on these tasks were examined in separate models. In addition, these two measures were not normally distributed because they each showed a floor effect. A large proportion of participants scored zero on these measures, demonstrating no prior knowledge of the target texts. The number of participants by group who scored zero on each Prior Knowledge of Individual Texts (PKoIT) task is tabulated in Table 25 below. Given that outcome measures for the Prior Knowledge of Individual Texts (PKoIT) tasks were not normally distributed, non-parametric analyses were used. Results showed that the groups did not differ significantly on either of the Prior Knowledge of Individual Texts (PKoIT) tasks. In addition, noting the large proportion of participants scoring zero on these tasks and the floor effect for both tasks, it was concluded that across groups, participants did not have prior knowledge of the target texts. Therefore, these measures were not used in analyses. Results are tabulated in Table 25 below.
Table 25
Mann-Whitney Test: Between Group Difference on Prior Knowledge of Individual Text Tasks

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N</th>
<th>Number of Zero Scores</th>
<th>Mean Rank</th>
<th>Control</th>
<th>N</th>
<th>Number of Zero Scores</th>
<th>Mean Rank</th>
<th>Mann-Whitney U</th>
<th>Z</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>PKoIT-HM</td>
<td>23</td>
<td>9</td>
<td>23.23</td>
<td>21</td>
<td>9</td>
<td>21.64</td>
<td>223.5</td>
<td>-0.44</td>
<td>0.660</td>
<td></td>
</tr>
<tr>
<td>PKoIT-FT</td>
<td>23</td>
<td>8</td>
<td>26.07</td>
<td>21</td>
<td>15</td>
<td>18.60</td>
<td>159.5</td>
<td>-2.10</td>
<td>0.136</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, ** = p < 0.01, *** = p < 0.001, NS = not significant

Due to scoring scheme, maximum scores for these tasks could not be calculated.

PKoIT-HM = Prior Knowledge of Individual Text - Henry and Mudge texts; PKoIT-FT = Prior Knowledge of Individual Text - Folk Tales

Analysis of Online and Offline Measures

As discussed earlier in the Method section, outcomes of participants’ think alouds (verbal reports) were examined in two models, using a repeated measures multivariate analysis of variance (RM-MANOVA). One model examined importance verbal reports (“important” vs. “not important”) and the second model examined story elements verbal reports (“problem” vs. “solution”). As earlier noted in the Method section, scores for each of the verbal report categories were generated by totaling the number of verbal reports coded with membership in that category. Therefore, a total “important” score (per text read), was generated by counting the total number of verbal reports during which a participant indicated that a text segment contained important story information. Similarly, a total “not important” score was generated by counting the total number of verbal reports during which a participant indicated that a text segment contained not important story information. This process was repeated for “problem” and “solution” verbal reports as well.

In addition, in each model, two factors were entered: (1) text level (LL vs. UL) and (2) read condition (read once vs. read twice). It is important to note that only participants assigned to the treatment group thought aloud and generated verbal reports. Since the model does not
examine between-group differences, the Title Recognition Task (TRT) was not entered as a covariate (see Table 24 above).

A second group of analyses were conducted for offline outcomes. In these analyses the Assigning Importance Task (AIT) and Problem-Solution Identification task (PSID) were analyzed. Assigning Importance Task (AIT) was analyzed using a repeated measures multivariate analysis. Two within-subject factors, one between-subjects factor, and one covariate were entered into the model. The two within-subject factors were: (1) text level (LL vs. UL) and (2) read condition (read once vs. read twice), and group (treatment vs. control) was entered as the between-subjects factor. Given that offline analyses examined between-group differences (using the between-subjects factor “group”), the Title Recognition Task (TRT) was entered as a covariate to correct for preexisting between-group differences.

Next, the offline Problem-Solution Identification (PSID) task was examined. However, as earlier noted, scores for participants’ identification of the problem (PSID-Problem) and the solution (PSID-Solution) could not be entered in the same model. Therefore, they were entered in two separate HLM models. In each HLM model, three factors were entered: (1) text level (LL vs. UL), (2) read condition (read once vs. read twice), (3) group (treatment vs. control). In addition, a text level by read condition interaction was entered in each HLM model.

Tables 26-30 below tabulate results of the analyses examining online and offline outcomes as described above. Following the tables, narrative descriptions of the results are presented. The text is organized by the factors explored: (1) read condition (read once vs. read twice), (2) group (treatment vs. control), (3) importance (“important” vs. “not important”, for
online verbal reports only), (4) story elements (“problem” vs. “solution”, for online verbal reports only), and (5) text level (LL vs. UL).

Table 26
Repeated Measures MANOVA: Importance Verbal Reports as a Function of Text Level and Read Condition.

<table>
<thead>
<tr>
<th></th>
<th>Pillai’s Trace</th>
<th>F</th>
<th>Sig</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance</td>
<td>0.057</td>
<td>1.210</td>
<td>0.284</td>
<td>0.057</td>
</tr>
<tr>
<td>Text Level</td>
<td>0.003</td>
<td>0.055</td>
<td>0.816</td>
<td>0.003</td>
</tr>
<tr>
<td>Read Condition</td>
<td>0.119</td>
<td>2.707</td>
<td>0.116</td>
<td>0.119</td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance x Text Level</td>
<td>0.352</td>
<td>10.851</td>
<td>0.004**</td>
<td>0.352</td>
</tr>
<tr>
<td>Importance x Read Condition</td>
<td>0.000</td>
<td>0.002</td>
<td>0.967</td>
<td>0.000</td>
</tr>
<tr>
<td>Text Level x Read Condition</td>
<td>0.000</td>
<td>0.003</td>
<td>0.959</td>
<td>0.000</td>
</tr>
<tr>
<td>Importance x Text Level x Read Condition</td>
<td>0.021</td>
<td>0.422</td>
<td>0.524</td>
<td>0.021</td>
</tr>
</tbody>
</table>

* p < 0.05, ** = p < 0.01, *** = p < 0.001, NS = not significant

Maximum score for each category of verbal reports is 13.
Importance = “Not important” verbal reports versus “important” verbal reports; Text level = Lower level text versus upper level text; Read condition = Read once vs. read twice

Table 27
Repeated Measures MANOVA: Story Elements Verbal Reports as a Function of Text Difficulty and Reading Condition.

<table>
<thead>
<tr>
<th></th>
<th>Pillai’s Trace</th>
<th>F</th>
<th>Sig</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Story Element</td>
<td>0.232</td>
<td>6.030</td>
<td>0.023*</td>
<td>0.232</td>
</tr>
<tr>
<td>Text Level</td>
<td>0.215</td>
<td>5.488</td>
<td>0.030*</td>
<td>0.215</td>
</tr>
<tr>
<td>Read Condition</td>
<td>0.014</td>
<td>0.275</td>
<td>0.606</td>
<td>0.014</td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Story Element x Text Level</td>
<td>0.669</td>
<td>40.444</td>
<td>0.000***</td>
<td>0.669</td>
</tr>
<tr>
<td>Story Element x Read Condition</td>
<td>0.046</td>
<td>0.995</td>
<td>0.340</td>
<td>0.046</td>
</tr>
<tr>
<td>Text Level x Read Condition</td>
<td>0.002</td>
<td>0.039</td>
<td>0.845</td>
<td>0.002</td>
</tr>
<tr>
<td>Story Element x Text Level x Read Condition</td>
<td>0.053</td>
<td>1.118</td>
<td>0.303</td>
<td>0.053</td>
</tr>
</tbody>
</table>

* = p < 0.05, ** = p < 0.01, *** = p < 0.001, NS = not significant

Maximum score for each category of verbal reports is 13.
Story element = “Problem” verbal reports versus “solution” verbal reports; Text level = Lower level text versus upper level text; Read condition = Read once vs. read twice
Table 28
Repeated Measures MANCOVA: Scores on Assigning Importance Task (AIT) as a Function of Group, Read Condition, and Text Difficulty

<table>
<thead>
<tr>
<th>Test of Within Subjects Effects</th>
<th>Pillai’s Trace</th>
<th>F</th>
<th>Sig</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Level</td>
<td>0.001</td>
<td>0.039</td>
<td>0.844</td>
<td>0.001</td>
</tr>
<tr>
<td>Read Condition</td>
<td>0.013</td>
<td>0.539</td>
<td>0.467</td>
<td>0.013</td>
</tr>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>12.477</td>
<td>0.001**</td>
<td>0.233</td>
<td></td>
</tr>
<tr>
<td>TRT</td>
<td>1.391</td>
<td>0.245</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Level x TRT</td>
<td>0.005</td>
<td>0.216</td>
<td>0.645</td>
<td>0.005</td>
</tr>
<tr>
<td>Text Level x Group</td>
<td>0.011</td>
<td>0.441</td>
<td>0.510</td>
<td>0.011</td>
</tr>
<tr>
<td>Read Condition x TRT</td>
<td>0.027</td>
<td>1.157</td>
<td>0.288</td>
<td>0.027</td>
</tr>
<tr>
<td>Read Condition x Group</td>
<td>0.071</td>
<td>3.151</td>
<td>0.083</td>
<td>0.071</td>
</tr>
<tr>
<td>Text Level x Read Condition</td>
<td>0.109</td>
<td>5.034</td>
<td>0.030*</td>
<td>0.109</td>
</tr>
<tr>
<td>Text Level x Read Condition x TRT</td>
<td>0.002</td>
<td>0.035</td>
<td>0.854</td>
<td>0.002</td>
</tr>
<tr>
<td>Text Level x Read Condition x Group</td>
<td>0.004</td>
<td>0.174</td>
<td>0.679</td>
<td>0.004</td>
</tr>
</tbody>
</table>

* = p < 0.05, ** = p < 0.01, *** = p < 0.001, NS = not significant

Maximum score for each AIT task is 15. Maximum score on TRT = 39.
Group = Treatment versus control; Text level = Lower level text versus upper level text; Read condition = Read once vs. read twice; TRT = Title Recognition Task; AIT = Assigning Importance Task

Table 29
Hierarchical Linear Model: Identification of the Problem on the Problem-Solution Identification Task (PSID) as a Function of Group, Text Level, and Read Condition

<table>
<thead>
<tr>
<th>Fixed Effect</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-ratio</th>
<th>Odds Ratio</th>
<th>Confidence Interval</th>
<th>Approx df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRCPT1, β0</td>
<td>1.223207</td>
<td>0.381593</td>
<td>3.206</td>
<td>3.398068</td>
<td>(1.5747, 2.734)</td>
<td>44</td>
<td>0.003**</td>
</tr>
<tr>
<td>GROUP, γ00</td>
<td>0.154757</td>
<td>0.408289</td>
<td>0.379</td>
<td>1.167375</td>
<td>(0.5132, 2.659)</td>
<td>44</td>
<td>0.706</td>
</tr>
<tr>
<td>TEXT LEVEL slope, β1</td>
<td>-1.259892</td>
<td>0.259787</td>
<td>-4.850</td>
<td>0.283685</td>
<td>(0.1700, 0.474)</td>
<td>135</td>
<td>&lt;0.001***</td>
</tr>
<tr>
<td>READ CONDITION slope, β2</td>
<td>0.153908</td>
<td>0.360230</td>
<td>0.427</td>
<td>1.166383</td>
<td>(0.5722, 2.378)</td>
<td>135</td>
<td>0.670</td>
</tr>
<tr>
<td>INTRCPT2, γ10</td>
<td>0.064761</td>
<td>0.440515</td>
<td>0.147</td>
<td>1.066904</td>
<td>(0.4462, 2.550)</td>
<td>135</td>
<td>0.883</td>
</tr>
</tbody>
</table>

* = p < 0.05, ** = p < 0.01, *** = p < 0.001, NS = not significant

Group = Treatment vs. control; TL = Text level (lower level text vs. upper level text); RC = Read condition (read once vs. read twice); PSID = Problem Solution Identification Task
Analysis of Treatment Conditions.

Read Condition (read once vs. read twice). When designing this study, it was hypothesized that comprehension tasks based on story structure (such as identifying the story’s problem and solution) may require the reader to understand the text as a whole, uninterrupted unit. However, thinking aloud causes a reader to pause during reading and verbally report online processing. There was concern that stopping to think aloud may disjoint the text for readers and interfere with the ability to understand the text as a whole unit. Therefore, this study included two read conditions for the think aloud (treatment) group. In the read once condition, participants read the text once while thinking aloud. But, in the read twice condition the
participants first read through the text silently and then reread the text using a think aloud protocol. Furthermore, to strengthen the study’s design, the silent read (control) group also engaged in a read once and read twice condition. In the read once condition, the control participants read the text silently one time and in the read twice condition, they read the text silently two times.

The effects of read condition (read once vs. read twice) were considered in analyses of all online and offline tasks. As can be seen in Tables 26 through 31 above, read condition was entered as a factor in each model. Results showed that there were no main effects for read condition for any of the online and offline tasks in Study 2. However, as shown in Table 28, there was a significant text level by read condition interaction for the Assigning Importance Task (AIT). This interaction is further explored in the section below that addresses text level as a factor.

The lack of a significant main effect for read condition across all tasks indicates that, collapsed across all other factors, there was no benefit of reading twice on any of the study’s online and offline tasks. These outcomes indicate that pausing during a think aloud to report online processes does not impact participants’ online or offline processing of these texts. In addition, given that read condition showed no significant main effect, in all further discussions of the study’s findings, participants’ results are collapsed across read conditions (read once vs. read twice).

Verbal Reports Group vs. No Verbal Reports Group (treatment vs. control). This study included a think aloud protocol to capture participants’ online processes when assigning importance and identifying story elements. However, based on earlier research, there was
concern that thinking aloud may impact or interfere with the natural reading process. Some studies found that participants assigned to a think aloud group showed improved comprehension outcomes as compared to control participants in a non-think aloud condition (Baumann, Siefert-Kessell, & Jones, 1992; Silven & Vauras, 1992; Ward & Traweek, 1993), while other studies found no significant differences between think aloud and control groups (Guthrie, Britten, & Barker, 1991; Crain-Therozon, Lippman, McClendon-Mugnuson, 1997). Therefore, to evaluate the effects of thinking aloud on offline identification of story elements, the study included a control group whose group members silently read the text.

Participants were randomly assigned to a treatment group (think aloud group) or a control group (silent read group) through a lottery system. Participants had only one group membership and were assigned to either the think aloud group or silent read group. Therefore, group membership was examined as a factor only in analyses of offline tasks: the Assigning Importance Task (AIT) and Problem-Solution Identification task (PSID). As seen in Table 28 above, results showed a significant main effect for group on the Assigning Importance Task (AIT). Descriptives in Table 31 below show that the treatment group (think aloud group) significantly outperformed the control group (silent read group). It is important to note that the main effect for group was significant only when scores on Title Recognition Task (TRT) were entered into the model as a covariate. However, analyses of the Problem-Solution Identification task (PSID) showed no significant main effect for group. In addition, across analyses of all offline tasks, there were no significant interactions for group.
These results indicate that thinking aloud improved readers’ ability to assign importance to text segments and discriminate between “important” and “not important” text information during offline processing, even after differences in exposure to narrative texts were controlled. Moreover, results did not show that thinking aloud improved reader ability to correctly identify the story’s problem and solution during offline processing. However, the lack of a significant impact of thinking aloud on offline identification of the story’s problem and solution may be related to the fact that the Problem-Solution Identification task (PSID) was a weak task. As is shown in Table 34 below and discussed in greater detail in later portions of this paper, a floor effect was observed in participants’ offline identification of the story solution in UL texts. Differences between these two offline tasks are further explored in the Discussion section below.

**Analysis of Reader Processes and Text Factors.** The purpose of Study 2 was to extend and explain findings from Study 1. Specifically, Study 2 was designed to further explore readers’ processes for assigning importance, identifying the story problem, and identifying the story solution. In addition, the impact of text level (LL vs. UL) was further explored.

**Assigning Importance.** Story grammar theory states that the elements of story are the most important parts of a narrative. Therefore, it follows, that the ability to correctly assign importance to text segments is a skill needed to correctly identify the problem and solution in a narrative text. In addition, assigning importance may be particularly relevant when readers
designate one of the many story problems as the critical problem and distinguish the events contributing towards the solution from all other story events. In Study 1, participants received a summarizing intervention that guided the participants to include the important parts of the text (the story elements) in a summary, but omit the unimportant parts (or details). However, Study 1 results showed that participants did not effectively discriminate between important and unimportant information when summarizing LL texts. Therefore, Study 2 examined assigning importance during online and offline processing.

In offline processing, assigning importance was measured through the Assigning Importance Task (AIT). Task outcomes were represented as a single score (see the Method section for more information) and therefore, during analysis importance was not entered as a factor (see Table 28 above). In contrast, during online processing, participants were guided to think aloud about text segments’ importance to the text overall, and identify segments as “important” or “not important”. Therefore, during analysis of verbal reports, importance was entered as a factor. Results are displayed in Table 26 above, and show that there was no significant main effect for importance. However, there was an importance by text level interaction. This interaction is discussed below, when results for text level are reported. The lack of a significant main effect for importance indicates that, when collapsed across text levels (LL vs. UL) and read conditions (read once vs. read twice), there is no significant difference between the number of “important” verbal reports and “unimportant” verbal reports generated. However, it is important to note that all verbal reports, including verbal reports related to importance, were assigned to categories based on participants’ self-reporting. Verbal reports were not scored for accuracy.
**Story Elements.** Results of Study 1 showed, that when summarizing LL and UL texts, participants were least likely to correctly identify the story’s solution compared to all other story elements (character, problem, and falling action). In addition, when compared to other story elements, participants across both conditions made the smallest gains in correctly identifying the solution. This suggests that identifying the solution may be a difficult-to-remediate skill. Therefore, Study 2 was designed to focus on identifying the story solution. Although Study 1 participants struggled most with the solution and displayed good gains in identifying the problem, Study 2 focused on identifying the problem as well, because a story’s solution tends to directly respond to the story’s problem.

Moreover, a story’s problem and solution are infrequently *explicitly* stated in the text. Rather, they are inferred by the reader (Long & Golding, 1993) through story events. Inferring these story elements is likely to occur during online and offline processing, and therefore, in this study, identifying the story problem and solution was examined in online and offline tasks. During online processing, identification of story elements was examined through think aloud verbal reports, and during offline processing it was measured through the Problem-Solution Identification task (PSID). However, as earlier discussed, due to the scoring system used for the PSID, PSID-problem and PSID-solution outcomes could not be examined in the same model and thus could not be compared. This is because, by design, the PSID-problem was scored dichotomously and as a result, the scores showed a Bernoulli distribution. In contrast, the PSID-solution was continuously scored and was expected to reflect a normal distribution. However, as is discussed in later portions of this paper, participants’ outcomes on the PSID-solution did not show a normal distribution, rather a bi-modal distribution. Nevertheless, because the PSID-problem and PSID-solution scores showed different distribution types, they could not be entered
in the same model. (In addition, as is discussed later in this paper and in Table 34, PSID-solution scores for UL texts showed a floor effect.)

In contrast, participants’ online verbal reports for story elements (“problem” vs. “solution”) were analyzed in the same model. As displayed in Table 27 above, results showed a significant main effect for story elements. When considering this significant main effect, it is important to bear in mind that story elements verbal reports scores reflect participants’ self-reports and that verbal reports were not scored for accuracy. Descriptives for the “problem” and “solution” verbal reports are displayed in Table 32 below. The table shows that the total possible score for each story element verbal report category (“problem” and “solution”) was 13. This is because each verbal report generated after every text segment was dichotomously coded for membership in the “problem” and “solution” categories and each text was parsed into 13 text segments. The table also shows that there were mean differences between the number of “problem” and “solution” verbal reports. However, there was a significant story element by text level interaction, which further explains the main effect. This interaction is explored and discussed in greater detail, in the following section addressing text level as a factor.

<table>
<thead>
<tr>
<th>Table 32 Adjusted Means for Story Elements Verbal Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>----</td>
</tr>
<tr>
<td>Problem</td>
</tr>
<tr>
<td>Solution</td>
</tr>
<tr>
<td>Maximum score for each verbal report category is 13.</td>
</tr>
</tbody>
</table>

Text Level (LL vs. UL). Study 1 examined the impact of text difficulty by using it as an independent variable in the study’s analyses. In Study 1, each participant read and summarized one LL and one UL text at each point of assessment (pretest and posttest). Results found that text difficulty played a significant role in text processing. Participants were better able to
correctly include story elements in summaries of LL texts as compared to UL texts. This indicates that text difficulty impacts readers’ processing of the text, and texts of varying difficulty may be processed differently. Therefore, to better understand the impact of text difficulty on readers’ processes, in Study 2, the impact of text level was examined as well. In Study 2, each participant read two LL texts and two UL texts.

Results in Tables 26-30 show, that above all other factors studied, text level (LL vs. UL) was most commonly found to have a significant effect on participants’ performance. As shown in Table 27, there was a significant main effect for text level (LL vs. UL) during online processing, as seen in the analysis of story elements verbal reports. Confirmed by descriptives displayed in Table 33 below, participants tended to generate a greater number of story elements verbal reports while thinking aloud about UL texts as compared to LL texts when other factors were not considered. However, there was also a significant story elements by text level interaction, which better explains the main effect and is discussed below.

Table 33
Adjusted Means for Story Elements Verbal Reports by Text Level

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>LL</td>
<td>80</td>
<td>2.23</td>
<td>0.231</td>
<td>0-7</td>
</tr>
<tr>
<td>UL</td>
<td>80</td>
<td>2.76</td>
<td>0.255</td>
<td>0-9</td>
</tr>
</tbody>
</table>

Maximum score for story elements verbal report category is 26.

Although the main effect showed that there were significant differences between the number of story elements verbal reports generated at each level of text difficulty, the significant text level by story elements interaction shows a trend reversal across levels of text difficulty. A paired-sample t-test confirmed, that at each level of text difficulty (LL vs. UL), there was a significant difference between the number of “problem” and “solution” verbal reports generated
However, the interaction showed that the trend was reversed across levels of text difficulty. As displayed in Table 34 and Figure 5 below, participants generated a greater number of “solution” verbal reports in LL texts, but generated a greater number of “problem” verbal reports for UL texts.

But importantly, the text level by story elements interaction also shows that the difference in means for “problem” and “solution” verbal reports was considerably wider for LL texts as compared to UL texts (see Table 34 and Figure 5 below). This indicates that in LL texts, participants identified that few text segments were related to the story problem as compared to a greater number of text segments that were related to the solution. Meaning, through the low number of “problem” verbal reports generated for lower level texts, it can be inferred that in LL texts the problem was succinctly stated and contained to few text segments. But, the LL solution was spread across a greater number of text segments. In contrast, the greater number of “problem” verbal reports generated for upper level texts indicates that, in UL texts, the problem may have been less succinctly or clearly stated. In addition, the interaction showed that participants generated a more comparable number of “problem” and “solution” verbal reports for UL texts as compared to LL texts. Implications from these findings are addressed further in the Discussion section.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Range</th>
<th>N</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>LL</td>
<td>43</td>
<td>1.175</td>
<td>0.167</td>
<td>0-3</td>
<td>43</td>
<td>3.275</td>
<td>0.383</td>
<td>0-7</td>
</tr>
<tr>
<td>UL</td>
<td>43</td>
<td>3.175</td>
<td>0.327</td>
<td>0-7</td>
<td>43</td>
<td>2.375</td>
<td>0.324</td>
<td>0-7</td>
</tr>
</tbody>
</table>

Maximum score for each verbal report category is 13.
LL=Lower level text; UL = Upper level text
Similar to the main effect found for text level in analysis of story elements verbal reports, the offline task examining problem and solution identification (PSID) also showed a significant main effect for text level (LL vs. UL). Tables 29 and 30 above, show that there was a significant main effect for text level in PSID-Problem and in the PSID-Solution. Descriptives in Table 35 below, confirm that during offline processing, participants were more likely to correctly identify the story’s problem and solution in LL texts as compared to UL texts. Taken together, these main effects indicate that although participants generated a greater number of story elements verbal reports when thinking aloud about UL texts, they were less likely to correctly identify the story elements.

It is important to note that story elements verbal reports reported during online processing reflect self-reports and were not scored for accuracy. In contrast, the offline Problem-Solution Identification task (PSID) responses were scored for accuracy. Although the online outcomes
were not scored for accuracy and the offline outcomes were scored for accuracy, comparison of these two outcomes shows that the participants’ self-report of story element identification during online processing may not support correct identification of story elements when reading UL texts.

In addition, the descriptives in Table 35 show that UL solution outcomes were not normally distributed. The lack of a normal distribution may be attributed to a floor effect observed in these data, specifically in the UL problem and solution. As the table shows, only 50% of participants were able to correctly identify the problem in UL texts, and the remaining 50% if participants were unable to correctly identify the problem in UL texts. A 50% error rate suggests a floor effect for this task. In addition, the floor effect is even more strongly observed in outcomes for the UL solution. Only 37% of participants correctly identified the story solution in UL texts, suggesting that 63% of participants were unable to correctly identity the UL solution in the target texts. Moreover, the mode for UL PSID-Solution was 0. Implications for this finding are further addressed in the Discussion section.

<table>
<thead>
<tr>
<th></th>
<th>Percentage of Participants Correctly Identified Story Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>LL</td>
<td>88</td>
</tr>
<tr>
<td>UL</td>
<td>88</td>
</tr>
</tbody>
</table>

LL=Lower level text; UL = Upper level text

In addition, across tasks, there were several additional interactions with text level. As shown in Tables 26 above, analyses examining importance verbal reports ("important" vs. "not important") showed a significant text level by importance interaction. Figure 6 and descriptives
in Table 36 below, show that participants tended to generate a greater number of “not important” verbal reports as compared to “important” verbal reports when thinking aloud about LL texts, but the trend was reversed for UL texts. Participants generated a greater number of “important” verbal reports as compared to “not important” verbal reports when thinking aloud about UL texts. These results indicate that text level impacts how readers assign importance to text segments during online processing. Readers tend to perceive the larger portion of LL texts as containing not important information, but in UL texts, larger portions of texts were identified as “important”.

Table 36
Estimated Marginal Means for Text Level by Importance Interaction

<table>
<thead>
<tr>
<th></th>
<th>Important</th>
<th></th>
<th>Not Important</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>Standard Error</td>
<td>Range</td>
</tr>
<tr>
<td>LL</td>
<td>40</td>
<td>2.36</td>
<td>0.377</td>
<td>0-7</td>
</tr>
<tr>
<td>UL</td>
<td>40</td>
<td>3.40</td>
<td>0.534</td>
<td>0-10</td>
</tr>
</tbody>
</table>

Maximum score for each verbal report category is 13.
LL=Lower level text; UL = Upper level text

Figure 6. Interaction between Text Level and Importance Verbal Reports
LL= Lower level text  UL=Upper level text
Finally, in Table 28 above, results of the analysis examining the offline Assigning Importance Task (AIT), showed a significant text level by read condition interaction. Descriptives in Table 37 and Figure 7 below show that participants’ scores on the offline Assigning Importance Task (AIT) for LL texts were comparable for both read conditions (read once vs. read twice). However, UL text AIT scores significantly differed by read condition. Participants tended to have higher AIT scores after the read twice condition as opposed to the read once condition. This finding is aligned with one of Study 2’s hypotheses, and shows that reading through a text a second time improved participants’ ability to assign importance during offline processing of UL texts. However, it is important to note that reading a text a second time did not improve outcomes on the LL texts, even though participants did not reach the maximum score on the Assigning Importance Task (see Table 37). This finding is further explored in the Discussion section.

<table>
<thead>
<tr>
<th></th>
<th>Read Once</th>
<th>Read Twice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>LL</td>
<td>44</td>
<td>7.93</td>
</tr>
<tr>
<td>UL</td>
<td>44</td>
<td>6.97</td>
</tr>
</tbody>
</table>

Covariates appearing in the model are evaluated at the following values: TRT = 15.93. Maximum score for Assigning Importance Task is 15.
LL=Lower level text; UL = Upper level text
Taken together, these results show that text level influenced student outcomes on all online and offline tasks, either as a main effect or as an interaction. Effects for text level on participant’s verbal reports are aligned with the existing research and appear to indicate that LL texts were clearer for participants to process. Specifically, the analyses showed that when thinking aloud about LL texts, participants self-reported (through verbal reports) that few text segments contained “important” information. In addition, when reading LL texts, on average, participants identified that the story’s problem was contained in one text segment and the story’s solution was contained in three text segments. These findings suggest that LL texts were clear, and that story elements and important information was clearly identified during online processing. These findings are further confirmed by the offline Problem-Solution Identification task (PSID), which showed that participants had better accuracy in identifying the story problem and solution in LL texts as compared to UL texts.
In contrast, for UL texts, participants self-reported (through verbal reports) that a greater number of text segments contained important information. And, unexpectedly, participants generated a greater number of “problem” verbal reports as compared to “solution” verbal reports. These findings are counter to theory and existing research (Black and Bower, 1980). Additionally, the offline Problem-Solution Identification task (PSID) showed that despite the greater number of verbal reports generated for UL texts, participants had low accuracy rates for correctly identifying the problem and solution for UL texts during offline processing. However, results showed that reading UL texts a second time improved participants’ ability to correctly assign importance to text segments during offline processing. Possibly, these findings may indicate that when reading UL texts, participants were somewhat unclear or unsure of which text segments contained the story element and important information, and therefore presented low accuracy rates in correctly identifying story elements and important information during offline processing, however, reading a text a second time improves accuracy. Taken together, these findings suggest that as compared to LL texts, UL texts are less clear and that story elements and important information are not as easily identified. Implications for these findings are further addressed in the Discussion section below.

Analysis of Covariates

**Narrative Measures.** Previous research suggests that knowledge of text structure is a form of background knowledge that may support readers when reading a text. Specifically, when a reader engages with a narrative text, knowledge of story structure may provide a framework for the reader to understand that a story’s most important parts are the problem and solution and help them identify these elements. By extension, it can be inferred that readers with greater exposure to a wider range of stories are likely to develop greater familiarity with different
types of story structures and may be better able to identify story elements in narrative texts. Therefore, in this study, knowledge of narrative text structure and exposure to narrative texts were considered as possible factors and were measured during pretesting. Knowledge of narrative text structure was measured through the Knowledge of Narrative Story Structure Task (KNSST) and exposure to narrative texts was measured through the Title Recognition Task (TRT). Although these two tasks measure related types of knowledge, earlier analyses indicated that outcomes on the Knowledge of Narrative Story Structure Task (KNSST) and the Title Recognition Task (TRT) were weakly correlated and the correlation failed to reach significance. Therefore, it was concluded that these tasks measure different constructs and can be entered as covariates in the same model without a threat to multicollinearity.

To examine how knowledge of narrative structure and exposure to narrative texts may impact online processing, outcomes of the Knowledge of Narrative Story Structure Task (KNSST) and Title Recognition Task (TRT) were entered as covariates in a repeated measures multivariate analysis of covariate analysis (RM-MANCOVA) examining participants’ verbal reports. Paralleling earlier analyses, importance (important vs. not important) and story elements (problem vs. solution) verbal reports were entered in two separate models.

Results of an earlier analysis (displayed in Table 26 above) showed a significant text level by importance interaction. As stated above, this indicates that there was a change in pattern across LL and UL texts in the number of “important” and “not important” verbal reports generated by participants. However, when measures of narrative text exposure and knowledge of narrative structure were entered into the model as covariates, this interaction was no longer significant. This indicates that, after these covariates were entered into the model, there were no
significant main effects or interactions for importance (“important” vs. “not important”) verbal reports. Results of the RM-MANOVA are displayed in Appendix I.

In a second model, outcomes for story elements verbal reports (“problem” vs. “solution”) were analyzed. Earlier results, reported in Table 27 above, showed that there was a significant main effect for story element (“problem” vs. “solution”) and text level (LL vs. UL). In addition, there was a significant story elements by text level interaction. However, after the analysis was repeated in a model where scores for the Title Recognition Task (TRT) and the Knowledge of Narrative Story Structure Task (KNSST) were entered as covariates, the main effect for text level and the story elements by text level interaction were no longer significant. However, the main effect for story elements remained significant (*Pillai’s Trace*=0.431, *p*=0.002), indicating that when collapsed across text levels (LL vs. UL) and reading conditions (read once vs. read twice) and covariates are considered, results continued to show a greater number of “problem” verbal reports as compared to “solution” verbal reports. In addition, there was a significant story elements by TRT interaction (*Pillai’s Trace*=0.272, *p*=0.018). The full table of results can be found in Appendix I.

Taken together, these results indicate that individual differences in knowledge of narrative structure and exposure to narrative texts explain the differences found in earlier analyses of online verbal reports (see Tables 26-27 above). The main effect for story elements verbal reports (“problem” vs. “solution”) was the only finding that remained significant after accounting for these individual differences. These findings are further explained and addressed in the Discussion section.
Unlike the analyses of online outcomes which only included data of participants assigned to the think aloud treatment group, analyses of offline tasks included outcomes of the treatment (think aloud) and control (silent reading) groups. Therefore, to correct for pre-existing group differences in exposure to narratives, participant scores from the Title Recognition Task (TRT) were entered into the earlier analysis (see Table 29 above). However, as previously noted, the Title Recognition Task could only be entered as a covariate in the RM-MANOVA examining outcomes for the Assigning Importance Task (AIT). The second offline task, the Problem-Solution Identification task (PSID), was analyzed using a hierarchical linear model (HLM), and in an effort to avoid an overly complex model, covariates were not entered.

Results of the earlier analysis examining outcomes on the offline Assigning Importance Task (AIT) showed that there was a significant main effect for group (treatment vs. control) and a significant text level (LL vs. UL) by reading condition (read once vs. read twice) interaction. However, when scores of the Knowledge of Narrative Story Structure Task (KNSST) were entered as an additional covariate, the main effect for group (treatment vs. control) was no longer significant. However, the text level (LL vs. UL) by read condition (read once vs. read twice) interaction remained significant ($Pillai’s Trace=0.168, p=0.005$). In addition, a significant three-way interaction emerged. Results showed a significant text level by read condition by KNSST interaction ($Pillai’s Trace=0.108, p=0.027$). The full table of results can be found in Appendix I.

Overall, these results indicate that knowledge of narrative structure and exposure to narrative texts underlie students’ online and offline processing of texts. Specifically, these measures tended to explain some, if not all, of the variance previously attributed to other factors such as text level (LL vs. UL) and group (treatment vs. control), and were able to explain the advantage participants received from reading LL texts or participating in think aloud. This
further suggests that, possibly, as compared to text factors and external factors (such as text level and thinking aloud), readers’ background knowledge (such as knowledge of narratives and exposure to narratives) more strongly influences the ability to assign importance and identify story elements. Implications for this finding are further addressed in the Discussion section.

**CELF.** In a methods paper, Afflerbach (2002) explains that think aloud verbal reports rely on a reader’s verbal skills and likely impact the quality of the verbal reports generated during a think aloud. Therefore, in this study, speech fluency was measured through the Formulated Sentences subtest of the CELF, and was used as an inclusion criterion. Data of participants who scored below -1SD from the national mean were not included in this study. A set of analyses was conducted to better understand the impact of speech fluency skills on verbal reports produced among participants scoring above -1SD (of the national mean) on the Formulated Sentences subtest of the CELF.

As earlier described, the verbal reports were coded into categories of importance (“important” vs. “not important”), which referenced the text segment’s importance to the overall text, or categories of story elements (“problem” vs. “solution”), which referenced the segment’s relatedness to the text’s problem or solution. In addition, any verbal report that referenced neither the text segment’s importance nor its relatedness to story elements was coded as “other”. The “other” category was a catch-all category and included a wide range of verbal reports, including verbal reports that: paraphrased the text, questioned the text and character motive, made predictions, included general comments about the text, or contained comments unrelated to the think aloud task at hand. It is important to note that “other” verbal reports were an undesirable outcome. When a participant generated verbal reports that were coded as “other”, it indicates that the participant did not follow the think aloud instructions provided by the
investigator. This is despite the fact that the participant had a reference sheet available during the think aloud. (Participants who generated an “other” verbal report received redirection from the investigator to reference either the segment’s importance or relatedness to story elements. However, any verbal report generated after redirection was not used in analyses.)

An analysis examined “other” coded verbal reports when a measure of speech fluency was entered into the model as a covariate. The impact of speech fluency on “other” coded verbal reports was examined through a RM-ANOVA, where read condition (read once vs. read twice) and text level (LL vs. UL) were entered as factors, speech fluency (CELF) was entered as a covariate, and the number of “other” coded verbal reports was entered as the dependent variable. Results in Table 38 below show a significant main effect for read condition (read once vs. read twice) and a significant read condition by text level interaction.

<table>
<thead>
<tr>
<th>Table 38</th>
<th>Repeated Measures MANOVA: Other Reports as a Function of Text Difficulty, Reading Condition, and Speech Fluency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pillai’s Trace</td>
</tr>
<tr>
<td>Tests of Within Subjects Effects</td>
<td></td>
</tr>
<tr>
<td>Main Effects</td>
<td></td>
</tr>
<tr>
<td>Text Level</td>
<td>0.043</td>
</tr>
<tr>
<td>Read Condition</td>
<td>0.331</td>
</tr>
<tr>
<td>Test of Between Subjects Effects</td>
<td></td>
</tr>
<tr>
<td>CELF</td>
<td>10.104</td>
</tr>
<tr>
<td>Interactions</td>
<td></td>
</tr>
<tr>
<td>Read Condition x Text Level</td>
<td>0.001</td>
</tr>
<tr>
<td>Text Level x CELF</td>
<td>0.022</td>
</tr>
<tr>
<td>Text Level x Read Condition</td>
<td>0.308</td>
</tr>
<tr>
<td>Text Level x Read Condition x CELF</td>
<td>0.000</td>
</tr>
</tbody>
</table>

*p < 0.05, ** = p <0.01, ***=p <0.001, NS = not significant
Maximum score for each category of verbal reports is 13.
Text level = lower level text versus upper level text; Read condition = read once versus read twice conditions
CELF=Clinical Evaluation of Language Fundamentals
Marginal means for the read condition (read once vs. read twice) main effect indicate that participants in the read twice condition produced a significantly greater number of “other” verbal reports as compared to participants in the read once condition (see Table 39). However, as displayed in Table 39 and Figure 8 below, descriptive statistics for the read condition (read once vs. read twice) by text level (LL vs. UL) interaction clarify that the mean difference in the number of “other” verbal reports generated in each read condition (read once vs. read twice) varied by text level (LL vs. UL). Specifically, across read conditions (read once vs. read twice) participants generated a fairly comparable number of “other” verbal reports when thinking aloud about LL texts. In contrast, when thinking aloud about UL texts, participants generated a greater number of “other” verbal reports in the read twice condition as compared to the read once condition.
Table 39
Adjusted Means for “Other” Verbal Reports: Read Condition by Text Level Interaction

<table>
<thead>
<tr>
<th></th>
<th>Read Once</th>
<th></th>
<th></th>
<th>Read Twice</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>Standard Error</td>
<td>Range</td>
<td>N</td>
</tr>
<tr>
<td>LL</td>
<td>40</td>
<td>2.90</td>
<td>0.486</td>
<td>0-10</td>
<td>40</td>
</tr>
<tr>
<td>UL</td>
<td>40</td>
<td>2.10</td>
<td>0.498</td>
<td>0-9</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>2.50</td>
<td>0.443</td>
<td>0-10</td>
<td>40</td>
</tr>
</tbody>
</table>

Covariates appearing in the model are evaluated at the following values: CELF=11.10. Maximum score for “other” coded verbal reports is 13.
LL=Lower level text; UL = Upper level text

The impact of speech fluency on “other” coded verbal reports was further explored. As seen in Table 38 above, the effects of speech fluency (measured by the CELF) was significant. As displayed in Table 40 below, an exploration of parameter estimates shows that as speech fluency scores increased, the number of “other” verbal reports generally decreased. That is, as participants’ speech fluency increased, they produced fewer “other” coded verbal reports. This is specifically found when reading UL texts. This suggests that better developed speech fluency among participants significantly and positively impacts verbal reports by reducing the number of “other” verbal reports. Therefore, as suggested by Afflerbach (2002), before engaging in a think...
aloud protocol, participants should be screened to ensure that they can demonstrate developmentally appropriate speech fluency.

<table>
<thead>
<tr>
<th>Table 40 Regression Analyses of Speech Fluency Scores on Other Verbal Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta</td>
</tr>
<tr>
<td>LL Other Verbal Reports, Read Once</td>
</tr>
<tr>
<td>LL Other Verbal Reports, Read Twice</td>
</tr>
<tr>
<td>UL Other Verbal Reports, Read Once</td>
</tr>
<tr>
<td>UL Other Verbal Reports, Read Twice</td>
</tr>
</tbody>
</table>

*=p < 0.05, **=p <0.01, ***=p <0.001, NS = not significant
Maximum score for all verbal report categories is 13.
LL=Lower level text; UL=Upper level text

Correlation Between Online and Offline Measures

In a final set of analyses, online and offline outcomes were correlated to examine whether online processes were related to offline outcomes. To better understand the relationship between online and offline outcomes, correlations were conducted in two separate analyses. Outcomes related to story elements (problem and solution) were correlated in one analysis, and a second analysis was conducted for outcomes related to importance.

The first analysis correlated online and offline outcomes related to story elements. As such, story element verbal reports were correlated with the offline PSID-problem outcomes. Given that the verbal reports are a continuous variable and the PSID-problem outcome is a dichotomous score, a point-biserial correlation should be used. However, when using SPSS, point-biserial correlations are run as Pearson correlations.

The second correlation analysis examined online and offline tasks related to importance. In this analysis, the verbal reports related to importance (“important” vs. “not important”) were correlated with scores on the Assigning Importance Task (AIT). In this instance, both variables were continuous variables and were normally distributed. In addition, visual inspection
confirmed that the variables were linearly related. Therefore, these data met all of the criteria necessary for a Pearson’s correlation. Correlational tables are displayed in Appendix I.

Collectively, these correlational analyses yielded 252 correlations and only 20 correlations were significant at the $p<0.05$. In addition, only four of the 20 significant correlations, showed a significant relationship between online and offline outcomes. The remaining 16 correlations showed a significant relationship within online outcomes or within offline outcomes.

These analyses yielded no clear, discernible pattern of significant correlations. This suggests that the number of online verbal reports (either importance or story elements) generated during a think aloud is not related to outcomes on offline tasks. However, these results may be attributed to the fact that offline outcomes were scored for accuracy (“correct” vs. “incorrect”), while online outcomes recorded participants’ self-reports and were not scored for accuracy. These results are further explored in the Discussion section below.
Chapter 11

Discussion

Study 2 was designed to extend and further explore outcomes from Study 1. In this repeated-measures study, 44 fourth grade participants completed online and offline tasks on the identification of story elements and assigning importance. Several analyses were conducted yielding numerous significant main effects and interactions. However, results showed that of all factors examined in this study analyses, text level (LL vs. UL) was the factor that yielded the greatest number of significant main effects and interactions impacting participants’ online and offline outcomes. A brief summary of all statistically significant effects is tabulated in Table 41 below. In addition, further explorations and interpretations of the effects are presented below and guided by the study questions for Study 2.

<table>
<thead>
<tr>
<th>Task</th>
<th>Factors Considered</th>
<th>Significant Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Processing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance Verbal Reports</td>
<td>Text Level</td>
<td>Interaction: Text Level x Importance</td>
</tr>
<tr>
<td>(‘important’ vs. ‘not important’)</td>
<td>Read Condition</td>
<td></td>
</tr>
<tr>
<td>Story Elements Reports</td>
<td>Text Level</td>
<td>Main Effect: Text Level</td>
</tr>
<tr>
<td>(‘problem’ vs. ‘solution’)</td>
<td>Read Condition</td>
<td>Main Effect: Story Elements</td>
</tr>
<tr>
<td></td>
<td>Story Elements</td>
<td>Interaction: Text Level x Story Elements</td>
</tr>
<tr>
<td>Offline Processing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigning Importance Task (AIT)</td>
<td>Text Level</td>
<td>Main Effect: Group</td>
</tr>
<tr>
<td></td>
<td>Read Condition</td>
<td>Interaction: Text Level x Read Condition</td>
</tr>
<tr>
<td>Problem-Solution Identification task (PSID)</td>
<td>Text Level</td>
<td>Main Effect: Text Level</td>
</tr>
<tr>
<td></td>
<td>Read Condition</td>
<td></td>
</tr>
</tbody>
</table>

Study question 1 questioned whether reading through a text ahead of thinking aloud improves readers’ identification of the story problem, solution, and important ideas. Therefore, this study included read once and read twice conditions. In the read once condition, participants thought aloud while reading the text for the first time. In the read twice condition, participants first read through the text silently and then reread the text while thinking aloud. The two read
conditions were included in this study to test whether stopping to think aloud interferes with the reader’s ability to perceive the text as a single, coherent unit, and thereby prevents the reader from forming the coherent textbase needed to identify story elements and assign importance. Across all analyses of online and offline tasks, results showed that read condition (read once vs. read twice) did not yield any significant main effects. However, there was a significant text level by read condition interaction in the offline assigning importance task, where participants in the read twice condition were better able to assign importance to UL text segments as compared to participants in the read once condition.

Overall, these findings show that there was no significant impact of stopping to think aloud during online processing. During offline processing, there was some advantage observed to rereading a text, but this advantage was reserved to assigning importance to UL text segments. The fact that there were no significant differences between the read conditions (as a main effect) suggests that stopping to think aloud while reading a text does not interfere with the reader’s process for developing a textbase, assigning importance, or identify storying elements (as measured through self-reports during online processing and accuracy scoring of offline tasks during offline processing). Although there was a significant text level by read condition interaction (but not main effect), it is important to note that this interaction was an outcome of an offline task. Analyses of online verbal reports did not show any significant main effect or interaction during online processing. This provides evidence that stopping to think aloud does not interfere with a reader’s self-reporting (via verbal reports) of assigning importance and identifying story elements.

To improve the organization and coherence of this Discussion section, study question 3 is addressed next. Study question 3 questioned whether thinking aloud improves readers’ offline
comprehension. As noted in the Literature Review section for Study 2, some studies found that thinking aloud improved comprehension, while other studies found that thinking aloud had no impact on comprehension. Therefore, to test the effects of thinking aloud on comprehension, this study included a treatment and a control group. Participants were randomly assigned to a group, and the treatment group thought aloud, while the control group read texts silently.

Analysis of the offline Assigning Importance Task (AIT) showed that there was a main effect for group, where participants assigned to the treatment group that thought aloud were better able to assign importance as compared to participants in the control group that read texts silently. Also, after considering that the scores were not normally distributed and there was a floor effect in correctly identifying the UL solution, analyses examining outcomes of the offline Problem-Solution Identification task (PSID) did not show that there were any significant differences between participants who thought aloud and those who read silently.

However, to better understand these results, it is important to note that the Assigning Importance Task (AIT) was a considerably stronger and more sensitive measure as compared to the Problem-Solution Identification task (PSID). This is because outcome scores on the Assigning Importance Task (AIT) were continuous, with a maximum score of 15. And, although participants did not reach the maximum score on this task (see Table 37), visual inspection of the data confirmed that the scores were normally distributed. In contrast, the scoring system used for the Problem-Solution Identification task (PSID) somewhat weakened this measure. The PSID-Problem was dichotomously scored as “correct” or “incorrect”. Dichotomous scoring minimizes variance and typically generates a weaker measure. In addition, the scoring system for the PSID-Solution awarded participants with five points for correctly including the “must contain” and one additional point for every “may contain”. (For additional information, please
see the Method section.) This scoring system likely contributed to a bi-modal distribution. Visual inspection of the data confirmed that outcomes on the PSID-Solution, were not normally distributed. In addition, as seen in Table 34 above, there was a considerable floor effect for the UL solution on this task. Together, this suggests that thinking aloud positively affected participants’ ability to assign importance during offline processing given that the Assigning Importance Task (AIT) was a strong and sensitive measure and assuming that this task reflected comprehension of the stories. Through a measure stronger than the PSID, it may be possible to observe a similar effect on the identification of story elements during offline processing.

Next, study question 4 questioned whether a greater number of verbal reports would be generated while thinking aloud about an LL text as compared to a UL text. To satisfy this question, participants read an LL text and a UL text in each read condition. Study 2 included text level as a factor, to extend results from Study 1. Results from Study 1 showed that text level impacted participants’ summarizing processes.

Results from Study 2 show that text level impacted participants’ online and offline outcomes more than any other factor considered in this study. Analysis of importance verbal reports did not find a main effect for text level. This indicates that participants did not generate a greater number of importance verbal reports when reading LL texts as compared to UL texts. However, results showed that there was a significant main effect for text level in the analysis of story elements verbal reports. The main effect showed that, contrary to what was expected, the participants generated a greater number of story element verbal reports for UL texts as compared to LL texts. In addition, the analysis found a significant story element by text level interaction. The interaction showed that while participants generated a smaller number of “problem” verbal reports and a comparatively larger number of “solution” verbal reports when thinking aloud
about LL texts, they generated a larger number of “problem” verbal reports and a *somewhat*
smaller number of “solution” verbal reports when thinking aloud about UL texts. In addition,
there was a significant main effect for text level in the analysis of story elements during offline
processing too. Analysis of the Problem-Solution Identification task (PSID) showed that
participants were better able to identify story elements in LL texts as compared to UL texts
during offline processing. Taken together, these results show that text level impacted
participants’ online and offline processing of story elements, and that processing story elements
information in UL texts was more difficult. A more in-depth and contextualized interpretation of
these results can be found in the discussion of story elements, below.

There was also a significant text level by importance interaction. This interaction showed
that while participants generated a greater number of “not important” verbal reports when
thinking aloud about LL texts, they generated a greater number of “important” verbal reports
when thinking aloud about UL texts. These results suggest that text level impacts how readers
assign importance to text segments during online processing. And, lastly, results showed a
significant text level by read condition interaction in the analysis of outcomes for the offline
Assigning Importance Task (AIT), where reading a text a second time improved assigning
importance for UL texts, but not LL texts.

Taken together, these results show that, of all factors examined in Study 2 analyses, text
level had the greatest impact on participants’ online and offline outcomes. Text level showed
either a main effect or an interaction for all online and offline tasks. These results indicate that
text level has a significant impact on how readers identify story elements and assigning
importance. By extension, it can be inferred that text level is likely to impact readers’
comprehension in all online and offline processing of narrative text.
It is important to note that the UL texts were leveled at the mean fourth grade reading level using Lexile leveling. In addition, in order to meet the inclusionary criteria for Study 2, participants had to demonstrate that they were able to read and comprehend texts at the fourth grade reading level. Therefore, it would be difficult to attribute the observed effects of text level to increased difficulty as measured in readability formulae through word readability, word frequency and/or sentence complexity. Scores on inclusionary criteria indicate that the participants should have been able to read and process LL and UL texts with comparable ease. But, results showed that participants varied their online processes by text level and generally, showed lower scores for outcomes on UL offline measures. This indicates that the UL texts may differ from LL texts in ways that are not captured through readability formulae, such as text structure. It is possible, that as texts increase in difficulty, the text structure also increases in complexity. Evidence to support this claim, based on Study 2 outcomes and findings, is further discussed below.

Study question 2 addressed how background knowledge such as knowledge of story structure and exposure to print may affect readers’ ability to assign importance and identify story elements. Based on earlier research demonstrating that background knowledge supports readers’ ability to assign importance and process texts (Afflerbach, 2002), it was hypothesized that knowledge of narrative structure may be a form of background knowledge that may support readers in assigning importance and identifying story elements (Magliano, Trabasso, & Graesser, 1999). Exposure to narrative text was measured as a possible entry point for readers to acquire and improve knowledge of narrative structure. It was hypothesized that as readers increase their exposure to narrative texts, they may also improve their knowledge of narrative structure. Knowledge of story structure was assessed through the Knowledge of Narrative Story Structure
Task (KNSST) and exposure to narratives was measured through the Title Recognition Task (TRT). Scores on these measures were entered as covariates in analyses of online and offline student outcomes.

Outcomes showed that after measures of knowledge of narrative structure and exposure to narratives were entered into the model, most of the significant findings reported above (displayed in Table 40) were no longer significant. Only the main effect for story elements verbal reports remained significant, so that, when data were collapsed across read conditions and text levels, participants generated a greater number of “solution” verbal reports as compared to “problem” verbal reports. Most importantly, the main effects and interactions for text level were no longer significant. These results indicate that knowledge of narrative structure and exposure to narrative texts explain differences previously attributed to text level (and other factors). These results suggest that differences in readers’ knowledge of narrative structure may explain differences in readers’ ability to assign importance and identify story elements.

It is important to note that the Title Recognition Task (TRT) was designed to capture knowledge of story structure that readers may have implicitly acquired through exposure to narrative texts. In contrast, the Knowledge of Narrative Story Structure Task (KNSST), which measured knowledge of story structure in contextualized and de-contextualized formats (see Method section), was designed to capture explicit knowledge of narrative structure that is likely to be a product of classroom instruction. Study results indicate that implicit and explicit measures of narrative structure explain differences in how readers assign importance and identify story elements during online and offline processing. This further suggests that continued instruction on narrative structure is important for readers’ processing of texts. This suggestion is further supported by the fact that even after including measures of narrative structure as a
covariate, the significant main effect observed for story elements verbal reports remained. As is further discussed below, despite the fact that verbal reports in Study 2 reflected participants’ self-reporting and were not scored for accuracy, nevertheless, the fact that participants generated a greater number of “solution” verbal reports as compared to “problem” verbal reports even after accounting for knowledge of and exposure to narrative texts is aligned with theory. As indicated by Black and Bowers (1980), theory suggests that a smaller portion of stories is typically used to describe the problem while a larger portion of stories is used to describe the characters’ attempts at solving the problem. Thus, as readers continue to improve their knowledge of narrative structure, they should also continue to generate a greater number of self-report “solution” verbal reports as compared to “verbal” verbal reports. Taken together, these results imply the importance of continued instruction in reinforcing readers’ knowledge of narrative structure.

Assigning Importance

This study examined how readers assign importance to text segments during online and offline processing, because it was hypothesized that correctly assigning importance may be needed to distinguish story elements from all other story events. Specifically, readers may need to assign importance to discriminate between the primary problem and minor story problems. Ability to correctly assign importance may also be needed to isolate the story events contributing towards the solution from all other story events and failed attempts. As earlier noted, the importance verbal reports reflect self-reports of how readers assign importance during online processing, but were not scored for accuracy. In contrast, scores on the offline Assigning Importance Task (AIT) were scored for accuracy.
Results showed that during online processing, participants generated a greater number of “not important” verbal reports as compared to “important” verbal reports when thinking aloud about LL texts. However, the trend was reversed for UL texts. When thinking aloud about UL texts, participants generated a greater number of “important” verbal reports as compared to “not important” verbal reports. These results indicate that participants perceived smaller portions of LL texts as containing important information while they perceived larger portions of UL texts as containing important information. Based on these results, it can be concluded that text level affects how readers assign importance to text segments. However, given that the verbal reports were not scored for accuracy, no other conclusions can be drawn from these results at this time.

Results of analyses examining outcomes on the offline Assigning Importance Task (AIT) are aligned with findings from previous research. Previous research showed that assigning importance may be a challenging skill for readers and a difficult-to-remediate skill (Silven & Vauras, 1992). However, results of this study found that thinking aloud and rereading a text were found to improve participants’ ability to correctly assign importance. However, as shown in Table 42 below, despite these scaffolds, participant mean score on this task was approximately 7 even though the maximum score was 15, and no participant scored higher than 12 on any AIT task.

In addition, a further examination of participants’ responses by importance category showed that participants were most likely to correctly rate segments containing “very important” information (“must contain” story element information) and least likely to correctly rate text segments containing “not important” information (story details). But, across all importance categories, participants’ correct responses ranged from 28%-68%. It is interesting to note that the percentage of correct responses by importance category was relatively similarly across levels
of text difficulty. Only the “not important” category varied drastically across text levels, and showed that participants were more likely to correctly identify story details as “not important” in LL (49%) texts as compared to UL texts (28%). Overall, the means and accuracy rates displayed in Table 42 are surprisingly low and indicate that the participants struggled to correctly assign importance to text segments at both levels of text difficulty. These results further suggest, that as found in earlier research, assigning importance is a difficult task for readers, and indicates that readers require instruction on how to correctly assign importance to narrative text segments.

Table 42
Outcomes on Assigning Importance Task by Importance Categories

<table>
<thead>
<tr>
<th>Participants Scoring Correct by Importance Categories</th>
<th>“Not Important”</th>
<th>“A Little Important”</th>
<th>“Very Important”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Range</td>
<td>“LL”</td>
<td>“UL”</td>
<td>“LL”</td>
</tr>
<tr>
<td>--------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Mean Range</td>
<td>7.94</td>
<td>7.27</td>
<td>2-12</td>
</tr>
<tr>
<td>Maximum score for Assigning Importance Task is 15.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LL=Lower level text; UL = Upper level text</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Story Elements

Outcomes of Study 1 showed that participants struggled to include the story solution in their summaries, and therefore Study 2 examined factors that may impact a reader’s ability to correctly identify the story solution. However, given that the story solution relates to the story problem, Study 2 also investigated participants’ processes for identifying the story problem. Outcomes of the participants’ online processes for identifying story elements showed that, when thinking aloud about LL texts, participants generated a smaller number of “problem” verbal reports as compared to “solution” verbal reports. In fact, descriptives in Table 36 show that, on average, participants identified that one LL text segment contained the story problem, and that three text segments contained the story solution. (Each text was parsed into 13 text segments.)
Although these verbal reports have not been scored for accuracy, the pattern displayed for LL texts is aligned with theory, as explained below.

As discussed earlier in the Literature Review section, narratives tend to present a problem, but the majority of the text focuses on a character’s actions to solve the problem. Often, during this pursuit, the character is faced with several failed attempts before finally achieving the solution (Black & Bowers, 1980). Therefore, it is conceivable and aligned with theory that a story’s problem may be contained within one segment, while the story solution may be contained in three text segments. This is further supported by outcomes on the offline Problem-Solution Identification task (PSID) for LL texts. As seen in Table 34, 91% of participants correctly identified the story problem. An additional analysis showed that 84% of participants correctly identified the LL solutions. The high percentage of participants correctly identifying the LL story elements during offline processing suggests that they were also likely to correctly identify the story elements segments during online processing as well. However, participants’ online and offline outcomes for UL texts show a contrasting pattern.

Analysis of UL story elements verbal reports showed that participants generated a greater number of “problem” verbal reports as compared to “solution” verbal reports. As see in Table 36, on average, participants identified that three text segments contained information related to the story problem, whereas two text segments contained information related to the story solution. This pattern of verbal reports is contrary to theory. As noted above, larger portions of narrative texts tend to focus on the character’s actions to solve the problem, not the problem itself. Therefore, it follows that participants should have generated a greater number of “solution” verbal reports as compared to “problem” verbal reports when thinking aloud about UL texts too. But, given that participants generated a greater than expected number of “problem” verbal
reports, it was evident that they were unclear about the story problem and therefore over-identified text segments as containing information related to the story problem. This is further confirmed by outcomes of the Problem-Solution Identification task (PSID) which shows that a lower than expected number of participants correctly identified the UL problem. As seen in Table 34 above, approximately 50% of participants correctly identified the story problem in UL texts.

Moreover, the participants generated a lower than expected number of “solution” verbal reports for UL texts. They should have identified a larger number of text segments as containing information related to the story solution. This suggests that they either misidentified text segments containing the solution or were unable to identify the complete set of text segments containing information related to the story solution. Outcomes on the offline Problem-Solution Identification task (PSID) provide further evidence of the participants’ difficulty in correctly identifying the solution in UL texts. A descriptive analysis showed that only 37% of participants were able to correctly identify the solution in UL texts and that the mode score for UL solution was zero.

The difficulty participants experienced in correctly identifying story elements in UL texts requires further investigation. However, given that these study participants met the inclusionary criteria for this study, difficulty in identifying the UL story elements cannot be attributed to participants’ difficulty reading connected text and/or reading comprehension. Instead, there may be other factors attributing to this difficulty related to the text itself.

There is a possibility that the difficulty in identifying UL story elements may be related to text structure. Meaning, as texts increase in difficulty, they also increases in complexity. For
instance, the LL texts used in this study clearly presented the story’s problem and solution within a simple story structure. This may be confirmed by the high rates of accuracy the participants showed in correctly identifying the story elements on the Problem-Solution Identification task (PSID). Further evidence can be drawn from the fact that the adult control group also show a high degree of agreement on LL text story elements (see Tables 20-21).

In contrast to the clarity and simplicity found in the LL texts, the UL texts were considerably more complex. For instance, participants may have struggled to identify the UL story problem in these texts, because the texts may have failed to provide the reader with clear direction on discriminating between the primary and minor problems. For example, in *Fox and Possum*, the problem is that Fox wants to eat Possum, and Possum must think of a clever way to escape. However, this primary problem is not directly stated in the text, rather it is inferred from the text statements, “‘I am glad to see you, friend Possum,’....‘Oh, nice and fat. You would taste so good!’” (p. 85). This short and rather indirect expression of the story’s primary problem contrasts with the more elaborate telling of the minor problem. (The story’s minor problem is that that only Possum knew where the persimmons grow, and Fox was concerned that if he eats Possum, then he will never know where the persimmon trees are located.):

> Possum was better at gathering than the other animal people, for he took care not to be followed to his gathering places. He waited until darkness before starting out for the persimmon trees. He took great care to watch behind him on the way. When he came there, he ate the sweet, soft fruit until his belly was full, and then filled the pouch at his belt. Nothing was so (sic) good as a ripe persimmon! (p. 84)
“Aho! You have been eating persimmons!” Fox exclaimed. There was nothing Fox loved better than persimmons. “Ai!” he thought. “What shall I do? If I have Possum for my dinner, I will never know where the persimmon trees are. Perhaps I should eat him for dinner some other time.” (p. 85)

Transcripts of participants’ Problem-Solution Identification task (PSID) showed that some participants confounded the primary and minor problems or only reported the minor problem. For instance, a participant reported, “Winter was coming so Possum was finding persimmons, but Fox wants them (persimmons). So he (Fox) catches Possum and makes Possum show him (Fox) the persimmon trees.” The difficulty participants experience may likely be linked to the text’s short and indirect telling of the primary problem in contrast with its elaborate discussion of the minor problem.

In addition, *Fox and Possum* contained a multi-step solution, where a sequence of actions ultimately solved the story’s problem. In order for Possum to escape, Possum distracted Fox by leading him to the persimmon trees, and then helped Fox (who was not a good climber) up the tree. Once Fox was in the tree and could not get down, Possum was able to sneak away. Succinctly said, Possum solved the problem through three key events: (1) leading Fox to the persimmon trees, (2) helping Fox up the tree, and (3) sneaking away once Fox was in the tree. The text elaborates on the story solution by containing many additional details above and beyond the three key actions listed here, but it is these three actions that are the essential components of the solution. Omitting any one of these three actions, would yield an incomplete chain of events to fully solve the problem (Black & Bowers, 1980). However, identifying this multi-step solution was challenging for the participants. Participants were able to report parts of the multi-step solution, but only in a few cases reported the complete chain. The multi-step solution found
in *Fox and Possum* demonstrates another instance of a more complex structure found in the UL texts as compared to the LL texts.

A different example of how text structure complexity may impact a readers’ identification of the story elements may be drawn from the second UL text, *The Fight between the Insects and Animals*. In this story, Mountain Lion accidentally stepped on a Locust. This episode caused an argument between Mountain Lion and Locust, because each of the characters wanted to establish his importance and self-worth. It is important to note that Mountain Lion and Locust decided to *solve* their problem by holding a battle between all Insects and Animals (see Table 17).

As mentioned in the Method section, this story’s problem could be identified at the text-dependent level and the inferential level. At the text-dependent level, the problem is that Mountain Lion stepped on Locust, as the text clearly states, “*He did not see Locust sleeping in the shade under a young redbud tree, and he stepped on him..... ‘Who do you think you are, Chief of the World, to come stepping on me?’*” At the inferential level, the story’s problem is that Locust and Mountain Lion each wanted to assert their importance and self-worth. However, transcripts of the “problem” verbal reports on the Problem-Solution Identification task (PSID) showed that participants struggled to correctly identify the problem (and solution) in this text, because they conflicted with the participants’ world view. In their world view, the participants know that fighting is a problem and never a solution. Therefore, participants considered fighting to be an inherent problem, and identified the fight as the story’s problem instead of the solution. When asked to identify the problem on the PSID, one participant responded, “*Locust and Mountain Lion got into a fight and they (Mountain Lion and Locust) want to see who wins. The problem is they (Mountain Lion and Locust) got into a fight and a fight is a problem*”. In other
instances, some participants identified name-calling as the problem, because in this instance too, their world view states that name-calling is inherently wrong. As one participant shared, “The problem is that they're (Mountain Lion and Locust) not saying nice stuff to each other”.

Given that some participants misidentified the story problem due to influences from their world view, it followed that they also incorrectly stated that the story contained no solution. As one participant reported, “There really wasn't a solution. There was just a war.” Another participant reported, “I don't know because fighting is never a solution”.

Taken together, an examination of the UL texts showed that, as compared to LL texts, these texts contained more complex story structures, through text elaboration on a minor problem, a multi-step solution, and text perspectives that are in conflict with the reader’s world view. This further supports the claim that participants’ low accuracy rates on the UL Problem-Solution Identification task (PSID) may be related to story structure complexity, and cannot be attributed to low reading and comprehension ability. In addition, the complexity found in these UL story structures aligns with the finding that knowledge of story structure and exposure to narrative texts explained variance that had been attributed to text level in earlier analyses. Given that it is possible that the UL story structure complexity was the factor contributing to low accuracy rates in the identification of story elements, logically it follows that participants with better developed knowledge of story structure or exposure to narrative texts may be better able to correctly identify story elements in UL texts. However, this line of thought requires a more complete and intense qualitative analysis of the participants’ verbal reports and Problem-Solution Identification task (PSID) results which is beyond the scope of this study. These preliminary findings suggest that teachers continue to provide instruction on the identification of story elements as texts increase in complexity.
Study Strengths

This study used a think aloud protocol in an experimental design with sufficient power to conduct robust statistical tests. This provided the ability to examine impacts of thinking aloud on offline processing of text. Although some earlier studies also used a think aloud protocol within an experimental design, most studies using a think aloud protocol did not include an experimental design. In addition, to avoid interfering with the natural reading process to the greatest extent possible, this study retained the text’s natural presentation (as a continuous text) and strategically inserted stopping points at natural breaks in the storyline. This contrasts with earlier studies that presented participants with texts that were separated by sentence and contained a stopping point at the end of each sentence (e.g., showing one text sentence at a time on a flash card or computer screen). Finally, and possibly most importantly, in order to participate in this study, participants were required to demonstrate grade-level competence in word reading, reading comprehension, and speech fluency. Therefore, findings of this study think aloud results cannot be attributed to difficulties in word reading, comprehension, or speech fluency.

Study Weaknesses and Limitations

This study presents some weaknesses and limitations as well. This study is weakened by the fact that online and offline outcomes were scored differently and therefore could not be correlated. Earlier in the study it was suggested that offline outcomes may be used as calibration measures to support conclusions drawn from the participants’ verbal reports. However, correlational analyses found few significant correlations between online and offline outcomes. This may be related to the fact that while participants’ offline outcomes were scored for
accuracy, their verbal reports were not. Future studies may select scoring systems for online and offline tasks that are more closely aligned, and can therefore be correlated.

In addition, as earlier noted, the Problem-Solution Identification task (PSID) was a weak task, and this weakness may be attributed to a design flaw in the task’s scoring system. Scoring for the PSID was intended to correct or embellish upon the scoring system used for Study 1 summaries. As a result, in Study 2, participants were awarded five points for correctly identifying the “must contain” statement and an additional one point for each “may contain” statement. In addition, there was a one point penalty for inaccurate statements. This scoring system was designed with the intent to create a more sensitive scoring system with greater variance. But instead, based on this scoring system, participants’ scores resembled a bi-modal distribution with a cluster around zero and a cluster between 4-6. In addition, the problem was only scored dichotomously which further weakened the task by minimizing variance. Future studies may design a more sensitive measure for capturing participants’ offline identification of story elements.

Finally, a third limitation of this study may be the possible differential treatment for participants as they thought aloud. In Study 2, when a participant generated an “other” verbal report (a verbal report that did not relate the text segment to the story’s problem, solution, or importance), the participant received redirection to relate the text segment to the story’s problem solution, or important parts. As noted earlier, any verbal report that was generated after a redirection was not used in any Study 2 analysis. Nevertheless, there is concern that redirection received after generating an “other” coded verbal report may have influenced the participant’s subsequent verbal reports.
Implications for Practice and Future Studies

This study provides implications for future research studies and school-based practitioners. Results of this study’s findings show that thinking aloud supports readers’ ability to assign importance to text segments during offline processing and also shows that thinking aloud does not interfere with online processing by disjointing the text. These findings add to the existing body of research for think aloud protocols, and further demonstrate that thinking aloud is a valuable tool that may be used to study how readers process texts online. In addition, findings from this study suggest that teachers should continue to provide instruction on identifying story elements as texts increase in difficulty and complexity. The Common Core English Language Arts Standards (2010) lists identification of story elements as a skill set students are expected to master by the end of second grade, through literacy standards: (1) CCSS.ELA-Literacy.RL.K.3: “With prompting and support, identify characters, settings, and major events in a story”, (2) CCSS.ELA-Literacy.RL.1.3: “Describe characters, settings, and major events in a story, using key details”, and (3) CCSS.ELA-Literacy.RL.2.3 “Describe how characters in a story respond to major events and challenges”. Beyond 2nd grade instruction, the Common Core Standards do not include continued emphasis on identifying story elements as a performance measure. However, the findings of Study 2 suggest that on-going emphasis and instruction on identifying story elements may be necessary beyond 2nd grade, as text structure increases in complexity. In addition, there is a need to include instruction on reconciling readers’ world view and belief systems with text. This may be especially relevant when reading texts set in unfamiliar cultures or time-periods.

Future studies may continue investigating how readers assign importance and identify story elements during online and offline processing. This can be achieved through qualitative
analyses of participants’ online verbal reports and offline responses. In addition, future studies may choose to improve the measures used in this study, such as scoring verbal reports for accuracy and creating a stronger offline measure for story elements identification. But importantly, future studies may design an instructional intervention to better support readers in assigning importance and identifying story elements in narrative texts.
Chapter 12

General Discussion

Studies 1 and 2 examined various aspects of readers’ processing of narrative texts. The purpose of Study 1 was to design an intervention uniquely fitted to summarize narrative texts, and to examine the impacts of text and reader characteristics on the summarizing process. The purpose of Study 2 was to extend findings of Study 1 by further examining readers’ online and offline processing of narrative texts, specifically, how readers assign importance and identify story elements. Results of these studies were aligned, and showed that readers require continued supports and instruction on aspects of narrative comprehension and processing.

Importantly, both studies showed that there was a significant difference in outcomes based on the text’s level of difficulty. In both studies, participants were better able to identify the story elements in lower level texts as compared to upper level texts. These findings suggest a critique of earlier studies that examined narrative processing using low-level and simplistic texts (see Literature Review section for Study 1). Future studies may choose to re-examine findings of earlier research by replicating the studies’ designs using texts matched to the participants’ reading levels.

In addition, outcomes of both studies imply that readers require continued school-based instruction on processing narrative texts. As discussed in the Discussion section for Study 2, higher accuracy rates participants showed in correctly identifying story elements, as observed in Studies 1 and 2, may be attributed to the clearer and simpler story structure found in lower level texts as compared to upper level texts. These findings suggest that as texts increase in complexity, school-based instruction should be provided to support readers in correctly
processing the texts. In particular, instruction should include strategies for: (1) reconciling personal world views and/or background knowledge when in conflict with the text, (2) identifying the story solution, when the solution includes multiple events, and (3) discriminating the primary story problem from minor problems, even when the text offers a disproportionate amount of explicitness for minor problems as compared to the primary problem.

Furthermore, Study 1 showed the importance of instruction on improving narrative outcomes. In Study 1, participants were administered pretest measures of reader characteristics for reading vocabulary, reading comprehension, total reading, and cognitive verbal abilities. Results showed that total reading scores predicted outcome on lower level text summaries, while cognitive verbal abilities predicted outcome on upper level text summaries. However, these findings were only significant in the analysis of pretest summaries. After the study intervention had been administered, these reader characteristics were no longer significant. As mentioned in the Discussion section for Study 1, these results show the importance of instruction above and beyond reader characteristics. Similarly, Study 2 found that scores on the Knowledge of Narrative Story Structure Task (KNSST), a pretest measure closely aligned with classroom instruction, explained variance that had been attributed to text characteristics, and thus showing that, when participants had better knowledge of narrative structure (as provided via classroom instruction) they tended to demonstrate better outcomes independent of the text’s level of difficulty and reading conditions. Taken together, both studies provide strong evidence for the need to continue providing readers with instruction on identifying elements in narrative texts throughout the elementary grades.

In addition, both studies point to the difficulty readers experience in assigning importance to narrative text ideas (or segments). As a component of Study 1’s summarizing intervention,
participants were told to include all important information in a summary (i.e., story elements) and omit all not important information (i.e., extraneous information or details). However, analyses of posttest summaries showed that participants continued to include a greater amount of extraneous information in lower level text summaries as compared to upper level text summaries. It was suggested that, possibly, this pattern of results may be attributed to the lower cognitive load participants may experience when summarizing lower level texts (see the Discussion section for Study 1). Along these lines, they may have approached the summary task as a total recall task, and therefore, did not effectively discriminate between important and not important information. Similarly, Study 2 found that participants struggled to correctly identify the important information in a text. Results of Study 2 showed that the text’s level of difficulty had no main effect on assigning importance, and that the participants’ mean score for assigning importance did not near the maximum possible score (see the Discussion section for Study 2). Taken together, these findings suggest that at all levels of text difficulty, readers struggled to correctly assign importance and to correctly discriminate between important and not important ideas in a narrative text. These findings suggest that there is a need to conduct experimental research to design an effective intervention for assigning importance when reading narrative texts, and that outcomes of these studies be used to inform classroom instruction.

Overall, the results of Studies 1 and 2 imply that there is a need to focus on improving instruction on narrative comprehension and text processing to support readers in identifying story elements, assigning importance, and using these skills to effectively summarize narratives.
Appendix A: Consents and Assents for Study 1 & 2
CITY UNIVERSITY OF NEW YORK
Graduate Center
Department of Educational Psychology

PARENTAL/LEGAL GUARDIAN PERMISSION FORM
AND AUTHORIZATION FOR
CHILD’S PARTICIPATION IN RESEARCH

Project Title: Short and to the Point: Summarizing Narratives

Principal Investigator: Esther Hellmann
Doctoral Student
The Graduate Center
365 Fifth Avenue, Room 3203
New York, New York 10016
646-284-7706
ehellmann@gc.cuny.edu

Faculty Advisor: Dr. Linnea Ehri
Distinguished Professor
The Graduate Center
365 Fifth Avenue, Room 3204.01
New York, New York 10016
212-817-8294
lehri@gc.cuny.edu

Introduction/Purpose: Your child is invited to participate in a research study. The study is conducted under the direction of Esther Hellmann, a doctoral student at The Graduate Center of the City University of New York. The purpose of this research study is to take a closer look at a strategy designed to improve children’s summary writing skills. The results of this study may help teachers provide their student with instruction on summarizing and improve the quality of students’ summaries.

Procedures: Approximately 32 individuals are expected to participate in this study. In this study each participant will be asked to read passages and then complete a follow-up writing activity. In addition, each participant’s vocabulary, reading, and reading comprehension skills will be assessed. In a small group setting, Ms. Hellmann will be meeting with the participants for seven sessions, each approximately 30 minutes in length. The total participation time is approximately 3.5 hours spread across seven days. Meetings will be held at the participants’ afterschool location, during regular program hours.

Possible Discomforts and Risks: There are no foreseeable risks that may result from participating in this study. However, if you child feels stressed or uncomfortable in any way please encourage your child to speak with Esther Hellmann or contact her directly at the number listed above. Every effort will be made to alleviate any discomfort your child may experience.

Benefits: There are no guaranteed benefits to participating in this study, however, participation may improve your child’s literacy skills.
Voluntary Participation: Your child’s participation in this study is voluntary, and you may decide to withdraw your child from participation without prejudice, penalty, or loss of benefits to which s/he is otherwise entitled. If you decide to remove your child from the study, please contact the principal investigator, Esther Hellmann, to inform her of your decision.

Financial Considerations: Participation in this study will involve no cost. For your child’s participation in this study your child will receive a $20.00 gift card to Amazon.com.

Confidentiality: The information obtained from your child will be collected via written documentation, such as assessments and reading responses. The collected works will be accessible to Esther Hellmann and Member of the CUNY IRB only. The researcher will protect your child’s confidentiality by securing storing the data in a locked filing cabinet, in an off-site location which only Esther Hellmann has access to. The collected information will be stored and analyzed in its original written format; no part of your child records will be reproduced or distributed.

Contact Questions/Persons: If you or your child have any questions about the research now or in the future, you should contact the Principal Investigator, Esther Hellmann at 646-284-7706 or ehellmann@gc.cuny.edu. If you or your child have any questions concerning your child’s rights as a participant in this study, you may contact Ms. Kay Powell at 212-817-7525 or kpowell@gc.cuny.edu.

Statement of Consent:

“I have read the above description of this research and I understand it. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that any future questions that I may have will also be answered by the principal investigator of the research study. I voluntary agree to allow my child to participate in this study.

By signing this form I have not waived any of my legal rights to which my child would otherwise be entitled. I will be given a copy of this statement.”

Printed Name of Child

__________________________

Printed Name of Subject’s Legal Guardian

__________________________

Signature of Subject’s Legal Guardian

__________________________

Date Signed

__________________________

Signature of Person Explaining Form

__________________________

Date Signed

__________________________

Signature of Investigator

__________________________

Date Signed
Title of Research Study: Identifying the Story Problem and Solution in a Think Aloud Protocol

Principal Investigator: Esther Hellmann, MPhil
Doctoral Candidate

Faculty Advisor: Dr. Linnea Ehri, PhD
Distinguished Professor
The Graduate Center
Department of Educational Psychology

Your child is selected as a possible participant in this research study that is designed to examine the reading processes of forty-eight fourth grade students.

Purpose:
The purpose of this research study is to better understand how children identify a story’s problem and solution when reading a text. Through this study, we will try to answer questions such as: how do readers identify the story's problem and solution? and how do readers think about stories that contain more than one problem and solution?

Procedures:
If you agree to allow your child to participate in this research study, we will ask your child to do the following:

- Complete tasks that provide a sense of your child’s reading ability, via tasks commonly used in your child’s classroom. For instance, you child will be asked to read passages and answer multiple choice questions, read word lists, complete a vocabulary task, and brain storm about his or her pre-existing knowledge related to the text. These tasks are not expected to exceed 45 minutes in total.
- Your child may be asked to read passages silently or out loud and pause to report his or her thoughts. If your child is selected to read passages out loud, your child’s reading of passages and thoughts will be audio recorded. Reading is not expected to exceed 10 minutes per passage.
- Your child will be asked to complete reading comprehension tasks. After reading a passage, you child will be asked to write a summary, identify the story’s problem and solution in writing and rate story sentences for their importance to the story. These tasks are not expected to exceed 15 minutes per passage.
- Across all tasks in the study, your child is expected to participate for two hours and fifteen minutes broken into three forty-five minute sessions. Each of the three sessions will occur on a different day. In addition, within each session your child will be allowed to take breaks as often as needed and if your child wishes to discontinue working with me, the request will be honored.
**Time Commitment:**
Your child’s participation in this research study is expected to last for a total of two hours and fifteen minutes, which will be split into three 45-minute sessions conducted on separate days.

**Potential Risks or Discomforts:**
All of the tasks performed in this study are tasks that are part of typical classroom activities. The tasks are designed to be at the fourth grade level, and are expected to be highly familiar to your child. There are no foreseeable risks for participating in this study beyond the time commitment of two hours and fifteen minutes (divided into three sessions). However, your child may withdraw from the study at any point if you or your child expresses discomfort concerning participation or unease concerning the time commitment.

**Potential Benefits:**
In this study, I will work with your child individually on matters of reading comprehension, specifically the comprehension of narrative texts. Your child may benefit from working with an educator individually on literacy related skills. In this one-on-one setting, your child will receive individualized attention on his or her literacy ability. In addition, in this study your child may be asked to read passages out loud and think about them. Reading passages out loud and verbalizing thoughts about the passages may improve your child’s awareness of his or her own learning or thinking processes.

**Payment for Participation:**
Your child will not receive any payment for participating in this research study.

**Confidentiality:**
I will make my best effort to maintain confidentiality of any information that is collected during this research study, and that can identify your child. I will disclose this information only with your permission or as required by law.

I will take multiple steps to protect your child’s privacy. Your child’s performance will remain confidential and not be shared with any school personnel. In order to further protect your child’s privacy, your child will remain anonymous for the duration of the research process. Your child will be assigned an alpha-numeric identification code, so that his or her name will not be written on any work samples. This alpha-numeric coding system will be use on all of your child’s written work samples and audio recording, so that your child’s name or otherwise identifiable data will not appear on any written or audio data. Importantly, any publication that may result from this study will not include any personal information and will use aggregate data.

The research team, authorized CUNY staff and government agencies that oversee this type of research may have access to research data and records in order to monitor the research. Research records provided to authorized, non-CUNY individuals will not contain identifiable information about your child. Publications and/or presentations that result from this study will not identify your child by name.
Participants’ Rights:

- Your child’s participation in this research study is entirely voluntary. If you decide not to allow your child to participate, there will be no penalty to you, and you or your child will not lose any benefits to which you are otherwise entitled. Withdrawal from this study will not impact your child’s academic standing or benefits they receive in any way.

- You can decide to withdraw your permission and stop your child from participating in the research at any time, without any penalty.

Questions, Comments or Concerns:
If you have any questions, comments or concerns about the research, you may contact:
   Esther Hellmann, Principal Investigator at ehellmann@gc.cuny.edu.

If you have questions about your child’s rights as a research participant, or you have comments or concerns that you would like to discuss with someone other than the researchers, please call the CUNY Research Compliance Administrator at 646-664-8918. Alternately, you can write to:

CUNY Office of the Vice Chancellor for Research
Attn: Research Compliance Administrator
205 East 42nd Street
New York, NY 10017

Signature of Parent(s) or Legal Guardian:
If you give permission for your child to participate in this research study, please sign and date below. You will be given a copy of this form to keep.

_______________________               _________________________
Printed Name of Parent or Legal Guardian               Printed Name of Child Participant

______________________________               _______________________
Signature of Parent or Legal Guardian               Date

Signature of Individual Obtaining Parental Permission

______________________________
Printed Name of Individual Obtaining Parental Permission
PARENTAL PERMISSION FOR CHILD (AGE 7-12) TO PARTICIPATE IN A RESEARCH STUDY

Title of Research Study: Identifying the Story Problem and Solution in a Think Aloud Protocol

Principal Investigator: Esther Hellmann, MPhil
Doctoral Candidate

Faculty Advisor: Dr. Linnea Ehri, PhD
Distinguished Professor
The Graduate Center
Department of Educational Psychology

Your child is selected as a possible participant in this research study that is designed to examine the reading processes of forty-eight fourth grade students.

Purpose:
The purpose of this research study is to better understand how children identify a story’s problem and solution when reading a text. Through this study, we will try to answer questions such as: how do readers identify the story's problem and solution? and how do readers think about stories that contain more than one problem and solution?

Procedures:
If you agree to allow your child to participate in this research study, we will ask your child to do the following:

- Complete tasks that provide a sense of your child’s reading ability, via tasks commonly used in your child’s classroom. For instance, you child will be asked to read passages and answer multiple choice questions, read word lists, complete a vocabulary task, and brainstorm about his or her pre-existing knowledge related to the text. These tasks are not expected to exceed 45 minutes in total.

- Your child may be asked to read passages silently or out loud and pause to report his or her thoughts. If your child is selected to read passages out loud, your child’s reading of passages and thoughts will be audio recorded. Reading is not expected to exceed 10 minutes per passage.

- Your child will be asked to complete reading comprehension tasks. After reading a passage, your child will be asked to write a summary, identify the story’s problem and solution in writing and rate story sentences for their importance to the story. These tasks are not expected to exceed 15 minutes per passage.

- Across all tasks in the study, your child is expected to participate for two hours and fifteen minutes broken into three forty-five minute sessions. Each of the three sessions will occur on a different day. In addition, within each session your child will be allowed to take breaks as often as needed and if your child wishes to discontinue working with me, the request will be honored.
**Time Commitment:**
Your child’s participation in this research study is expected to last for a total of two hours and fifteen minutes, which will be split into three 45-minute sessions conducted on separate days.

**Potential Risks or Discomforts:**
All of the tasks preformed in this study are tasks that are part of typical classroom activities. The tasks are designed to be at the fourth grade level, and are expected to be highly familiar to your child. There are no foreseeable risks for participating in this study beyond the time commitment of two hours and fifteen minutes (divided into three sessions). However, your child may withdraw from the study at any point if you or your child expresses discomfort concerning participation or unease concerning the time commitment.

**Potential Benefits:**
In this study, I will work with your child individually on matters of reading comprehension, specifically the comprehension of narrative texts. Your child may benefit from working with an educator individually on literacy related skills. In this one-on-one setting, your child will receive individualized attention on his or her literacy ability. In addition, in this study your child may be asked to read passages out loud and think about them. Reading passages out loud and verbalizing thoughts about the passages may improve your child’s awareness of his or her own learning or thinking processes.

**Payment for Participation:**
Your child will not receive any payment for participating in this research study.

**Confidentiality:**
I will make my best effort to maintain confidentiality of any information that is collected during this research study, and that can identify your child. I will disclose this information only with your permission or as required by law.

I will take multiple steps to protect your child’s privacy. Your child’s performance will remain confidential and not be shared with any school personnel. In order to further protect your child’s privacy, your child will remain anonymous for the duration of the research process. Your child will be assigned an alpha-numeric identification code, so that his or her name will not be written on any work samples. This alpha-numeric coding system will be use on all of your child’s written work samples and audio recording, so that your child’s name or otherwise identifiable data will not appear on any written or audio data. Importantly, any publication that may result from this study will not include any personal information and will use aggregate data.

The research team, authorized CUNY staff and government agencies that oversee this type of research may have access to research data and records in order to monitor the research. Research records provided to authorized, non-CUNY individuals will not contain identifiable information about your child. Publications and/or presentations that result from this study will not identify your child by name.

**Participants’ Rights:**
- Your child’s participation in this research study is entirely voluntary. If you decide not to allow your child to participate, there will be no penalty to you, and you or your child will not lose any benefits to which
you are otherwise entitled. Withdrawal from this study will not impact your child’s academic standing or benefits they receive in any way.

- You can decide to withdraw your permission and stop your child from participating in the research at any time, without any penalty.

**Questions, Comments or Concerns:**
If you have any questions, comments or concerns about the research, you may contact:
Esther Hellmann, Principal Investigator at ehellmann@gc.cuny.edu.

If you have questions about your child’s rights as a research participant, or you have comments or concerns that you would like to discuss with someone other than the researchers, please call the CUNY Research Compliance Administrator at 646-664-8918. Alternately, you can write to:

CUNY Office of the Vice Chancellor for Research
Attn: Research Compliance Administrator
205 East 42nd Street
New York, NY 10017

**Signature of Parent(s) or Legal Guardian:**
If you give permission for your child to participate in this research study, please sign and date below. You will be given a copy of this form to keep.

____________________  ______________________
Printed Name of Parent or Legal Guardian  Printed Name of Child Participant

____________________
Signature of Parent or Legal Guardian

Date

**Signature of Individual Obtaining Parental Permission**

____________________
Printed Name of Individual Obtaining Parental Permission

____________________
Signature of Individual Obtaining Parental Permission  Date
CITY UNIVERSITY OF NEW YORK  
Graduate Center  
Department of Educational Psychology  

ASSENT TO PARTICPATE IN A RESEARCH PROJECT  

Project Title:  Short and to the Point: Summarizing Narratives  
Principal Investigator:  Esther Hellmann  
Faculty Advisor:  Linnea Ehri  

Child’s Name: ____________________

You are invited to participate in Esther Hellmann’s research study. The reason for this study is me to better understand how good readers think about reading and how they respond to their reading.

What will happen to me in this study?  
If you agree to participate in this study, I will be asking you to read some stories and then write about them. It will feel very similar to the reading responses your teacher asks you to do in class. Also, you will be completing some vocabulary, reading comprehension and word-reading tasks. These tasks will give me a better idea of how you read. We will be meeting for 30 minutes at a time, and we will meet for approximately 7 times.

Will I get hurt?  
It is not likely that you will experience any hurt from joining this study. And to be sure that you do not feel stressed, all of your work in this study will be kept private. This means that I will not share any of the tasks or your work with any or your teachers or the afterschool program director. Also, it will not affect your grades in school. If you are feeling uncomfortable at any point during the study, please let me know and I will try to make you more comfortable.

Will anything good happen to me?  
There are some benefits to joining this study. For your participation in this study you will receive a $20.00 gift card to Amazon.com so that you can get yourself a gift.

What if I do not want to do this?  
You don’t have to be in this study. No one will be mad at you if you don’t want to do this. If you don’t want to be in this study, just tell us. If you want to be in this study, just tell us. Remember, it is ok to say yes now and change your mind later. Nothing will happen to you if you decide to stop.

Will anyone know I was involved?  
Your name and the fact that you are in this study will be kept confidential.

Who can I talk to about this study?  
You can ask questions any time. You can ask now. You can ask later. You can talk to me or someone else, like your parents. They have already agreed for you to participate and they have more information on this study.
**Do you want to participate in this study?** ☐ Yes ☐ No

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**PERSON CONDUCTING ASSENT**

I have explained the study to ______________________________ *(name of child)* in language he/she understands, and he/she has agreed to be in the study.

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CHILD ASSENT (AGES 7-12) TO PARTICIPATE IN A RESEARCH STUDY

Title of Research Study: Identifying the Story Problem and Solution in a Think Aloud Protocol

Principal Investigator: Esther Hellmann, MPhil
               Doctoral Candidate

1. My name is Esti Hellmann.

2. We are asking you to take part in a research study because we are trying to learn more about how fourth graders think while they are reading. We would like to know what are readers thinking in their minds as they reading a story.

3. If you agree to be in this study we will be doing a number of tasks together. All of these tasks will feel like things that you normally do with your teacher in your classroom. In some cases, you will read passages silently and answer multiple choice questions. In some cases you will read words or passages out loud and tell me what you are thinking. And in other cases you will write a response to passages you read that will feel very much like a “reader’s response” you already do in your classroom. The work you do here will not be graded, will not be shared with your teacher, and will not affect your report card grade.

4. Because these tasks very much feel like things you do in your classroom, I don’t expect that there will be any risk to your participation in the study. However, if at any point you would like to take a break or stop entirely, please let me know and I will honor your request.

5. There are no direct benefits for you to participate in this study. However, you may feel that it is fun to work with me in private sessions.

6. You can talk this over with your parents before you decide whether or not to participate. We will also ask your parents to give their permission for you to take part in this study. But even if your parents say “yes” you can still decide not to do this.

7. If you don’t want to be in this study, you don’t have to participate. Remember, being in this study is up to you and no one will be upset if you don’t want to participate or even if you
change your mind later and want to stop. If you chose to leave this study, it will not affect your grades in any way.

If you agree to participate in this study, we will meet three times. Each time we will meet for 45 minutes. Each time we meet, I will again ask you if you want to participate and ask you sign this form again. So you have the choice to leave this study at any point and can make the decision at the beginning of each meeting whether you would like to continue.

8. You can ask any questions that you have about the study. If you think of a question later, you can email me at ehellmann@gc.cuny.edu or ask me next time.

9. Signing your name at the bottom means that you agree to be in this study. You and your parents will be given a copy of this form after you have signed it.

If you want to participate in this research, you can write your name or draw an X on the line below:

_____________________________________________________

_____________________________________________________

_____________________________________________________
Henry and Mudge

and

Annie’s Perfect Pet

*Cynthia Rylant*

Henry and Henry's big dog Mudge always visited Cousin Annie next door. Annie used to live far away. Henry didn't see much of her. But now she lived next door and it was fun!

Henry and Annie rode bikes, played Frisbee, and traded comics. And, of course, they petted Mudge all the time.

Annie loved Mudge. She loved his soft eyes and his warm nose and his big paws. Annie wished she had a dog. But her father was at work every day. No one would be home to take care of a dog.

Henry felt sorry for Annie.

He remembered how much fun it was to get a new pet. Mudge had been the cutest puppy. He was all round and rolly. And very small. Henry could pick him up and kiss him.

Henry sure couldn't do that now!
And Mudge was so short that he could walk under the collie down the street.

Not anymore!

Henry wanted Annie to have her own pet. He went to his parents for help.


"A bird?” said his mother. Henry shook his head. "It might fly into Annie's teacups," he said.

"Okay," said Henry's father, "Annie needs a pet that isn't scary, isn't wet, isn't hard, doesn't fly, and tap-dances."

"Tap-dances?” Henry giggled.

"I just threw that one in," said Henry's dad.

Henry's mother was thinking. "I know!” she said. "A bunny! It's soft and dry and doesn't fly."
"And it doesn't have to be walked like a dog," said Henry.

Henry and Henry's parents and Henry's big dog Mudge took Annie to the pet store. When they went inside, birds were singing, puppies were barking, kittens were meowing, and mice were squeaking.

But the bunnies in the corner were being quiet. Quiet and careful. Just like Annie.

"Perfect," said Henry's mother.

Annie picked up a white baby bunny. She had soft eyes, just like Mudge. She had a warm nose, just like Mudge. And she had something Mudge didn't: a little cottontail.

"She's so cute!" Annie said with a smile.

Mudge put his warm nose up to the bunny's warm nose. The bunny sniffed, sniffed, sniffed. She seemed to like Mudge. And when Mudge gave her a big drooly kiss, she didn't even mind.

Henry looked at his parents.

"We've found Annie's perfect pet," he said.

And they took the bunny home.
Henry’s Uncle Ed made a beautiful hutch for Annie’s bunny. It was painted with flowers and trees. It had a little china bowl for the bunny to eat from. And soft bits of cotton for the bunny to sleep on. It fit Annie's room perfectly.

Annie named her bunny Snowball.

She played with her, and sang to her, and took her to Henry's house for visits. The bunny liked Henry's house. She liked riding on Mudge's back. Mudge carried the bunny all around.

And when he got tired, they stopped for crackers.

Annie was so happy to have a pet. A pet just right for her.

"I love my bunny," Annie told Henry.

"I know," Henry said. "She's soft and dry and doesn't fly."

Suddenly the bunny went flying through the air and landed on Mudge's back.

Annie laughed. "Maybe she does!" she said.
Annie and her bunny, Snowball, liked to grow flowers in Annie's backyard. Annie had petunias and lilies and roses and four o'clocks. (Four o'clocks were her favorites.) When Annie's cousin Henry (who lived next door) would come over with his big dog, Mudge, sometimes they all would sit in Annie's garden.

"Be careful, Mudge," Annie would say. "Don't squash the four o'clocks."

Mudge was careful. He didn't squash the four o'clocks. But he did drool on a few lilies. Snowball just liked to hide in the roses.
“I see you, Snowball!” Henry would call. Snowball would just wiggle her nose.

One day when Annie and Henry were in the garden, they saw the most wonderful sight: a hummingbird! A hummingbird was drinking from a petunia!

“Oh!” said Annie.

“Wow!” said Henry. "I've never seen a hummingbird!"

Mudge and Snowball didn't really care. They were napping. But Annie and Henry were so excited. And they wondered how they could get more hummingbirds to come to Annie's garden. They started thinking.

"More petunias?" asked Henry.

"I've spent my whole allowance already," said Annie. "I can't buy any more petunias."

"Hmmm," said Henry. "Well, we will just have to advertise."
"Advertise?" asked Annie.

"Sure," said Henry. "We have to let more hummingbirds know that you're here. And that you have petunias."

"How do we let them know?" asked Annie, picking up Snowball and rubbing her ears.

"Let's ask my dad," said Henry. "He says he knows everything".

Annie smiled.

They found Henry's dad in his garage. He was making a bookcase. Or trying to. It was a little crooked.

"It's a little crooked, Dad," Henry said.

"Hmmm," said Henry's dad. He stepped back.

"Well, I'll just have to buy only books that lean to the right," he said. Annie laughed. Henry's dad was so silly.
"Dad, we need to attract hummingbirds," said Henry. "Do you know how?"

"Hmmm," said Henry's dad. "How about petunias?"

"I have petunias," said Annie "but only one hummingbird."

"Hmmm," said Henry's dad again. He thought for a minute while Snowball crawled on his head and Mudge sat on his foot.

"Maybe colors," he finally said. "Maybe more colors in the garden."

"What color are your petunias?" he asked Annie.

"Pink," said Annie.

"Then pink it is," said Henry's dad. "Put more pink in the garden and see what happens."
He looked again at his bookcase. "Maybe I'll buy books that lean to the right and we'll move to a house that leans to the left," he said. Henry and Annie just smiled.

"Pink stuff," said Henry as they walked back to Annie's house. "We need pink stuff."

He looked at Annie. "You should have plenty of pink stuff," he said. "You're nothing but pink!"

"I know," said Annie. "Let's check my room!"

They went to Annie's room. Pink everywhere!

Henry picked up a small chair. "Pink!" he said.

He picked up a large ball. "Pink again!"
Henry and Annie loaded up ten very pink things and took them to Annie's garden. They set them in strange high places for hummingbirds to see.

"I sure hope this works," said Annie.

"Me too," said Henry. "Because if it doesn't, I'm going to feel pretty silly."

Annie looked at Henry holding a pink umbrella.

"You look pretty silly now," she said. And she giggled and giggled.

It took four days. Annie and Snowball sat in the garden every morning, hoping for hummingbirds. Nothing on the first day. Nothing on the second day. One on the third day. And eight on the fourth day! Eight hummingbirds!

Annie ran over to get Henry.
"Come and see!" she said.

Henry and Mudge hurried to Annie's garden. And there they saw eight beautiful, tiny hummingbirds drinking from Annie's petunias.

“They like pink,” said Annie.

A hummingbird suddenly darted over. It hovered above Mudge's head.

"Or maybe they just like Mudge" said Annie.

"Well, who wouldn't?" asked Henry.

Then Annie and Snowball and Henry and Mudge spent the whole morning watching their wonderful birds.
THE FIGHT BETWEEN THE ANIMALS AND INSECTS

Lipan Apache

One fine day Mountain Lion went out for a stroll. He was hungry, but not too hungry. He was happy to pad along, enjoying the warm sunshine and the smell of summer grass in the clearing ahead. He did not see Locust sleeping in the shade under a young redbud tree, and he stepped on him.

"Ai-eeow! Hai, you, Fatfoot! Yes, you, Whiskerface! Who do you think you are, Chief of the World, to come stepping on me?"

"Poh!" scoffed Mountain Lion. "Compared with you, I am Chief of the World. Out of my way and let me pass!"

"Why should I? Fatfoot!"

Mountain Lion grinned. "Because my foot is fat, Fleabrain."

"Hairy puffball!"

"Bigmouth bug!"
The name-calling went on until both grew so angry that shouting was not enough.

"Stop right there," Locust bellowed. "I am too small to fight you one-to-one, but if you will choose a team from your people, I will choose one from mine. We can hold the match on the flat fields down below."

"Agreed," Mountain Lion growled, and he went off to gather all of the Animal People to fight on his side. Everyone agreed to come, from Mouse and Gopher to Buffalo and Bear. All of the insects flocked to join Locust, from the Ant People and all of the other Biters, to the Bumblebee People, the Wasps, and all of the other Stingers.

Coyote came down to the flats with Mountain Lion at the head of the animal fighters. All they found was the large field and the thick bushes beyond. Locust and his side were nowhere in sight. Coyote said to Mountain Lion, "I think it would be a good idea if I scout around and see where they are, and how many."

So he did. He crept through the bushes that bordered the field all around, and when he came near Locust's side, he saw that the bushes there were covered with insects. Crawlers and fliers of every kind were so crowded together that the branches sagged with their weight.
"Where are they, and how many?" Mountain Lion asked when Coyote returned.

"In the bushes, and too many to count," said Coyote.

"So are we," was Mountain Lion's proud reply.

He looked around at the great army of animals. Every family and clan and herd was there, and ready to fight.

"Let's go!" muttered Bear, who thought of himself as the bravest.

"Let's go!" the other animals echoed.

Bear took the lead. The great horde followed him. They moved forward quietly until they reached the middle of the field. Then they charged. The insects charged, too. At once, the animals began to bark and squeak and roar and howl. They rolled on the ground. From Mouse and Gopher to Bear and Buffalo, they whimpered and squealed. The insects crawled into their fur, and bit and stung them again and again. The animals rolled, and jumped up and down, and rubbed up against the bushes, but could not be rid of their enemies. They crawled over one another to reach their own side of the field. Many nearly died.
Not tricky Coyote. He waited while the others moved forward. When the fight started and he heard the first howl, he turned and ran.
Fox and Possum

Kitkehahki, South Band Pawnee

Possum had lived for a long while in his hollow tree. He knew every place round about where there were tasty roots, where pecan trees grew, and persimmon trees, too. Like the other animals that wear fur coats, every year when cold weather came and the leaves began to turn yellow, he went out to gather fruit and nuts. When his pouch was full, he traveled home again to store his harvest for the winter. Possum was better at gathering than the other animal people, for he took care not to be followed to his gathering places. He waited until darkness before starting out for the persimmon trees. He took great care to watch behind him on the way. When he came there, he ate the sweet, soft fruit until his belly was full, and then filled the pouch at his belt. Nothing was so good as a ripe persimmon!

One night as he waddled home, Possum met Fox. Then Fox stepped close.
"I am glad to see you, friend Possum," he said with a smile. He reached out to stroke Possum's back, and patted his rump. "Oh, nice and fat. You would taste so good!"

Fox so close that they were almost nose to nose.

Without a word, Possum raised a paw to Fox's nose for Fox to smell.

"Aho! You have been eating persimmons!" Fox exclaimed. There was nothing Fox loved better than persimmons. "Ail" he thought. "What shall I do? If I have Possum for my dinner, I will never know where the persimmon trees are. Perhaps I should eat him for dinner some other time." At last he asked, "When did you pick them?"


Fox grinned happily and rubbed his paws. "Just now? Hoh! Take me there!"

"Yes. Oh, yes, yes, of course," Possum said quickly. "Yes, yes, right away!"

So they went, hurrying together, side by side. A cold wind pushed at them, but Possum was
shivering so much from fear that he did not notice. When they reached the persimmon trees, Fox stood under the largest and peered upward into the darkness.

"I can smell them," he said. "What are you waiting for? Climb up and pick!"

Possum scrambled up into the branches as fast as his short legs and sharp claws would take him, and perched in a fork of the tree. "At least I will be out of danger up here," he thought unhappily. "For a while." He reached out carefully for a persimmon, and dropped it into Fox's outstretched paws.

"Um-mummm!" Fox licked his lips. "Another, another!"

Possum dropped another.

"Faster, faster!" Fox cried. "You are too slow! Must I come up there to help you?" He frowned, thought for a moment, and then called out, "Come down and help me climb up."

"Yes, yes," Possum answered. "I am coming."

Fox was not a tree climber, but he could reach his front legs far enough around the trunk to raise himself a little. Possum helped by boosting from below. When at last Fox was sitting in the fork
of the tree, picking and eating persimmons, Possum crept away through the darkness. The wind had grown much sharper and colder, but as he trotted on home he did not notice. "I'm safe, I'm safe, I'm safe!" he thought. "And I still have my pouch full of persimmons!"

The next morning the ground was covered with snow and the air was bitterly cold. "I'll just have a look," he thought, and he made his way back to the persimmon trees.

Fox was hanging in the fork of the tree, frozen stiff. Possum sighed, and was sorry. "But if I had not helped him up the tree, that might be me."
Henry and Mudge
and
Annie’s Perfect Pet

Cynthia Rylant

Henry and Henry's big dog Mudge always visited Cousin Annie next door. Annie used to live far away. Henry didn't see much of her. But now she lived next door and it was fun!

Henry and Annie rode bikes, played Frisbee, and traded comics. And, of course, they petted Mudge all the time.

Annie loved Mudge. She loved his soft eyes and his warm nose and his big paws. Annie wished she had a dog. But her father was at work every day. No one would be home to take care of a dog.

Henry felt sorry for Annie.

He remembered how much fun it was to get a new pet. Mudge had been the cutest puppy. He was all round and roly. And very small. Henry could pick him up and kiss him.

Henry sure couldn't do that now!
And Mudge was so short that he could walk under the collie down the street.

Not anymore! ▲

Henry wanted Annie to have her own pet. He went to his parents for help. ▲


"A bird?" said his mother. Henry shook his head. "It might fly into Annie's teacups," he said.

"Okay," said Henry's father, "Annie needs a pet that isn't scary, isn't wet, isn't hard, doesn't fly, and tap-dances."

"Tap-dances?" Henry giggled.

"I just threw that one in," said Henry's dad. ▲

Henry's mother was thinking. "I know!" she said. "A bunny! It's soft and dry and doesn't fly."
"And it doesn't have to be walked like a dog," said Henry.

Henry and Henry's parents and Henry's big dog Mudge took Annie to the pet store. When they went inside, birds were singing, puppies were barking, kittens were meowing, and mice were squeaking.

But the bunnies in the corner were being quiet. Quiet and careful. Just like Annie.

"Perfect," said Henry's mother.

Annie picked up a white baby bunny. She had soft eyes, just like Mudge. She had a warm nose, just like Mudge. And she had something Mudge didn't: a little cottontail.

"She's so cute!" Annie said with a smile.

Mudge put his warm nose up to the bunny's warm nose. The bunny sniffed, sniffed, sniffed. She seemed to like Mudge. And when Mudge gave her a big drooly kiss, she didn't even mind.

Henry looked at his parents.

"We've found Annie's perfect pet," he said.

And they took the bunny home.
Henry’s Uncle Ed made a beautiful hutch for Annie’s bunny. It was painted with flowers and trees. It had a little china bowl for the bunny to eat from. And soft bits of cotton for the bunny to sleep on. It fit Annie’s room perfectly.

Annie named her bunny Snowball.

She played with her, and sang to her, and took her to Henry's house for visits. The bunny liked Henry's house. She liked riding on Mudge's back. Mudge carried the bunny all around.

And when he got tired, they stopped for crackers.

Annie was so happy to have a pet. A pet just right for her.

"I love my bunny," Annie told Henry.

"I know," Henry said. "She's soft and dry and doesn't fly."

Suddenly the bunny went flying through the air and landed on Mudge's back.

Annie laughed. "Maybe she does!" she said.
Annie and her bunny, Snowball, liked to grow flowers in Annie's backyard. Annie had petunias and lilies and roses and four o'clocks. (Four o'clocks were her favorites.) When Annie's cousin Henry (who lived next door) would come over with his big dog, Mudge, sometimes they all would sit in Annie's garden.

"Be careful, Mudge," Annie would say. "Don't squash the four o'clocks."

Mudge was careful. He didn't squash the four o'clocks. But he did drool on a few lilies. Snowball just liked to hide in the roses.
“I see you, Snowball!” Henry would call. Snowball would just wiggle her nose. ▲

One day when Annie and Henry were in the garden, they saw the most wonderful sight: a hummingbird! A hummingbird was drinking from a petunia!

"Oh!" said Annie.

"Wow!" said Henry. "I've never seen a hummingbird!"

Mudge and Snowball didn't really care. They were napping. But Annie and Henry were so excited. And they wondered how they could get more hummingbirds to come to Annie's garden. They started thinking. ▲

"More petunias?" asked Henry.

"I've spent my whole allowance already," said Annie. "I can't buy any more petunias."

"Hmm," said Henry. "Well, we will just have to advertise."
"Advertise?" asked Annie.

"Sure," said Henry. "We have to let more hummingbirds know that you're here. And that you have petunias."

"How do we let them know?" asked Annie, picking up Snowball and rubbing her ears.

"Let's ask my dad," said Henry. "He says he knows everything".

Annie smiled. ▲

They found Henry's dad in his garage. He was making a bookcase. Or trying to. It was a little crooked.

"It's a little crooked, Dad," Henry said.

"Hmmm," said Henry's dad. He stepped back.

"Well, I'll just have to buy only books that lean to the right," he said. Annie laughed. Henry's dad was so silly. ▲
"Dad, we need to attract hummingbirds," said Henry. "Do you know how?"

"Hmmm," said Henry's dad. "How about petunias?"

"I have petunias," said Annie. "but only one hummingbird."

"Hmmm," said Henry's dad again. He thought for a minute while Snowball crawled on his head and Mudge sat on his foot.

"Maybe colors," he finally said. "Maybe more colors in the garden."

"What color are your petunias?" he asked Annie.

"Pink," said Annie.

"Then pink it is," said Henry's dad. "Put more pink in the garden and see what happens."
He looked again at his bookcase. "Maybe I'll buy books that lean to the right and we'll move to a house that leans to the left," he said. Henry and Annie just smiled.

"Pink stuff," said Henry as they walked back to Annie's house. "We need pink stuff."

He looked at Annie. "You should have plenty of pink stuff," he said. "You're nothing but pink!"

"I know," said Annie. "Let's check my room!"

They went to Annie's room. Pink everywhere!

Henry picked up a small chair. "Pink!" he said.

He picked up a large ball. "Pink again!"
Henry and Annie loaded up ten very pink things and took them to Annie's garden. They set them in strange high places for hummingbirds to see.

"I sure hope this works," said Annie.

"Me too," said Henry. "Because if it doesn't, I'm going to feel pretty silly."

Annie looked at Henry holding a pink umbrella.

"You look pretty silly now," she said. And she giggled and giggled.

It took four days. Annie and Snowball sat in the garden every morning, hoping for hummingbirds. Nothing on the first day. Nothing on the second day. One on the third day. And eight on the fourth day! Eight hummingbirds!

Annie ran over to get Henry.
"Come and see!" she said.

Henry and Mudge hurried to Annie's garden. And there they saw eight beautiful, tiny hummingbirds drinking from Annie's petunias.

“They like pink,” said Annie.

A hummingbird suddenly darted over. It hovered above Mudge's head.

"Or maybe they just like Mudge" said Annie.

"Well, who wouldn't?" asked Henry.

Then Annie and Snowball and Henry and Mudge spent the whole morning watching their wonderful birds.
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"Agreed," Mountain Lion growled, and he went off to gather all of the Animals to fight on his side. Everyone agreed to come, from Mouse and Gopher to Buffalo and Bear. All of the insects flocked to join Locust, from the Ants and all of the other Biters, to the Bumblebees, the Wasps, and all of the other Stingers. ▲

Coyote came down to the flats with Mountain Lion at the head of the animal fighters. All they found was the large field and the thick bushes beyond. Locust and his side were nowhere in sight. Coyote said to Mountain Lion, "I think it would be a good idea if I scout around and see where they are, and how many." ▲

So he did. He crept through the brush that bordered the field all around, and when he came near Locust's side, he saw that the bushes there were covered with insects. Crawlers and fliers of every kind were so crowded together that the branches sagged with their weight. ▲
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"So are we," was Mountain Lion's proud reply.

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Bear took the lead. The great horde followed him. They moved forward quietly until they reached the middle of the field. Then they charged. ▲ The insects charged, too. At once, the animals began to bark and squeak and roar and howl. They rolled on the ground. From Mouse and Gopher to Bear and Buffalo, they whimpered and squealed. The insects crawled into their fur, and bit and stung them again and again. ▲ The animals rolled, and jumped up and down, and rubbed up against the bushes, but could not be rid of their enemies. They crawled over one another to reach their own side of the field. Many nearly died. ▲
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Fox and Possum

Kitkehahki, South Band Pawnee

Possum had lived for a long while in his hollow tree. He knew every place round about where there were tasty roots, where pecan trees grew, and persimmon trees, too. Like the other animals that wear fur coats, every year when cold weather came and the leaves began to turn yellow, he went out to gather fruit and nuts. When his pouch was full, he traveled home again to store his harvest for the winter. Possum was better at gathering than the other animal people, for he took care not to be followed to his gathering places. He waited until darkness before starting out for the persimmon trees. He took great care to watch behind him on the way. When he came there, he ate the sweet, soft fruit until his belly was full, and then filled the pouch at his belt. Nothing was so good as a ripe persimmon! ▲

One night as he waddled home, Possum met Fox. Then Fox stepped close.

"I am glad to see you, friend Possum," he said with a smile. He reached out to stroke Possum's back, and patted his rump. "Oh, nice and fat. You would taste so good!" ▲
Possum was more frightened than before, so frightened that he grew foolish. He stepped around Fox, and walked on. Almost at once, he stopped in horror. He had turned his back on a hungry fox! He whirled to face him again, and found fox so close that they were almost nose to nose.

Without a word, Possum raised a paw to Fox's nose for Fox to smell.

"Aho! You have been eating persimmons!" Fox exclaimed. There was nothing Fox loved better than persimmons. "Ai!" he thought. "What shall I do? If I have Possum for my dinner, I will never know where the persimmon trees are. Perhaps I should eat him for dinner some other time." At last he asked, "When did you pick them?"


Fox grinned happily and rubbed his paws. "Just now? Hoh! Take me there!"

"Yes. Oh, yes, yes, of course, "Possum said quickly. "Yes, yes, right away!"
So they went, hurrying together, side by side. A cold wind pushed at them, but Possum was shivering so much from fear that he did not notice. When they reached the persimmon trees, Fox stood under the largest and peered upward into the darkness.

"I can smell them," he said. "What are you waiting for? Climb up and pick!"

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Possum dropped another.

"Faster, faster!" Fox cried. "You are too slow! Must I come up there to help you?" He frowned, thought for a moment, and then called out, "Come down and help me climb up."

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Fox was not a tree climber, but he could reach his front legs far enough around the trunk to raise himself a little. Possum helped by boosting from below. When at last Fox was sitting in the fork of the tree, picking and eating persimmons, Possum crept away.
through the darkness. The wind had grown much sharper and colder, but as he trotted on home he did not notice. “I’m safe, I’m safe, I’m safe!” he thought. "And I still have my pouch full of persimmons!"

The next morning the ground was covered with snow and the air was bitterly cold. "I'll just have a look," thought Possum, and he made his way back to the persimmon trees.

Fox was hanging in the fork of the tree, frozen stiff. Possum sighed, and was sorry. "But if I had not helped him up the tree, that might be me."
Appendix C: Study 1 Materials

Writing a Summary in 1-2-3

1. Use the guiding questions to help you find the most important information:

   *Which character has a problem?*
   *What is the character’s problem?*
   *What was done to try and solve the problem?*
   *And then what happened?*

2. Consolidate the most important pieces of information in a paragraph format.

3. POLISH!!! Reread the summary. Make sure it makes sense.
A summary contains the important parts of a story, but it does not contain any unimportant information.

Please read the story and summarize below:

________________________________________________________________________

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________________________________________________________________________

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Appendix D: Study 1 Scoring Rules

Rules for scoring:

1. Score at the independent clause level. Dependent clauses are attached to independent clauses. However, sometimes a clause is not independent due to poor writing such as in the chase where the writer failed to name the subject in the clause. In the case where a clause is a dependent clause due to poor writing, it is treated as an independent clause.

2. Each element of story has a “must contain” phrase. If the writing does not have the “must contain” phrase, then no credit is given for that element of story.

3. Each element has an additional “may contain” ideas. These phrases embellish on the element of story. It is okay to include “may contain” ideas, but is inconsequential towards the final score. It neither improves nor detracts from the summary score.

4. Each element has “extra/inaccurate information” ideas. These ideas decrease the score of the summary because they contain extra information on details or inaccurate information. Essentially, any phrase not relating to either a “must contain” or a “may contain” idea, falls in this category. This category is not exhaustive, but samples are provided.

5. Each clause is scored at the full clause level. Thus, if a single clause contains “must contain” information and “extra information”, it is given credit. Similarly, if a single phrase contains “May contain” and “extra information” no credit is taken.

6. If a summary contains “may contain” clauses without including “must contain” clauses, then the “may contain” clauses are treated as extra information and receive a grade penalty.

7. Actual scoring scheme:

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must contain</td>
<td>5</td>
</tr>
<tr>
<td>May contain</td>
<td>0</td>
</tr>
<tr>
<td>Extra/inaccurate information</td>
<td>-1</td>
</tr>
<tr>
<td>Redundant information</td>
<td>-1</td>
</tr>
</tbody>
</table>
Appendix E: Story Elements Rubrics (for Summary and PSID Tasks)

Henry and Mudge and Annie’s Perfect Pet

1. Which character has a problem?

<table>
<thead>
<tr>
<th>Must contain:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduced Henry as having a problem</td>
</tr>
<tr>
<td>OR</td>
</tr>
<tr>
<td>Introduces Annie as having a problem</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>May contain:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional information</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Extra/inaccurate information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henry and Annie are cousins</td>
</tr>
<tr>
<td>Henry and Annie live next door to each other.</td>
</tr>
<tr>
<td>Henry has a dog named Mudge</td>
</tr>
<tr>
<td>Annie loved Mudge</td>
</tr>
</tbody>
</table>

Samples of “extra/inaccurate information” clauses:

*Henry’s cousin Annie lived next door to Henry. They always played together with Henry’s dog Mudge.*

*Henry and Mudge and Annie’s perfect pet is about how Annie lives right next door to her cousin Henry.*

*Henry and Mudge always used to go to Annie’s house to play. There were neighbors and cousins.*

*...They always played together.*

*Henry had a cousin named Annie. Annie loved Henry’s dog Mudge. She loved his fluffy eyes, his wet nose, and his big paws.*
Henry and Mudge and Annie’s Perfect Pet

2. What is the character's problem?

**Must contain:**
Henry wanted to get Annie a pet
OR
Annie wants a pet

**May contain:**
Henry doesn’t know which pet to get Annie
Annie’s father is away at work all day, so no one could take care of the dog

**Extra/Inaccurate information:**
Annie’s parents don’t let her get a dog

Sample “must contain” or “may contain” clauses:

*Seeing Mudge so much made Annie want to get a pet. So Henry’s family discussed what pet Annie should get.*

*Henry has a pet dog Mudge, but Henry’s friend Annie doesn’t and she really wants one.*

*Annie wanted a dog like Mudge, but her dad’s at work so on one would take care of it.*

*Annie really wanted a pet so Henry decided to get her one.*

Sample “extra/inaccurate information” clauses:

*But Annie's parents didn't let her get a dog.*
3. What was done to try and solve the problem?

<table>
<thead>
<tr>
<th>Must contain</th>
<th>Henry spoke to his parents and they decided to get Annie a bunny</th>
</tr>
</thead>
<tbody>
<tr>
<td>May contain</td>
<td>The various types of pets Annie cannot have</td>
</tr>
<tr>
<td>Extra/Inaccurate information:</td>
<td>Annie thought it was a good idea to get a bunny</td>
</tr>
</tbody>
</table>

Sample “must contain” and “may contain” clauses:

- They finally decided to get a bunny.

- So Henry gets help from his parents and they think of a bunny... so they go and get a bunny.

- So Henry went to his parents to ask them for a pet for Annie that's not wet, doesn't fly. His mom said a bunny.

- Henry felt bad so he went to his parents for advice. They agreed for a bunny.

Sample “extra/inaccurate information” clauses:

- “Perfect” said Henry.

- Annie likes the idea (of getting a bunny).
Henry and Mudge and Annie’s Perfect Pet

4. And then what happened?

**Must contain:**
They go the pet store to buy a bunny

**May contain:**
They bring the bunny home
Annie was happy with her bunny

**Extra/inaccurate information:**
It was Annie’s perfect pet
Mudge loved the bunny
Henry’s father built the bunny a hutch
Annie named the bunny Snowball

Sample “must contain” and “may contain” phrases:

*So they went to the pet store to buy a bunny.*

*Mudge and the bunny played together and had fun.*

Sample “extra/inaccurate information” phrases:

*It was Annie’s perfect pet.*

*She got the bunny and had a lot of fun with it (after already mentioning that she got a bunny)*

*....They heard all the animals making noises except for the bunnies were quiet. Also Annie loved the bunny she got and named it Snowball. The bunny loved Mudge and always went on this back.*

*Annie is so happy with her bunny and named it Snowball.*

*She took it everywhere. The bunny loved Henry.*
Annie and Snowball and the Pink Surprise

1. Which character has a problem?

**Must contain:**
Introduce Annie as the character with the problem.

**May contain:**
Introduces Henry as having a problem

**Extra/Inaccurate information:**
- Snowball is Annie’s pet.
- Mudge is Henry’s pet
- Annie has a garden she loves.
- Annie and Henry live near each other.
- Annie loved four o’clocks best
- Annie and Henry are cousins

**Samples of Extra/Inaccurate information:**

> Annie and her bunny Snowball had a beautiful garden. She grew petunias, lilies, and roses and four o’clocks in her garden.

> Annie and her bunny Snowball like to grow flowers. Annie grows petunias, lilies, and four o’clocks. Henry her next door neighbor comes over often with his dog Mudge.
Annie and Snowball and the Pink Surprise

2. What is the character’s problem?

**Must contain:**
Annie wanted to attract more hummingbirds to her garden.

**May contain:**
They saw a hummingbird and wanted more  
It was only one hummingbird

**Extra/Inaccurate information:**
Annie enjoyed sitting in her garden.

**Samples of “must contain” and “may contain” clauses:**
- They saw a hummingbird on a flower…but it was only one hummingbird  
- Then a hummingbird comes and lands on a pink petunia. Annie and Henry are fascinated and they want more to come  
- Annie and Henry notice a hummingbird on a petunia in Annie's garden. They try to attract more hummingbirds.  
- One day they saw a hummingbird drinking from a petunia....The next day they asked their Dad to get more.  
- They wondered how they can get more hummingbirds  
- One day they were sitting in the garden and they saw a hummingbird and they wanted it to come to the garden.

**Samples of “extra/inaccurate information” clauses:**
- When her cousin Henry would come over, he would always come over with his dog Mudge.  
- Sometimes they would sit in her garden.  
- The hummingbird was drinking from a petunia (after having mentioned that they saw the hummingbird.)  
- So they go to the cousin.
Annie and Snowball and the Pink Surprise

3. What was done to try and solve the problem?

**Must contain:**
- They placed pink things in the garden

**May contain:**
- They asked Henry’s dad for a suggestion
- Henry’s dad told them to put more pink things in the garden
- They went to Annie’s room to find pink things

**Extra/Inaccurate information:**
- Dad asked about the color of the petunia
- No hummingbirds came on days 1-3

Sample of “must contain” and “may contain” phrases:

> So they asked their dad and he said that hummingbirds are attracted to the color pink. Henry said to Annie “your room is full of pink”. So they took a lot of pink things and put it around the garden. On the fourth day there were 8 hummingbirds.

> The way they attract more hummingbirds is by putting more pink objects in the garden. It took four days for the birds to come. On the fourth day eight hummingbirds came.

> So they asked Henry’s dad and his dad said that to attract hummingbirds you have to take things are pink and put them in the garden.

Samples of “extra/inaccurate information” phrases

> And he (Dad) what color were the petunias? And they said pink.

> On the first day no hummingbirds came. The second day no hummingbirds came either.

> So they ran over, come and see they said to Snowball and Mudge.

> They asked Henry’s dad how to advertise.
Annie and Snowball and the Pink Surprise

4. And then what happened?

Must contain:
Hummingbirds came to the garden

May contain:
They enjoyed watching the hummingbirds
They spent the afternoon watching the hummingbirds

Extra/inaccurate information:
Mudge and Snowball loved the hummingbirds
Annie and Henry loved the hummingbirds

Samples of “must contain” and “may contain”:

Annie and Henry watched the hummingbirds fly around the garden.

Four days later the hummingbirds come. So they watched them all the way through the morning.
The Fight between the Animals and Insects

1. Which character has a problem?

<table>
<thead>
<tr>
<th>Must contain:</th>
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</thead>
<tbody>
<tr>
<td>Identify Locust as having a problem</td>
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</table>

<table>
<thead>
<tr>
<th>May contain:</th>
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</thead>
<tbody>
<tr>
<td>None</td>
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</table>

<table>
<thead>
<tr>
<th>Extra/inaccurate information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Lion went for a walk</td>
</tr>
</tbody>
</table>

Sample “extra/inaccurate information” clauses:

Mountain Lion went out for a stroll.

One day there was a lion and his type was Mountain Lion. And he strolled.
The Fight between the Animals and Insects

2. What is the character's problem?

**Must contain:**
Mountain lion stepped on locust

**May contain:**
Mountain Lion and Locust got into an argument
Mountain Lion and Locust called each other names

**Extra/inaccurate information:**
The exchanges between Locust and Mountain Lion
Mountain Lion and Locust were mad at each other

Sample “must contain” and “may contain” clauses:

This story is about a lion steps on a locust and they started to call each other names.

Then he stepped on an insect

One day a lion stepped on a Locust and Locust said watch where you’re going. Then they started
to trash talk for a long time.

Sample “extra/inaccurate information” clauses:

And then they got tired of all of that (name calling).

And they got mad at each other.

Mountain Lion and Locust got in a fight...they started a war. (With no additional information, 
this does not explain the problem).

He said that Locust wasn’t big enough to fight Mountain Lion one on one.

One day Locust and Lion were fighting (without explain why of for what reason)

Ai-ee-ow said the insect

Then said [Locust] that he wasn’t big enough to fight him himself.
The Fight between the Animals and Insects

3. What was done to try and solve the problem?

**Must contain:**
They decided to have a war of insects versus animals

**May contain:**
Locust gathered all insects to his team
Lion gathered all animals to his team
There were more insects than animals
The sides started fighting
The insects hid in bushes

**Extra/inaccurate information:**
The specific animals chosen
The specific insects chosen
The insects nearly broke a branch
The coyote offered to scout the insects

Sample “must contain” and “may contain” clauses:

*So they want the animals to fight the insects.*

....until the Locust said to have all the flies and bugs against all the animals. And they agreed.
And the flies and the [illegible word] and all the animals were fighting.

They decided to have a battle, animals versus insects. On the day of the battle both sides gathered in the field. Each side had many fighters, but the insects had more.

Then the Locust decided they should get teams and fight. The Lion got a group of animals and the Locust got a group of bugs. When the fight started, the bugs bit, stung, and scratched all the animals.

They were going to attack them the next day. So lion got animals to come fight with him and so did Locust. Later the animals started fighting.

Sample “extra/inaccurate information” clauses:

*So the coyote said to the lion “I think it would be a good idea if we scout around and see where they are and how many.”*

Mountain Lion chose big and strong animals for his team and Locust chose insects that could sting such as bees, wasps, and more.
The insects were so heavy together, that they broke a branch.

The Lion thought he would win because his animals were bigger.
The Fight between the Animals and Insects

4. And then what happened?

| Must contain: |
| Insects won |

| May contain: |
| The insects stung the animals |
| Many of the animals *nearly* died |
| Coyote was the only one who got away |

| Extra/inaccurate information: |
| The animals died |

Sample “may contain” and “must contain” clauses:

- *When the coyote heard the first howl, he ran away.*
- *The animals nearly died and the insects won.*
- *They had beaten the animals.*
- *But at the end the insects won because they were more.*
- *But Coyote didn’t. When [he] heard the first howl, he ran away.*

Sample “extra/inaccurate information” clauses:

*After the battle the animals were wounded, some even died. (without discussing that they were stung and defeated)*
Fox and Possum

1. Which character has a problem?

<table>
<thead>
<tr>
<th>Must contain:</th>
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</thead>
<tbody>
<tr>
<td>Identify Possum as having a problem</td>
</tr>
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<table>
<thead>
<tr>
<th>May contain:</th>
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<tbody>
<tr>
<td>None</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Extra/inaccurate information:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possum knew where the persimmon and pecan trees were</td>
</tr>
</tbody>
</table>

Sample “must contain” and “may contain” clauses:

This story is mainly about a possum.

Sample “extra/inaccurate information” clauses:

Possum went out of his hollow tree to gather fruits and nuts. Possum was better than most of the animals for he was careful not to be followed to his gathering places. He went to gather fruit. Possum knew where all the persimmon and pecan trees grew. Possum lived in his hollow tree for a long time. He know a lot of places to go and to get good food.
Fox and Possum

2. What is the character’s problem?

**Must contain:**
Fox wanted to eat Possum

**May contain:**
Possum met Fox

**Extra/Inaccurate information:**
Possum was coming back from eating persimmons
Referring to persimmons as berries
Fox demanded that Possum tell him where the fruit trees are
Fox cannot decide if he should eat Possum or ask him for the persimmon tree location
Possum didn’t want to tell anyone where the persimmon trees are

**Sample “must contain” and “may contain” clauses:**

> Later Fox came to Possum’s house and wanted to eat Possum

> ....On his way back to the tree he met Fox. Fox wanted to eat Possum.

**Sample “extra/inaccurate information” clauses:**

> "I am glad to see you my friend possum."

> One day he was on his way to a persimmon tree. And after he ate a lot of berries, he decided to go.

> Possum knows where a persimmon tree is and Fox wants to know where it is but Possum didn’t want to show him.
Fox and Possum

3. What was done to try and solve the problem?

**Must contain:**
- Possum distracts Fox by making him smell his paw
- Possum takes Fox to the persimmon tree
- While Fox was in the tree, Possum snuck away

**May contain:**
- Possum fools Fox into climbing up the tree
- Possum didn’t drop the fruit fast enough for Fox
- Possum helped Fox up the persimmon tree

**Extra/inaccurate information:**
- Dialog between Fox and Possum
- Fox asked Possum to take him to the persimmon trees

**Sample “must contain” and “may contain” clauses:**

But then Possum raised his paw to Fox’s nose so Fox could smell he had been eating fruit.

Then Possum lifted his paw to his nose so he could smell it. Fox smelled it and smelled persimmons. Fox said to Possum take me to the persimmon tree, and he did. Fox said to help me up and Possum did. After he lifted Fox up he quickly snuck away.

Possum climbed up and started to drop them, but he wasn’t fast enough. Fox climbed up and Possum ran away.

**Sample “extra/inaccurate information” clauses:**

Fox asked possum to show him the tree of berries. When they were there, Possum crept away

Fox was deciding whether he should eat Possum and know where the fruit trees were or let Possum show him the fruit trees. Fox decided to let Possum show him the fruit trees.

"Where did you pick them?’ Fox grinned happily and rubbed his paws. “Just now, huh! Take me there!’” “Yes, yes right away.”

Until he (Fox) realized that Possum knew where there persimmon trees were. He said “bring me to the persimmon tree”.

Fox doesn’t stop eating them.

Possum waits until night to go to his secret stash of persimmons so nobody will follow him.
Fox and Possum

4. And then what happened?

**Must contain:**
Possum saw Fox frozen in the tree

**May contain:**
It snowed/was cold overnight
Possum came to the tree the next morning
Possum was glad he evaded Fox

**Extra/inaccurate information:**
Possum felt sorry
Possum is clever

Sample “must contain” and “may contain” clauses:

The next morning Possum went to the tree and saw Fox frozen.

It started to snow so possum decided to see how Fox was so he went and saw that Fox had become frozen.

Sample “extra/inaccurate information” clauses:

Possum felt sorry.

In the end Fox never ate Possum.
Appendix F: Study 2 Pretest Measures

Name:________________________

Date:________________________

Knowledge of Narrative Story Structure Task

Part I

Stories have certain elements, or parts, that help create the story. These elements are the important parts of a story, and every good story contains these elements. Sometimes they are called a story map or story grammar.

In the space below, please name as many elements (or parts) or stories that you can. Remember, you are not being asked about the important parts of one specific story you read, rather about the important parts of all stories in general.

You do not have to use all of the spaces provided.

___________________________  ___________________________  ___________________________

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___________________________  ___________________________  ___________________________

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___________________________  ___________________________  ___________________________

___________________________  ___________________________  ___________________________
Part II

Stories contain elements such as: character, setting, problem, solution, and falling action (or reaction). I will read three stories to you. Please listen carefully to the stories. The stories are also printed below, so you can follow along. For each story, please indicate which elements it contains. Place a check mark next to each element the story contains.

Story 1

A Wolf in Sheep’s Clothing

A wolf had a hard time getting sheep to eat because the shepherd and his dog were always watching the sheep carefully. One day the wolf found the skin of a sheep. He put it on and walked right up to the sheep. For a long time, he was able to make friends with sheep and lead them away.

Then wolf would take off his disguise and laugh and say, “Appearances are deceptive!” Then he would eat the sheep.

Which element(s) can be found in this story?

______Character  ______Setting  ______Problem  ______Solution

______Falling Action (or Reaction)
Story 2

The Ant and the Grasshopper

A grasshopper was jumping around dancing and singing. He was very happy. An ant walked by carrying a big ear of corn. He was working very hard gathering food for the winter.

The grasshopper asked, “Why are you working so hard? Why don’t you come over and sit and chat?”

“Winter is coming and there won’t be any food to eat,” said the ant. “I think you should gather some food too.”

“Why worry about winter?” said the grasshopper. “There is plenty of food today.”

But the ant kept working. When winter came, the grasshopper was hungry, while the ant had plenty of food.

The ant said, “It is best to prepare for the days of necessity.”

Which element(s) can be found in this story?

- Character
- Setting
- Problem
- Solution
- Falling Action (or Reaction)
Story 3

The Hare and the Tortoise

One day the hare was bragging about how fast he could run.

“Tortoise," he said. “I have never yet been beaten,” he said. “I challenge any one here to race with me.”

The tortoise said quietly, “I accept your challenge.”

“That is a good joke,” said the hare; “I could dance around you all the way.”

“Do not brag until later,” answered the tortoise. “Shall we race?”

So the race began. The hare ran very fast and very far, but then he stopped and lay down to take a nap. The tortoise kept going, and when the hare woke up from his nap, he saw the tortoise was almost ready to cross the finish line. He could not get there in time to win the race.

Then the tortoise said, “Slow and steady wins the race.”

Which element(s) can be found in this story?

_____Character  _____Setting  _____Problem  _____Solution

_____Falling Action (or Reaction)
Part III

Good stories contain all of the story elements, such as: character, setting, problem, solution and falling action (or reaction). Listen to each story below. For each story indicate whether you think it is a good story. Remember, good stories are those that contain all of the story elements. If you decide it is not a good story, please indicate which story elements you feel are missing.

Story 4

The Goose with the Golden Eggs

One day a farmer saw that there was a strange egg in the nest of his goose. He looked closer and saw that it was made of pure gold. Every day, the goose laid another gold egg, and the farmer became very rich by selling the eggs. But one day, the farmer became greedy and decided to get all the gold at once by killing the goose. He killed the goose and cut it open, but there were no golden eggs inside.

The man's wife said, “Greed often reaches too far.”

Do you think this is a good story, containing all story elements? □ yes □ no

If you do not think this is a good story, please check off which story element(s) may be missing:

_____Character _____Setting _____Problem _____Solution

_____Falling Action (or Reaction) _____None. All story elements are present.
Story 5
The Crow and the Pitcher

A crow was dying from thirst. He saw a tall pitcher and he flew over to it because he hoped to find water. But there was so little water in it that he could not reach the water with his beak. Then he began to collect stones and put them in one at a time until the water level came up to where he could reach it with his beak. Then he enjoyed the water and saved his own life.

He said, “Necessity is the mother of invention,” and “Little by little does the trick.”

Do you think this is a good story, containing all story elements?  □ yes  □ no

If you do not think this is a good story, please check off which story element(s) may be missing:

□ Character  □ Setting  □ Problem  □ Solution

□ Falling Action (or Reaction)  □ None. All story elements are present.
Story 6

The Bird, Bats and Mammals

There was a war between the birds and the mammals. When the two armies came to fight, the bat refused to take sides.

The birds came to him and said, “Join us!”

But the bat said, “I am more like a mammal!”

Then the mammals came to him and said, “Join us!”

But the bat said, “I am more like a bird!”

At the last minute, the birds and the mammals made peace and they stopped the war. The bat went to celebrate with the birds, but they were angry with him and made him go away. Then he went to celebrate with the mammals, but they were also angry and made him go away.

They said, “If you do not define yourself, you will have no friends at all.”

Do you think this is a good story, containing all story elements?  □ yes  □ no

If you do not think this is a good story, please check off which story element(s) may be missing:

_____ Character  _____ Setting  _____ Problem  _____ Solution

_____ Falling Action (or Reaction)  _____ None. All story elements are present.
Knowledge of Narrative Story Structure Task: Scoring Key

(Correct responses are completed in Section 1. Correct responses for Sections 2 and 3 are indicated with a check mark.)

Part I

Stories have certain elements, or parts, that help create the story. These elements are the important parts of a story, and every good story contains these elements. Sometimes they are called a story map or story grammar.

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<th>Main character</th>
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</table>
Part II

Stories contain elements such as: character, setting, problem, solution, and falling action (or reaction). I will read three stories to you. Please listen carefully to the stories. The stories are also printed below, so you can follow along. For each story, please indicate which elements it contains. Place a check mark next to each element the story contains.

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A wolf had a hard time getting sheep to eat because the shepherd and his dog were always watching the sheep carefully. One day the wolf found the skin of a sheep. He put it on and walked right up to the sheep. For a long time, he was able to make friends with sheep and lead them away.

Then wolf would take off his disguise and laugh and say, “Appearances are deceptive!” Then he would eat the sheep.

Which element(s) can be found in this story?

- ✓ Character
- □ Setting
- ✓ Problem
- ✓ Solution
- ✓ Falling Action (or Reaction)
Story 2

The Ant and the Grasshopper

A grasshopper was jumping around dancing and singing. He was very happy. An ant walked by carrying a big ear of corn. He was working very hard gathering food for the winter.

The grasshopper asked, “Why are you working so hard? Why don’t you come over and sit and chat?”

“Winter is coming and there won’t be any food to eat,” said the ant. “I think you should gather some food too.”

“Why worry about winter?” said the grasshopper. “There is plenty of food today.”

But the ant kept working. When winter came, the grasshopper was hungry, while the ant had plenty of food.

The ant said, “It is best to prepare for the days of necessity.”

Which element(s) can be found in this story?

✓ Character       _____ Setting       ✓ Problem       ✓ Solution

✓ Falling Action (or Reaction)
Story 3

The Hare and the Tortoise

One day the hare was bragging about how fast he could run.
“"I have never yet been beaten," he said. "I challenge any one here to race with me."

The tortoise said quietly, "I accept your challenge."

"That is a good joke," said the hare; "I could dance around you all the way."

"Do not brag until later," answered the tortoise. "Shall we race?"

So the race began. The hare ran very fast and very far, but then he stopped and lay down to take a nap. The tortoise kept going, and when the hare woke up from his nap, he saw the tortoise was almost ready to cross the finish line. He could not get there in time to win the race.

Then the tortoise said, "Slow and steady wins the race."

Which element(s) can be found in this story?

✓ Character       __ Setting       ✓ Problem       ✓ Solution

✓ Falling Action (or Reaction)
Part III

Good stories contain all of the story elements, such as: character, setting, problem, solution and falling action (or reaction). Listen to each story below. For each story indicate whether you think it is a good story. Remember, good stories are those that contain all of the story elements. If you decide it is not a good story, please indicate which story elements you feel are missing.

**Story 4**

The Goose with the Golden Eggs

One day a farmer saw that there was a strange egg in the nest of his goose. He looked closer and saw that it was made of pure gold. Every day, the goose laid another gold egg, and the farmer became very rich by selling the eggs. But one day, the farmer became greedy and decided to get all the gold at once by killing the goose. He killed the goose and cut it open, but there were no golden eggs inside.

The man's wife said, “Greed often reaches too far.”

_Do you think this is a good story, containing all story elements?_ □ yes  ☑ no

If you do not think this is a good story, please check off which story element(s) may be missing:

- [ ] Character  ☑ Setting  - [ ] Problem  ☑ Solution
- [ ] Falling Action (or Reaction)  - [ ] None. All story elements are present.
Story 5

The Crow and the Pitcher

A crow was dying from thirst. He saw a tall pitcher and he flew over to it because he hoped to find water. But there was so little water in it that he could not reach the water with his beak. Then he began to collect stones and put them in one at a time until the water level came up to where he could reach it with his beak. Then he enjoyed the water and saved his own life.

He said, “Necessity is the mother of invention,” and “Little by little does the trick.”

Do you think this is a good story, containing all story elements?  □ yes  ✔ no

If you do not think this is a good story, please check off which story element(s) may be missing:

- Character  ✔ Setting  - Problem  - Solution
- Falling Action (or Reaction)  - None. All story elements are present.
Story 6
The Bird, Bats and Mammals

There was a war between the birds and the mammals. When the two armies came to fight, the bat refused to take sides.

The birds came to him and said, “Join us!”

But the bat said, “I am more like a mammal!”

Then the mammals came to him and said, “Join us!”

But the bat said, “I am more like a bird!”

At the last minute, the birds and the mammals made peace and they stopped the war. The bat went to celebrate with the birds, but they were angry with him and made him go away. Then he went to celebrate with the mammals, but they were also angry and made him go away.

They said, “If you do not define yourself, you will have no friends at all.”

Do you think this is a good story, containing all story elements? ☐ yes ☑ no

If you do not think this is a good story, please check off which story element(s) may be missing:

- Character
- Setting ✔
- Problem
- Solution ✔
- Falling Action (or Reaction)
- None. All story elements are present.
Below you will see a list of book titles. Some of the titles are names of actual books and some of the
titles are made up. Please read the names and put a check mark or an X next to the names of those that
you know are real book titles. Remember, some of the titles are not real book titles, so guessing can be
easily detected.

☐ 1. Dr. Dolittle
☐ 2. The Genius Files
☐ 3. Henry and the Clubhouse
☐ 4. Ramona the Pest
☐ 5. Pippi Longstocking
☐ 6. Clementine
☐ 7. Aliens Ate My Homework
☐ 8. Sideways Stories from Wayside School
☐ 9. The Adventures of Captain Underpants
☐ 10. By the Shores of Silver Lake
☐ 11. Dear Mr. Henshaw
☐ 12. Chocolate Fever
☐ 13. James and the Giant Peach
☐ 14. Superfudge
☐ 15. Tales of Fourth Grade Nothing
☐ 16. The Little House in the Big Woods
☐ 17. Mr. Popper’s Penguins
☐ 18. How to Eat Fried Worms
☐ 19. Iggy’s House
☐ 20. Third Grade Tales
☐ 21. Skateboards
22. Stuart Little
23. The Indian in the Cupboard
24. Frindle
25. The Report Card
26. From the Mixed-Up Files of Mrs. Basil E. Frankweiler
27. The Borrowers
28. The Missing Letter
29. Matilda
30. Freedom Train
31. Harriet the Spy
32. Dream Catcher
33. He’s Your Little Brother!
34. The Lion, the Witch, and the Wardrobe
35. Joanne
36. Blubber
37. Bridge to Terabithia
38. The BFG
39. The Tale of Despereaux

Are there books you read at home this year, which are not included in this list?

__________________________________________________________

__________________________________________________________
Scoring Key: TRT (Foil titles are left blank)

Below you will see a list of book titles. Some of the titles are names of actual books and some of the titles are made up. Please read the names and put a check mark or an X next to the names of those that you know are real book titles. Remember, some of the titles are not real book titles, so guessing can be easily detected.

- ✔ 1. Dr. Dolittle
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- ✔ 17. Mr. Popper’s Penguins
- ✔ 18. How to Eat Fried Worms
- ✔ 19. Iggy’s House
- ☐ 20. Third Grade Tales
- ☐ 21. Skateboards
Are there books you read at home this year, which are not included in this list?
What do you know about…

Folk Tales

Folk tales are types of stories. If you’ve hear of these stories, read any of these stories, or know anything at all about these stories, please write it on the lines below. Use one bullet point for each fact. If you have never encountered these stories, you may leave the page blank.

Please note that you do not have to fill out all of the bullet points. There are many extra lines, just in case you need them.

• ______________________________________________________
  ______________________________________________________
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What do you know about…

Henry & Mudge or Annie & Snowball?

Henry & Mudge and Annie & Snowball are two book series. If you’ve heard of these books, read any of these books, or know anything at all about these books, please write it on the lines below. Use one bullet point for each fact. If you have never encountered these books, you may leave the page blank.

Please note that you do not have to fill out all of the bullet points. There are many extra lines, just in case you need them.

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Problem Solution Identification Task

**Problem:**
*What is the story’s main problem?*
Try to remember that a story may have many problems, please list the main problem in the story that the characters are trying to solve.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

**Explanation:**
*Why do you think this is the story’s problem?*
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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Solution:
*What solution worked best for this story’s problem?*

Try to remember that stories can have many attempts at a solution that may not work. Try to tell only the solution that worked to solve the problem.

Explanation:
*Why do you think this is the solution that worked best for this story’s problem?*
Henry and Mudge and Annie’s Perfect Pet

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Next, please indicate if the statement reflects a story detail by checking off the correct box.

1. Henry wanted Annie to have her own pet. He went to his parents for help.

   Is this part of the story important? 0 1 2 3 4
   Unimportant A little important Very important

   Is this part of the story a detail? □ Yes □ No

2. Annie played with Snowball, and sang to her, and took her to Henry's house for visits.

   Is this part of the story important? 0 1 2 3 4
   Unimportant A little important Very important

   Is this part of the story a detail? □ Yes □ No
3. Suddenly the bunny went flying through the air and landed on Mudge's back.

Is this part of the story important?  
Unimportant  | 1 | 2 | 3 | 4  
A little important | Very important

Is this part of the story a detail?  □ Yes  □ No

4. Henry’s Uncle Ed made a beautiful hutch for Annie’s bunny.

Is this part of the story important?  
Unimportant  | 1 | 2 | 3 | 4  
A little important | Very important

Is this part of the story a detail?  □ Yes  □ No

5. And they took the bunny home.

Is this part of the story important?  
Unimportant  | 1 | 2 | 3 | 4  
A little important | Very important

Is this part of the story a detail?  □ Yes  □ No

6. Annie named her bunny Snowball.

Is this part of the story important?  
Unimportant  | 1 | 2 | 3 | 4  
A little important | Very important

Is this part of the story a detail?  □ Yes  □ No
7. Henry and Henry's parents and Henry's big dog Mudge took Annie to the pet store.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☑ Yes ☐ No

8. Henry's mother was thinking. "I know!" she said. "A bunny! It's soft and dry and doesn't fly."

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☑ Yes ☐ No

9. "Okay," said Henry's father, "Annie needs a pet that isn't scary, isn't wet, isn't hard, doesn't fly, and tap-dances."

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☑ Yes ☐ No

10. The bunny sniffed, sniffed, sniffed. She seemed to like Mudge.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☑ Yes ☐ No
11. But Annie’s father was at work every day. No one would be home to take care of a dog.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important
Is this part of the story a detail? □ Yes □ No

12. "She's so cute!” Annie said with a smile.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important
Is this part of the story a detail? □ Yes □ No

13. Henry wanted Annie to have her own pet. He went to his parents for help.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important
Is this part of the story a detail? □ Yes □ No

14. Annie wished she had a dog.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important
Is this part of the story a detail? □ Yes □ No
15. Henry remembered how much fun it was to get a new pet. Mudge had been the cutest puppy.

Is this part of the story important?  

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☐ Yes  ☐ No
Annie and Snowball and the Pink Surprise

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1. "Hmmm," said Henry's dad. "How about petunias?" "I have petunias," said Annie “but only one hummingbird."

   Is this part of the story important? 0 1 2 3 4
   Unimportant A little important Very important

   Is this part of the story a detail? □ Yes □ No

2. “I see you, Snowball!” Henry would call. Snowball would just wiggle her nose.

   Is this part of the story important? 0 1 2 3 4
   Unimportant A little important Very important

   Is this part of the story a detail? □ Yes □ No
3. One day when Annie and Henry were in the garden, they saw the most wonderful sight: a hummingbird!

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4. Henry and Mudge hurried to Annie's garden. And there they saw eight beautiful, tiny hummingbirds drinking from Annie's petunias.

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Is this part of the story a detail? □ Yes □ No

5. "You look pretty silly now," she said. And she giggled and giggled.

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Is this part of the story a detail? □ Yes □ No

6. Annie and her bunny, Snowball, liked to grow flowers in Annie's backyard.

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Is this part of the story a detail? □ Yes □ No
7. "Then pink it is," said Henry's dad. "Put more pink in the garden and see what happens."

8. He thought for a minute while Snowball crawled on his head and Mudge sat on his foot.

9. Henry and Annie loaded up ten very pink things and took them to Annie's garden.

10. He was making a bookcase. Or trying to. It was a little crooked.
11. They went to Annie's room. Pink everywhere!

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☐ Yes ☐ No

12. And they wondered how they could get more hummingbirds to come to Annie's garden.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☐ Yes ☐ No

13. When Annie's cousin Henry (who lived next door) would come over with his big dog, Mudge, sometimes they all would sit in Annie's garden.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☐ Yes ☐ No

14. “What color are your petunias?” he asked Annie.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☐ Yes ☐ No
15. "Dad, we need to attract hummingbirds," said Henry. "Do you know how?"

Is this part of the story important?  

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Is this part of the story a detail?  

☐ Yes  ☐ No
The Fight Between the Animals and Insects

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Next, please indicate if the statement reflects a story detail by checking off the correct box.

1. Coyote crept through the bush that bordered the field all around, and when he came near Locust's side, he saw that the bushes there were covered with insects.

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   Is this part of the story a detail? ☐ Yes ☐ No

2. Lion was happy to pad along, enjoying the warm sunshine and the smell of summer grass in the clearing ahead.

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   Is this part of the story a detail? ☐ Yes ☐ No
3. One fine day Mountain Lion went out for a stroll.

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Is this part of the story a detail?  ☐ Yes  ☐ No

4. "I am too small to fight you one-to-one, but if you will choose a team from your people, I will choose one from mine. We can hold the match on the flat fields down below."

Is this part of the story important?  

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Is this part of the story a detail?  ☐ Yes  ☐ No

5. Lion looked around at the great army of animals.

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Is this part of the story a detail?  ☐ Yes  ☐ No

6. "Agreed," Mountain Lion growled, and he went off to gather all of the Animals to fight on his side.

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Is this part of the story a detail?  ☐ Yes  ☐ No
7. The insects crawled into their fur, and bit and stung them again and again.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☐ Yes ☐ No

8. Coyote said to Mountain Lion, "I think it would be a good idea if I scout around and see where they are, and how many."

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☐ Yes ☐ No

9. At once, the animals began to bark and squeak and roar and howl.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☐ Yes ☐ No

10. The name-calling went on until both grew so angry that shouting was not enough.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? ☐ Yes ☐ No
11. Every family and clan and herd was there, and ready to fight.

Is this part of the story important? □ 0 □ 1 □ 2 □ 3 □ 4
Unimportant □ A little important □ Very important

Is this part of the story a detail? □ Yes □ No

12. The animals moved forward quietly until they reached the middle of the field.

Is this part of the story important? □ 0 □ 1 □ 2 □ 3 □ 4
Unimportant □ A little important □ Very important

Is this part of the story a detail? □ Yes □ No

13. Lion did not see Locust sleeping in the shade under a young redbud tree, and he stepped on him.

Is this part of the story important? □ 0 □ 1 □ 2 □ 3 □ 4
Unimportant □ A little important □ Very important

Is this part of the story a detail? □ Yes □ No

14. The animals crawled over one another to reach their own side of the field. Many nearly died.

Is this part of the story important? □ 0 □ 1 □ 2 □ 3 □ 4
Unimportant □ A little important □ Very important

Is this part of the story a detail? □ Yes □ No
15. "Where are they, and how many?" Mountain Lion asked when Coyote returned.

Is this part of the story important?  □ 0  □ 1  □ 2  □ 3  □ 4

Unimportant  A little important  Very important

Is this part of the story a detail?  □ Yes  □ No
Fox and Possum

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1. Fox was hanging in the fork of the tree, frozen stiff.
   
   Is this part of the story important? 0 1 2 3 4
   Unimportant A little important Very important

   Is this part of the story a detail? □ Yes □ No

2. The next morning the ground was covered with snow and the air was bitterly cold.

   Is this part of the story important? 0 1 2 3 4
   Unimportant A little important Very important

   Is this part of the story a detail? □ Yes □ No
3. When they reached the persimmon trees, Fox stood under the largest and peered upward into the darkness.

4. Like the other animals that wear fur coats, every year when cold weather came and the leaves began to turn yellow, Possum went out to gather fruit and nuts.

5. Fox was not a tree climber, but he could reach his front legs far enough around the trunk to raise himself a little.
6. Without a word, Possum raised a paw to Fox's nose for Fox to smell.

Is this part of the story important?  

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Is this part of the story a detail? □ Yes □ No

7. “You are too slow! Must I come up there to help you?” Fox frowned, thought for a moment, and then called out, "Come down and help me climb up.”

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Is this part of the story a detail? □ Yes □ No

8. When Possum’s pouch was full, he traveled home again to store his harvest for the winter.

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Is this part of the story a detail? □ Yes □ No

9. There was nothing Fox loved better than persimmons.

Is this part of the story important?  

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Is this part of the story a detail? □ Yes □ No
10. When at last Fox was sitting in the fork of the tree, picking and eating persimmons, Possum crept away through the darkness.

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Is this part of the story a detail?  □ Yes  □ No

12. When Possum came there, he ate the sweet, soft fruit until his belly was full, and then filled the pouch at his belt.

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Is this part of the story a detail?  □ Yes  □ No

13. One night as he waddled home, Possum met Fox.

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Is this part of the story a detail?  □ Yes  □ No
14. Possum knew every place round about where there were tasty roots, where pecan trees grew, and persimmon trees, too.

Is this part of the story important?  0 1 2 3 4
Unimportant  A little important  Very important

Is this part of the story a detail?  □ Yes  □ No

15. Fox reached out to stroke Possum's back, and patted his rump. "Oh, nice and fat. You would taste so good!"

Is this part of the story important?  0 1 2 3 4
Unimportant  A little important  Very important

Is this part of the story a detail?  □ Yes  □ No
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Next, please indicate if the statement reflects a story detail by checking off the correct box.

1. Henry wanted Annie to have her own pet. He went to his parents for help.

   Is this part of the story important? 0 1 2 3 4
   Unimportant  A little important  Very important

   Is this part of the story a detail? ☐ Yes ☐ No

2. Annie played with Snowball, and sang to her, and took her to Henry's house for visits.

   Is this part of the story important? 0 1 2 3 4
   Unimportant  A little important  Very important

   Is this part of the story a detail? ☐ Yes ☐ No
3. Suddenly the bunny went flying through the air and landed on Mudge's back.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? Yes No

4. Henry’s Uncle Ed made a beautiful hutch for Annie’s bunny.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? Yes No

5. And they took the bunny home.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? Yes No

6. Annie named her bunny Snowball.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? Yes No
7. Henry and Henry's parents and Henry's big dog Mudge took Annie to the pet store.

Is this part of the story important?  

Unimportant  1  2  3  4  

A little important  Very important

Is this part of the story a detail?  

Yes  No

8. Henry's mother was thinking. "I know!" she said. "A bunny! It's soft and dry and doesn't fly."

Is this part of the story important?  

Unimportant  1  2  3  4  

A little important  Very important

Is this part of the story a detail?  

Yes  No

9. "Okay," said Henry's father, "Annie needs a pet that isn't scary, isn't wet, isn't hard, doesn't fly, and tap-dances."

Is this part of the story important?  

Unimportant  1  2  3  4  

A little important  Very important

Is this part of the story a detail?  

Yes  No

10. The bunny sniffed, sniffed, sniffed. She seemed to like Mudge.

Is this part of the story important?  

Unimportant  1  2  3  4  

A little important  Very important

Is this part of the story a detail?  

Yes  No
11. But Annie’s father was at work every day. No one would be home to take care of a dog.

Is this part of the story important?  
0  
Unimportant  
1  
2  
3  
4  
Very important  

Is this part of the story a detail?  
☑ Yes  
☐ No

12. "She's so cute!” Annie said with a smile.

Is this part of the story important?  
0  
Unimportant  
1  
2  
3  
4  
Very important  

Is this part of the story a detail?  
☐ Yes  
☐ No

13. Henry wanted Annie to have her own pet. He went to his parents for help.

Is this part of the story important?  
0  
Unimportant  
1  
2  
3  
4  
Very important  

Is this part of the story a detail?  
☐ Yes  
☐ No

14. Annie wished she had a dog.

Is this part of the story important?  
0  
Unimportant  
1  
2  
3  
4  
Very important  

Is this part of the story a detail?  
☑ Yes  
☐ No
15. Henry remembered how much fun it was to get a new pet. Mudge had been the cutest puppy.

Is this part of the story important?

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Is this part of the story a detail?  □ Yes  □ No
ID:______________________

**Answer Key: Annie and Snowball and the Pink Surprise**

In a story, some statements are important to the story line. These statements include major story events or explanations of events. Without these statements, the story would not make sense.

Other story statements are unimportant and usually include details. Without these statements the story will still make sense.

Please read the text segments listed below, in large print. After reading each segment, mark off whether you think it is important, a little important or unimportant to the story. For “very important” mark a 4 and for “a little important” mark a 1. For “not important” mark 0. You can also use the numbers 2 and 3 on the scale.

Next, please indicate if the statement reflects a story detail by checking off the correct box.

1. "Hmmm," said Henry's dad. "How about petunias?"  "I have petunias," said Annie “but only one hummingbird."

   Is this part of the story important?  □ 0  □ 1  □ 2  □ 3  □ 4
   Unimportant  A little important  Very important

   Is this part of the story a detail?  □ Yes  □ No

2. “I see you, Snowball!” Henry would call. Snowball would just wiggle her nose.

   Is this part of the story important?  □ 0  □ 1  □ 2  □ 3  □ 4
   Unimportant  A little important  Very important

   Is this part of the story a detail?  □ Yes  □ No
3. One day when Annie and Henry were in the garden, they saw the most wonderful sight: a hummingbird!

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? □ Yes □ No

4. Henry and Mudge hurried to Annie's garden. And there they saw eight beautiful, tiny hummingbirds drinking from Annie's petunias.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? □ Yes □ No

5. "You look pretty silly now," she said. And she giggled and giggled.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? □ Yes □ No

6. Annie and her bunny, Snowball, liked to grow flowers in Annie's backyard.

Is this part of the story important? 0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail? □ Yes □ No
7. "Then pink it is," said Henry's dad. "Put more pink in the garden and see what happens."

Is this part of the story important? □ Yes   □ No

Is this part of the story a detail? □ Yes   □ No

8. He thought for a minute while Snowball crawled on his head and Mudge sat on his foot.

Is this part of the story important? □ Yes   □ No

Is this part of the story a detail? □ Yes   □ No

9. Henry and Annie loaded up ten very pink things and took them to Annie's garden.

Is this part of the story important? □ Yes   □ No

Is this part of the story a detail? □ Yes   □ No

10. He was making a bookcase. Or trying to. It was a little crooked.

Is this part of the story important? □ Yes   □ No

Is this part of the story a detail? □ Yes   □ No
11. They went to Annie's room. Pink everywhere!

Is this part of the story important? 0 1 2 3 4
Unimportant  A little important  Very important

Is this part of the story a detail? □ Yes □ No

12. And they wondered how they could get more hummingbirds to come to Annie's garden.

Is this part of the story important? 0 1 2 3 4
Unimportant  A little important  Very important

Is this part of the story a detail? □ Yes □ No

13. When Annie's cousin Henry (who lived next door) would come over with his big dog, Mudge, sometimes they all would sit in Annie's garden.

Is this part of the story important? 0 1 2 3 4
Unimportant  A little important  Very important

Is this part of the story a detail? □ Yes □ No

14. “What color are your petunias?” he asked Annie.

Is this part of the story important? 0 1 2 3 4
Unimportant  A little important  Very important

Is this part of the story a detail? □ Yes □ No
15. "Dad, we need to attract hummingbirds," said Henry. "Do you know how?"

Is this part of the story important?  
Unimportant  A little important  Very important

0 1 2

Is this part of the story a detail?  
Yes No
ID: __________________________________________

**Answer Key: The Fight Between the Animals and Insects**

In a story, some statements are important to the story line. These statements include major story events or explanations of events. Without these statements, the story would not make sense.

Other story statements are unimportant and usually include details. Without these statements the story will still make sense.

Please read the text segments listed below, in large print. After reading each segment, mark off whether you think it is important, a little important or unimportant to the story. For “very important” mark a 4 and for “a little important” mark a 1. For “not important” mark 0. You can also use the numbers 2 and 3 on the scale.

Next, please indicate if the statement reflects a story detail by checking off the correct box.

1. Coyote crept through the bush that bordered the field all around, and when he came near Locust's side, he saw that the bushes there were covered with insects.

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<thead>
<tr>
<th>Importance Level</th>
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<td>Very important</td>
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Is this part of the story important? □ Yes □ No

Is this part of the story a detail? □ Yes □ No

2. Lion was happy to pad along, enjoying the warm sunshine and the smell of summer grass in the clearing ahead.

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<tr>
<th>Importance Level</th>
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Is this part of the story important? □ Yes □ No

Is this part of the story a detail? □ Yes □ No
3. One fine day Mountain Lion went out for a stroll.

Is this part of the story important? 

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Is this part of the story a detail? ☐ Yes ☐ No

4. "I am too small to fight you one-to-one, but if you will choose a team from your people, I will choose one from mine. We can hold the match on the flat fields down below."

Is this part of the story important? 

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Is this part of the story a detail? ☐ Yes ☐ No

5. Lion looked around at the great army of animals.

Is this part of the story important? 

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Is this part of the story a detail? ☐ Yes ☐ No

6. "Agreed," Mountain Lion growled, and he went off to gather all of the Animals to fight on his side.

Is this part of the story important? 

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Is this part of the story a detail? ☐ Yes ☐ No
7. The insects crawled into their fur, and bit and stung them again and again.

Is this part of the story important? [ ] Yes [ ] No

8. Coyote said to Mountain Lion, "I think it would be a good idea if I scout around and see where they are, and how many."

Is this part of the story important? [ ] Yes [ ] No

9. At once, the animals began to bark and squeak and roar and howl.

Is this part of the story important? [ ] Yes [ ] No

10. The name-calling went on until both grew so angry that shouting was not enough.

Is this part of the story important? [ ] Yes [ ] No
11. Every family and clan and herd was there, and ready to fight.

Is this part of the story important?  
0  1  2  3  4  
Unimportant  A little important  Very important

Is this part of the story a detail?  
☐ Yes  ☐ No

12. The animals moved forward quietly until they reached the middle of the field.

Is this part of the story important?  
0  1  2  3  4  
Unimportant  A little important  Very important

Is this part of the story a detail?  
☐ Yes  ☐ No

13. Lion did not see Locust sleeping in the shade under a young redbud tree, and he stepped on him.

Is this part of the story important?  
0  1  2  3  4  
Unimportant  A little important  Very important

Is this part of the story a detail?  
☐ Yes  ☐ No

14. The animals crawled over one another to reach their own side of the field. Many nearly died.

Is this part of the story important?  
0  1  2  3  4  
Unimportant  A little important  Very important

Is this part of the story a detail?  
☐ Yes  ☐ No
15. "Where are they, and how many?" Mountain Lion asked when Coyote returned.

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Is this part of the story a detail?  
☐ Yes  ☐ No
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Next, please indicate if the statement reflects a story detail by checking off the correct box.

1. Fox was hanging in the fork of the tree, frozen stiff.
   - Is this part of the story important?
     - 0 Unimportant
     - 1 A little important
     - 2 Very important
   - Is this part of the story a detail? □ Yes □ No

2. The next morning the ground was covered with snow and the air was bitterly cold.
   - Is this part of the story important?
     - 0 Unimportant
     - 1 A little important
     - 3 Very important
   - Is this part of the story a detail? □ Yes □ No
3. When they reached the persimmon trees, Fox stood under the largest and peered upward into the darkness.

Is this part of the story important?  

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Is this part of the story a detail?  

☐ Yes  ☐ No

4. Like the other animals that wear fur coats, every year when cold weather came and the leaves began to turn yellow, Possum went out to gather fruit and nuts.

Is this part of the story important?  

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Is this part of the story a detail?  

☐ Yes  ☐ No

5. Fox was not a tree climber, but he could reach his front legs far enough around the trunk to raise himself a little.

Is this part of the story important?  

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Is this part of the story a detail?  

☐ Yes  ☐ No
6. Without a word, Possum raised a paw to Fox's nose for Fox to smell.

Is this part of the story important? □ Yes □ No

Is this part of the story a detail? □ Yes □ No

7. “You are too slow! Must I come up there to help you?” Fox frowned, thought for a moment, and then called out, "Come down and help me climb up.”

Is this part of the story important? □ Yes □ No

Is this part of the story a detail? □ Yes □ No

8. When Possum’s pouch was full, he traveled home again to store his harvest for the winter.

Is this part of the story important? □ Yes □ No

Is this part of the story a detail? □ Yes □ No

9. There was nothing Fox loved better than persimmons.

Is this part of the story important? □ Yes □ No

Is this part of the story a detail? □ Yes □ No
10. When at last Fox was sitting in the fork of the tree, picking and eating persimmons, Possum crept away through the darkness.

Is this part of the story important?  
0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail?  
☐ Yes  ☐ No


Is this part of the story important?  
0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail?  
☐ Yes  ☐ No

12. When Possum came there, he ate the sweet, soft fruit until his belly was full, and then filled the pouch at his belt.

Is this part of the story important?  
0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail?  
☐ Yes  ☐ No

13. One night as he waddled home, Possum met Fox.

Is this part of the story important?  
0 1 2 3 4
Unimportant A little important Very important

Is this part of the story a detail?  
☐ Yes  ☐ No
14. Possum knew every place round about where there were tasty roots, where pecan trees grew, and persimmon trees, too.

Is this part of the story important?  

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Is this part of the story a detail?  

☐ Yes  ☐ No

15. Fox reached out to stroke Possum's back, and patted his rump. "Oh, nice and fat. You would taste so good!"

Is this part of the story important?  

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Is this part of the story a detail?  

☐ Yes  ☐ No
Appendix G: Study 2 Training Materials

Think about the:

problem

solution

important parts

Stop at the triangles ▲.

Tell what you are thinking.

Use I statements.
The Town Mouse and the Country Mouse

A Mouse living in the countryside, invited his cousin who lived in a big town to spend some time in her modest home. She agreed and they spent a long time together, despite the modest conditions they lived in. Nothing ever seemed to trouble their peace and harmony. Before returning to her home, the Town Mouse asked the Country Mouse to come with her. As the Town Mouse described the city life full of surprises and luxury, her cousin was very curious to see all that herself, so she said „Yes”. They traveled together to the Town Mouse's house and everything was indeed as described with lots of food and fun. But, at the same time, there were many dangers that the Country Mouse wasn’t made aware of. A cat tried to catch them while they were eating, then a dog barked at them, so the Country Mouse decided immediately to return home and never come back.

“I’d rather live in poverty, but in peace. What’s the use of having plenty of food and lots of dangers, too?”, she said happy to be back home.
A Mouse living in the countryside, invited his cousin who lived in a big town to spend some time in her modest home.

*I see that this story is going to be about two characters: a city mouse and a country mouse. Knowing the characters in the story is an important piece of information for me to remember.*

She agreed and they spent a long time together, despite the modest conditions they lived in.

*I’m wondering if the modest spaces will soon become this story’s problem.*

Nothing ever seemed to trouble their peace and harmony.

*Oh, I guess the modest space is not a problem for these characters!* 

Before returning to her home, the Town Mouse asked the Country Mouse to come with her.

*I think this event might lead to the story’s problem.*

As the Town Mouse described the city life full of surprises and luxury, her cousin was very curious to see all that herself, so she said „Yes“.

*I know from reading other stories that this might be the problem. There are lots of stories that talk about how a country animals has a hard time adjusting to the city.*

They traveled together to the Town Mouse's house and everything was indeed as described with lots of food and fun.

*I think this is a detail the author included to keep me interested. I don’t think this is an important part of the story.*

But, at the same time, many dangers that the Country Mouse wasn’t made aware of.

*Oh, I think this is the story problem. Like I said before, many stories talk about the problem country animals face when they come to the city.*

A cat tried to catch them while they were eating, then a dog barked at them, so the Country Mouse decided immediately to return home and never come back.

*Now I know more about the specific problem. The cat wanted to each the mouse. I guess that could be a very big problem if you’re a mouse. But this sentence also tells me how Country Mouse solved the problem -- she went home.*

“I’d rather live in poverty, but in peace.”
Here, I think the mouse is justifying her solution.

What’s the use of having plenty of food and lots of dangers, too?”, she said happy to be back home. ▲

Here too, the author is telling me that the mouse is happy with her solution. Going back home was a good solution to her problem.
One day, a Crow found a piece of meat, took it in her beak and flew away with it in a tree. Right that moment, a Fox passing by, saw the Crow with the meat and, since he was very hungry, thought of a plan meant to help him steal the meat. So, he sat in front of the Crow and began to exclaim:

“Oh, Crow, you are the most gracious and beautiful bird I have ever seen! Let me admire you, and let me hear your voice, too, it must be equally beautiful as your appearance, you, Queen of Birds!”

The Crow was truly delighted by all these compliments, and she was even convinced she had a beautiful voice, so, she opened her mouth to sing. That moment, she dropped the meat, and the Fox grabbed it right away.

“Look, Crow”, the Fox said, “your voice is ok, but, unfortunately, you have no wits.”
Appendix H: Prior Knowledge Rubrics Study 2

Scoring Rules and Rubric for Prior Knowledge

Henry and Mudge

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<tr>
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<td>Reflects poor exposure:</td>
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<td></td>
<td>Names of characters</td>
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<td>Vague knowledge of one or two Henry and Mudge stories</td>
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<td>2</td>
<td>Reflects some exposure:</td>
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<td></td>
<td>Name characters’ traits</td>
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<td>Names recurring an event or theme in two texts</td>
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<td>Specific details in a Henry and Mudge story</td>
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<th><strong>In-depth Knowledge</strong></th>
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<tr>
<td>3</td>
<td>Reflects in-depth knowledge:</td>
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<td>Identifies a recurring events that occur across texts (3+)</td>
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<td>Alludes to a basic text structure/ plot structure across texts</td>
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Folk Tales

<table>
<thead>
<tr>
<th></th>
<th><strong>Cursory Knowledge</strong></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Reflects poor exposure:</td>
</tr>
<tr>
<td></td>
<td>Vague knowledge of one or two folk tales</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>Basic Knowledge</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Reflects some exposure:</td>
</tr>
<tr>
<td></td>
<td>Names animals as likely characters in a folk tale</td>
</tr>
<tr>
<td></td>
<td>In-depth knowledge of a folk tale</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th><strong>In-depth Knowledge</strong></th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>Reflects in-depth knowledge:</td>
</tr>
<tr>
<td></td>
<td>Alludes to a basic text structure/ plot structure of folk tales</td>
</tr>
<tr>
<td></td>
<td>Alludes to the role of culture in folk tales</td>
</tr>
<tr>
<td></td>
<td>Discusses the purpose of a folk tale: to teach a lesson</td>
</tr>
<tr>
<td></td>
<td>Names an author famous for writing folk tales</td>
</tr>
</tbody>
</table>
Appendix I: Repeated Measures MANCOVA for Verbal Reports and AIT and Correlational Analyses

Table 1A
Repeated Measures MANCOVA of Verbal Reports Coded by Importance by Text Difficulty and Reading Condition

<table>
<thead>
<tr>
<th>Test of Within-Subjects Effects</th>
<th>Pillai’s Trace</th>
<th>F</th>
<th>Sig</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Importance</td>
<td>0.012</td>
<td>0.199</td>
<td>0.661</td>
<td>0.012</td>
</tr>
<tr>
<td>Text Level</td>
<td>0.115</td>
<td>2.210</td>
<td>0.155</td>
<td>0.115</td>
</tr>
<tr>
<td>Read Condition</td>
<td>0.000</td>
<td>0.007</td>
<td>0.933</td>
<td>0.000</td>
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<td>Tests of Between-Subjects Effects</td>
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<tr>
<td>Main Effects</td>
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<tr>
<td>TRT</td>
<td>2.813</td>
<td>0.112</td>
<td>0.142</td>
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<tr>
<td>KNSST</td>
<td>0.235</td>
<td>0.634</td>
<td>0.014</td>
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</tr>
<tr>
<td>Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance *TRT</td>
<td>0.001</td>
<td>0.015</td>
<td>0.905</td>
<td>0.001</td>
</tr>
<tr>
<td>Importance *KNSST</td>
<td>0.050</td>
<td>0.890</td>
<td>0.359</td>
<td>0.050</td>
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<tr>
<td>Text Level*TRT</td>
<td>0.200</td>
<td>4.253</td>
<td>0.055</td>
<td>0.200</td>
</tr>
<tr>
<td>Text Level*KNSST</td>
<td>0.000</td>
<td>0.001</td>
<td>0.970</td>
<td>0.000</td>
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<tr>
<td>Text Level*Read Condition</td>
<td>0.098</td>
<td>1.840</td>
<td>0.193</td>
<td>0.098</td>
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<tr>
<td>Text Level<em>Read Condition</em>TRT</td>
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<td>1.647</td>
<td>0.217</td>
<td>0.088</td>
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<td>Text Level<em>Read Condition</em>KNSST</td>
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<td>0.521</td>
<td>0.480</td>
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<tr>
<td>Text Level<em>Read Condition</em>Importance</td>
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<td>0.008</td>
<td>0.928</td>
<td>0.000</td>
</tr>
<tr>
<td>Text Level<em>Read Condition</em>TRT</td>
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<td>0.704</td>
<td>0.413</td>
<td>0.040</td>
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<tr>
<td>Text Level<em>Read Condition</em>Importance</td>
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<td>0.951</td>
<td>0.352</td>
<td>0.051</td>
</tr>
<tr>
<td>Text Level*Importance</td>
<td>0.007</td>
<td>0.118</td>
<td>0.736</td>
<td>0.007</td>
</tr>
<tr>
<td>Text Level*Importance *TRT</td>
<td>0.030</td>
<td>0.519</td>
<td>0.481</td>
<td>0.030</td>
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<tr>
<td>Text Level*Importance *KNSST</td>
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<td>1.795</td>
<td>0.198</td>
<td>0.095</td>
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<td>Read Condition*TRT</td>
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<td>0.857</td>
<td>0.367</td>
<td>0.048</td>
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<tr>
<td>Read Condition*KNSST</td>
<td>0.008</td>
<td>0.135</td>
<td>0.717</td>
<td>0.008</td>
</tr>
<tr>
<td>Read Condition*Importance</td>
<td>0.015</td>
<td>0.251</td>
<td>0.622</td>
<td>0.015</td>
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<tr>
<td>Read Condition*Importance *TRT</td>
<td>0.071</td>
<td>1.306</td>
<td>0.269</td>
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<tr>
<td>Read Condition*Importance *KNSST</td>
<td>0.018</td>
<td>0.315</td>
<td>0.582</td>
<td>0.018</td>
</tr>
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*p < 0.05, ** = p <0.01, ***=p <0.001, NS = not significant

Maximum score for each category of verbal reports is 13. Maximum TRT score = 39; Maximum KNSST score = 41
Story Elements = “problem” verbal reports versus “solution” verbal reports; Text level = lower level text versus upper level text;
Read condition = think aloud only condition versus think aloud reread condition
### Table 2A
Repeated Measures MANCOVA of Verbal Reports Coded as Story Elements by Text Difficulty and Reading Condition

<table>
<thead>
<tr>
<th>Test of Within-Subjects Effects</th>
<th>Pillai’s Trace</th>
<th>F</th>
<th>Sig</th>
<th>Partial Eta Squared</th>
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<tbody>
<tr>
<td>Main Effects</td>
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<tr>
<td>Story Elements</td>
<td>0.431</td>
<td>13.627</td>
<td>0.002**</td>
<td>0.431</td>
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<tr>
<td>Text Level</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>0.000</td>
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<tr>
<td>Read Condition</td>
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<td>0.372</td>
<td>0.550</td>
<td>0.020</td>
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<td>Tests of Between-Subjects Effects</td>
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<tr>
<td>Main Effects</td>
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<td>TRT</td>
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<td>KNSST</td>
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<td>0.116</td>
<td>0.132</td>
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<tr>
<td>Interactions</td>
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<tr>
<td>Story Elements*TRT</td>
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<td>Story Elements*KNSST</td>
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<td>0.055</td>
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<td>Text Level*TRT</td>
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<td>0.136</td>
<td>0.717</td>
<td>0.007</td>
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<td>Text Level*KNSST</td>
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<td>0.090</td>
<td>0.767</td>
<td>0.005</td>
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<td>0.034</td>
<td>0.855</td>
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<td>0.710</td>
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<tr>
<td>Text Level<em>Read Condition</em>KNSST</td>
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<td>0.006</td>
<td>0.939</td>
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<td>0.451</td>
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<td>0.013</td>
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<td>0.117</td>
<td>0.736</td>
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<td>0.878</td>
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*=p < 0.05, **=p < 0.01, ***=p < 0.001, NS = not significant

Maximum score for each category of verbal reports is 13. Maximum TRT score = 39; Maximum KNSST score = 41

Story Elements = “problem” verbal reports versus “solution” verbal reports; Text level = lower level text versus upper level text;
Read condition = think aloud only condition versus think aloud reread condition
Table 3A
Repeated Measures MANCOVA for AIT Scores by Group, Read Condition, and Text Difficulty

<table>
<thead>
<tr>
<th>Test of Within Subjects Effects</th>
<th>Pillai’s Trace</th>
<th>F</th>
<th>Sig</th>
<th>Partial Eta Squared</th>
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<tbody>
<tr>
<td>Main Effects</td>
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</tr>
<tr>
<td>Text Level</td>
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<td>0.450</td>
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<td>0.077</td>
<td>0.782</td>
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<tr>
<td>Main Effects</td>
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<tr>
<td>Group</td>
<td>1.220</td>
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<tr>
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<td>1.290</td>
<td>0.262</td>
<td>0.029</td>
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<tr>
<td>KNSST</td>
<td>0.253</td>
<td>0.618</td>
<td>0.006</td>
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</tr>
<tr>
<td>Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Level *TRT</td>
<td>0.030</td>
<td>1.310</td>
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<td>Text Level *KNSST</td>
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<td>0.000</td>
<td>0.994</td>
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<td>2.990</td>
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<td>0.256</td>
<td>0.616</td>
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<td>Read Condition *Text Level</td>
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<td>8.706</td>
<td>0.005**</td>
<td>0.168</td>
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<td>Read Condition *Text Level *Group</td>
<td>0.001</td>
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</table>

*p < 0.05, ** = p < 0.01, *** = p < 0.001, NS = not significant

Maximum score for each AIT task is 15. TRT maximum score = 39; KNSST maximum score = 41

Group = treatment versus control; Text level = lower level text versus upper level text; Read condition = think aloud only condition versus think aloud reread condition; TRT = Title Recognition Task; KNSST = Knowledge of Narrative Story Structure Task
Table 4A
Correlations for Story Elements (Problem and Solution) Verbal Reports and PSID by Text Difficulty and Read Condition

<table>
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<th></th>
<th>1</th>
<th>2</th>
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</tr>
<tr>
<td>1. Problem, LL, Read Once</td>
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<tr>
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<td>3. Problem, LL, Read Twice</td>
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</tr>
<tr>
<td>4. Solution, LL, Read Twice</td>
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<td>0.418</td>
<td>0.382</td>
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</tr>
<tr>
<td>5. Problem, UL, Read Once</td>
<td>-0.081</td>
<td>0.233</td>
<td>0.185</td>
<td>-0.255</td>
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<tr>
<td>6. Solution, UL, Read Once</td>
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<td>0.403</td>
<td>0.150</td>
<td>0.230</td>
<td>-0.082</td>
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<tr>
<td>7. Problem, UL, Read Twice</td>
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<td>0.291</td>
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<td>0.182</td>
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<tr>
<td>8. Solution, UL, Read Twice</td>
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<td>-0.016</td>
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<tr>
<td>9. Problem, LL, Read Once</td>
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<td>0.301</td>
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<td>-0.109</td>
<td>0.014</td>
<td>-0.091</td>
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<tr>
<td>11. Problem, LL, Read Twice</td>
<td>-0.184</td>
<td>-0.101</td>
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<td>-0.082</td>
<td>0.261</td>
<td>0.298</td>
<td>0.176</td>
<td>-0.255</td>
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<tr>
<td>12. Solution, LL, Read Twice</td>
<td>-0.255</td>
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<td>-0.128</td>
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* = p < 0.05, ** = p < 0.01, *** = p < 0.001, † = p < 0.1, NS = not significant
LL = Lower level text; UL = Upper level text
Table 5A  
Correlations for Importance Verbal Reports and AIT by Text Difficulty and Read Condition

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*=p < 0.05, **=p < 0.01, ***=p < 0.001, †=p<0.1, NS = not significant
LL= Lower level text; UL=Upper level text
References


