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Development of An Early Expository Text Comprehension Assessment: A Pilot Study

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ABSTRACT

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Literature supporting the use of informational texts with preschool children has increased in recent years. However, many preschool classrooms still focus on narrative text, and teachers are often unsure how to provide support for children's comprehension of informational texts. An assessment addressing preschool children's informational text comprehension will help teachers understand what children can do with informational texts and point out demands or tasks that children should be able to handle. A comprehension assessment for preschool children focusing on text purpose, text features, text retell, and comprehension of text structures has not been available. To fit this need, recent effort has focused on developing The Early Expository Text Comprehension Assessment (EECA), which previous studies have found to be reliable and valid. However, the latest iteration, developed in 2016, identified multiple problematic items based on a many-facets Rasch analysis, and problems with administrator consistency were noted. To further develop the EECA, changes were made to problematic items and the assessment was fully digitized. This pilot study tested a beta version of the next iteration of the EECA on twelve participants at the BYU preschool to identify additional changes that could be made before submitting the revised assessment to a more comprehensive full-scale study for analysis of reliability and validity. Results identified additional changes to apply to the assessment including suggestions for improving child engagement and responsiveness to the digitized format, administrator prompts, technical errors with the assessment program, and improvements to individual test items.

ACKNOWLEDGMENTS

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DESCRIPTION OF THESIS CONTENT

This thesis, *Development of an Early Expository Text Comprehension Assessment: A Pilot Study*, is written in a traditional format. It contains four chapters: Review of Literature, Method, Results, and Discussion. Appendix A includes a list of the items used in the assessment tool. Appendix B contains the protocol used for this pilot study. Appendix C includes the feedback guide given to administrators followed by a compilation of that feedback in Appendix D. An annotated bibliography is given in Appendix E.

CHAPTER 1

Review of Literature

Researchers in early childhood education have increasingly emphasized the need to expose children to informational texts and content (Duke & Kays, 1998; Hall, Markham, & Culatta, 2005; Pappas, 1991). Early childhood programs, however, have historically focused on narrative texts. This tradition still has a hold in many preschool classrooms, with teachers unsure as to how to provide adequate instruction with informational texts (Duke, 2000; Mantzicopoulos & Patrick, 2011; Neuman & Roskos, 2012). Addressing informational texts early on in children's lives requires educators to understand the importance and nature of these texts. Being able to ultimately provide instruction in informational texts also relies on teachers having access to tools for assessing children's informational text comprehension.

The Importance of Addressing Informational Texts in Early Childhood Settings

For many years, educational professionals believed that informational texts were too complex to include in an early curriculum and that young children were only capable of handling fictional stories (Duke, 2000). This assumption was based on the idea that there was a developmental sequence in literacy that began with comprehending narratives; children could only begin to understand and use informational texts after they had learned to understand and write narratives (Pappas, 1991). However, several studies have shown that when given exposure, preliterate children are capable of enjoying and learning from expository texts (Culatta, Hall-Kenyon, & Black, 2010; Duke & Kays, 1998; Pappas, 1991).

Young children's ability to benefit from informational books could have important implications for improving children's text comprehension. In most early grade classrooms there is little direct instruction on how to deal with informational texts (Duke, 2000). As children

progress through their elementary school years, an ever-increasing emphasis is put on learning from expository texts, particularly in the areas of science, math, and social studies. By the third or fourth grade there is usually a significant increase in the amount of exposure children have to these texts as they encounter curriculum that focuses on reading to learn instead of learning to read. This sudden increase of informational texts without adequate experience and instruction in earlier grades may be a contributing factor to what is often called the "fourth-grade slump," where overall reading scores decline around the fourth grade (Duke & Kays, 1998; Hall, Sabey, & McClellan, 2005; Harding, 2014).

Increasing children's early exposure to informational texts may better prepare them for later comprehension challenges (Catts, 1997; Pappas, 1991). For example, research has indicated that exposing children to literature requiring higher levels of cognitive demand has a positive effect on their literacy skills. The language included within informational texts, as well as the extratextual utterances adults use when reading and explaining these texts, has been found to evoke the high levels of cognitive demand which are associated with these positive gains in literacy and language (Price, Kleeck, & Huberty, 2009).   Research has also shown positive comprehension gains from direct instruction with informational texts. In Culatta et al. (2010) a 16-week pilot study with 71 children showed positive gains in comprehension following direct instruction involving a theme-based unit. Consensus among numerous researchers regarding the importance of early exposure to informational texts is reflected in recent changes made by Common Core state standards to recommend using a balance of 50% literary and 50% informational texts in classroom instruction for grades K-5 (Neuman & Roskos, 2012). Planning classroom support and instruction, to align their curriculum with this recommendation, requires teachers to understand the unique features of informational texts.

The Nature of Informational Texts

In order to assess and provide instruction in informational texts, teachers need to understand the nature of such texts. Informational texts can be characterized by their content, structure, and signaling devices.

Content. The unique content features of informational texts separate them from other genres and places unique cognitive demands on children. The purpose of informational content is to convey factual and accurate information to the reader about the natural or social world (Duke, 2000; Hall, Sabey, et al., 2005; Mantzicopoulos & Patrick, 2011). Because informational texts deal with aspects of the larger social and physical world, events that occur beyond children's home lives or every day experiences, the content can be more complex than the ideas included in narrative texts that tend to deal with situations children actually have experienced (Hall, Sabey, et al., 2005). Decontextualized informational content often includes unfamiliar technical vocabulary words that are not usually a part of children's normal everyday conversations at home or at school (Mantzicopoulos & Patrick, 2011; Price et al., 2009).

Structure. Another element unique to informational texts is the variety of text structures that can be employed. Text structure refers to the structural pattern around which a text is arranged in order to highlight important relationships among ideas and support meaning of the overall passage (Akhondi, Malayeri, & Samad, 2011; Hall, Sabey, et al., 2005; McDonald, 2016). While narratives have one predictable text structure, informational texts use different structures depending on the purpose of the text. The five main types of informational text structures include description, sequence, compare/contrast, problem/solution, and cause and effect. When readers understand the purpose of these structures, they can anticipate information to unfold in certain ways; they can better identify important information and understand how the

main ideas are related. Multiple researchers agree that an understanding of text structure leads to better comprehension (Akhondi et al., 2011; Hebert, Bohaty, Nelson, & Brown, 2016).

Signal devices. An additional aspect of expository texts that influences comprehension is the inclusion of signal devices, which can indicate structural relationships between main ideas. These devices are typically words that provide clues to help students identify the organization or structure of a text. For example, the words *problem* and *solution* can suggest the problem/solution text structure. With these clues, readers can anticipate and organize important incoming information (Hall-Kenyon & Black, 2010; Harding, 2014). Since the function of a compare/contrast passage is to deal with similarities and differences between or among entities, common signal words could include *similarly, in contrast, if, then or but, however, on the other hand, different,* and *alike.* The purpose of a problem/solution passage is to show how a problem was or could be solved so common signal words could include *problem*, *solution*, *question*, *answer*, *if*, and *then*. The function of a sequence structure is to organize items based on a certain order or time and therefore common signal words could include *first*, *second*, *third*, *next*, *then*, *last*, *previously*, *now*, *finally*, *after*, and *since*. The purpose of cause/effect is to highlight a causal relationship; common signal words could include *if/then*, *as a result*, *since*, *therefore*, *consequently*, *because*, *since*, *due to*, *so that*, *thus*, and *this led to*. The purpose of description is to explain the attributes of something. It can use words such as *for example*, *characteristics*, *for instance*, *such as*, *is like*, *including*, and *to illustrate* (Hall, Sabey, et al., 2005; Harding, 2014; Hebert et al., 2016; McDonald, 2016).

Signal devices, decontextualized vocabulary, and the logical organization of a text all must be highlighted or specifically taught to children. Classroom strategies designed to improve informational text comprehension can specifically teach the more abstract vocabulary, highlight

key signal words in texts (e.g., same, compare, problem, cause), and label and map text structures with graphic representations.

The Need to Assess Informational Text Comprehension

The increased emphasis on exposing preschool children to informational texts in instruction creates a need for a comprehension assessment. An assessment can serve to identify children's comprehension abilities and difficulties and guide instruction.

Research has shown that comprehension abilities exhibited by children during preschool can be predictive of later literacy performance (Justice, Mashburn, & Petscher, 2013; Skarakis-Doyle, Dempsey, & Lee, 2008). Therefore a comprehension assessment may provide information about what children are able to comprehend, under what circumstances, and within what task demands. Information about how well or to what extent children are exhibiting important preliteracy skills can be useful in knowing how to support comprehension (Griffin, 2002; Hall, Markham, et al., 2005). If children exhibit comprehension problems, teachers may wish to support them in their processing of connected text and in their ability to gain information from informational texts. By teaching comprehension skills that will enhance processing of informational texts, teachers can better prepare children for the increased encounters with informational text comprehension tasks they will meet as they progress through elementary school.

Successful intervention in the area of expository text comprehension may also motivate children to want to engage more with these texts (Justice, Invernizzi, & Meier, 2002). Therefore, early identification is proactive in that it can stimulate or enhance skills that will relate to later reading performance (Catts, 1997; Justice et al., 2002). Information about the manner in which young children can interact with and abstract information from information texts, gained through

an assessment, can give early indicators of what specific instruction may be needed before formal reading instruction begins.

While young children, both with and without comprehension delays, are able to benefit from specific instruction with expository texts, many teachers seem unaware of how to incorporate and teach these texts (Hall, Sabey, et al., 2005; Neuman & Roskos, 2012). An assessment tool that highlights children's understanding of unique informational text elements (e.g., structures and signal devices) may guide teachers in knowing more about these features. Therefore, an assessment tool can help teachers better understand the necessary skills students need to comprehend informational texts and direct their instruction accordingly. In addition, an assessment can also give guidance on what a child's weaknesses and strengths are in regard to comprehension tasks in order to establish objectives and provide specific skill instruction (Witmer, Duke, Billman, & Betts, 2014).

Existing Efforts to Assess Informational Text Comprehension in Young Children

Despite the value of teaching young children to comprehend informational texts, little has been done in the way of developing assessment tools that focus on informational text comprehension. While a limited number of such comprehension measures have been developed in recent years, these tools have limited use in early childhood education.

In the recent past, assessments for exclusively assessing informational text comprehension did not exist. Instead, expository comprehension was usually assessed concurrently with other language and reading skills. This was typically done through informal reading inventories. One commonly used instrument is the Qualitative Reading Inventory (QRI). This inventory has gone through multiple editions with the most recent being the QRI-6. This inventory contains both narrative and informational passages for the preprimer to high school

levels. These reading inventories are helpful with gaining an overall look at a student's comprehension of informational passages through having them retell and answer comprehension questions. However, these inventories are not designed to look at the comprehension of multiple text structures and their signal devices.

In addition to lacking tools that assess texts that vary in terms of informational text structure and presence of signal devices, there are no comprehension tools that have been created to use with preschool-aged children. There has been some recent focus on creating tools that exclusively assess informational texts in younger children but these are typically designed for first-grade students or older. One example is the Concepts of Comprehension Assessment. This assessment looks at four subscale categories of comprehension including vocabulary, text features, graphics, and comprehension strategies (Witmer et al., 2014). It is constructed to be used with children beginning in first grade. There is still a need to create an assessment tool that can be used with preschoolers.

Several recent efforts have focused on creating a text comprehension measure that would be appropriate for preschool children. A series of attempts to develop a comprehension measure began in 2005 with a study by Hall, Markham, et al. that focused on creating a preschool expository comprehension assessment. This assessment, the Early Expository Comprehension Assessment (EECA) focused on a compare and contrast text structure and three response tasks. Students used visual representations as manipulatives to contrast two different animals described in the text. The assessment was shown to be reliable, but the authors noted that it needed to be further developed with more text structures to better fulfill the need for an expository assessment for young children (Harding, 2014; McDonald, 2016).

The EECA was further developed in 2014 in a follow-up study where a second iteration was created. This iteration added a problem/solution text and other comprehension tasks to the assessment. This assessment included two different informational text structures: compare/contrast and problem/solution. The measure was retested for validity and was shown to be a reliable assessment (Harding, 2014; McDonald, 2016).

Another study was done in 2016 to again expand the EECA by adding a sequencing text to the assessment and digitizing parts of the assessment to help increase consistency of test administration. This third iteration of the EECA was also found to be a reliable and valid measure. However after statistical analysis of the individual test items using a many-facets partial credit Rasch model, multiple items were found to be problematic in relation to the calculated probability of children obtaining a correct score on each of these items based on the facets of the children's ability, item difficulty, rater variability in scoring, and the different content between the two different test versions (McDonald, 2016). These items may have been problematic due to scoring or the nature of the task being difficult. McDonald made multiple suggestions on how to refine the instrument to possibly address these problematic items.

Purpose of the Present Study

The purpose of this study was to pilot an updated version of the EECA that incorporated a new digitized format and made changes to the problematic items identified in McDonald's 2016 study. The goal was to identify any additional changes that could be made before submitting the revised assessment to a more comprehensive analysis for reliability and validity. The pilot was designed to qualitatively analyze children's engagement and interactions with the digitized presentation as well as their responses to the revised items. This information was useful

in knowing if additional refinements should be made before the assessment is subjected to a full-scale study.

CHAPTER 2

Method

Development of the Early Expository Comprehension Assessment

The EECA was initially created with one text structure and tested for validity in 2005 in a study by Hall, Markham, et al. In each subsequent version of the EECA, in 2014 and 2016, additional text structures and comprehension elements were added to expand the EECA to make it a more functional assessment. Aside from focusing on text structures and signal devices, other factors were taken into consideration when creating the assessment. This included decisions about the type of content used for the text, specific tasks used in the assessment, and the mode of presentation.

Content. Topics were selected for the EECA based on their appropriateness for preschool children. In addition to selecting topics that would be interesting, these topics needed to not be familiar enough that the children would depend on their prior knowledge alone to complete the assessment instead of relying on the text. Each topic selected in the EECA also had an accompanying inherent text structure.

Tasks. In the first iteration of the EECA in 2005, the assessment consisted of a compare/contrast text structure and three response tasks: retelling, mapping, and comparing. Retelling and mapping text structures have been shown in past research to be an effective means of improving text comprehension (Culatta et al., 2010; Hall, Sabey, et al., 2005; Hall-Kenyon & Black, 2010; Hebert et al., 2016; Mantzicopolous & Patrick, 2011; McGee, 1982). The three tasks were presented in a specific order with the least supportive and most cognitively demanding task (unaided retelling) presented first and the most supported and least demanding task (structure-based questions) presented last. These tasks were ordered in this way so that each

of the three tasks would have the least possible influence on each other. For example, the unaided retell was placed first to see how much children remembered without the influence of visual aids that were used with the mapping tasks. The second iteration of the EECA created in 2014 tested another text structure: problem/solution and included the same three response tasks for the new structure: retelling, mapping, and structure-based questions. In addition, the EECA-R added two additional comprehension tasks: identifying the purpose of the text and identifying graphics. Both of these are identified as important skills in the Common Core (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). The third iteration of the EECA in 2016 added a third text structure, sequencing, with the same three response tasks. This most recent version was comprised of 27 total test items. These test items are listed in Appendix A.

Mode of presentation. The initial iterations of the EECA were not digitized. Beginning in 2016, parts of the EECA were digitized and administered on an iPad to help ensure consistency in test administration; this included all the instructions, texts, and evaluation questions. This also allowed improved graphics to be displayed on a screen, controlled the rate of presentation, and ensured that tasks were introduced consistently. The graphic organizers used in McDonald's (2016) study for mapping the text structures were still completed manually apart from the iPad.

The Current EECA-R3 Measure

To further develop the EECA, it was decided that the next version would be fully digitized to enhance administration consistency and that adjustments would be made to the problematic items highlighted in McDonald's (2016) study. A beta version of the resultant measure was created to pilot these changes. The protocol for the beta measure is located in

Appendix B. The decision process that resulted in changes to McDonald's 2016 version of the

EECA to create the current version used for this pilot study is listed below.

   Changes to presentation medium. The new pilot version took the 27 items presented in

McDonald's (2016) study (see Appendix A) and completely digitized them to enhance

administration consistency and ease of use. The digitized EECA allows the assessment to be

administered via an iPad that accesses the program from a site via the Internet, with children

being able to manually select their answers on a screen. All of the informational texts and

questions were audio recorded to play from the assessment as an administrator advanced to each

new page. Students responded to questions as they were played by giving verbal answers or by

pointing or manipulating items on the screen. For each text structure, students were presented

with a graphic organizer and moved pictures into the organizer to demonstrate comprehension. In

the previous version of the EECA, these graphic organizers were completed separately from the

iPad with a paper and cutout manipulatives.

   Changes to problematic test items. In McDonald's (2016) study, nine questions were

found to be problematic following the statistical analysis described earlier. These nine

problematic questions and an overview of the changes made for this pilot study are listed in

Table 1 and are further explained below.

   Identifying fiction and non-fiction. The first problematic items on the assessment were

test Items 1 and 2. Both of these test items were collapsed test items (two questions were

combined for one test item and required the child to answer the first question in order to give a

response for the second question). Test item 1 presented children with a picture of two different

giraffe books and asked the child to pick which book they would read if they wanted to read a

pretend story. The item then asked the child to give an explanation for why they chose that book.

Test item 2 required the same two questions for identifying the nonfiction book. In McDonald's (2016) version, children received points separately for each collapsed question. McDonald's suggestion was to make the scoring for each of these test items dichotomous requiring the child to correctly identify the book and give a valid explanation in order to receive credit. This was to better understand which children could identify the genre and which children were simply guessing. This suggested scoring change was incorporated into the pilot.

Interpreting graphics. Test item 5 was a graphic item that required children to look at the picture and describe what was happening. The graphic used for this test item was an image of a baby giraffe drinking milk from its mother. Since the other graphic items used in McDonald's (2016) EECA were not statistically problematic, it lead us to believe that the difficulty of this item was due to problems with this particular image instead of potential difficulty with the task demands. However, it was unclear whether this question was problematic because children did not comprehend the subject matter of baby giraffes nursing or if the image itself was the problem. McDonald (2016) recommended that this picture be changed. This recommendation was not made for the pilot so more observations could be obtained to determine whether or not children appeared to understand the image of a baby giraffe nursing from its mother.

Mapping passages. Test Items 15, 20, and 25 were also listed as problematic. These questions asked the children to arrange pictures onto the graphic organizers for each text structure. McDonald's (2016) study pointed out an observation that children appeared to randomly move the pictures into the boxes without paying attention to order and content. This may be because of task difficulty and not understanding the instructions. McDonald (2016) suggested modifying the prompts to these items. In the previous assessment the instructions were "You choose the picture that shows the answer and put it in the correct box." It then listed the

questions directly (e.g., "What do lizards eat?"). With the new digitized graphic organizers created for this pilot study, these mapping questions now required students to move pictures onto the organizer by tapping on the picture and then tapping on the area of the organizer where the picture belonged. Our new version changed the prompt instructions by highlighting the intended box on the organizer in yellow and stating, "What do lizards eat? Tap on the picture that shows what lizards eat and then tap on the yellow box." In addition, McDonald (2016) also suggested making the scoring for each graphic organizer dichotomous, requiring children to correctly place all four pictures in order to receive credit. This suggestion was implemented in our study as a possible way to better identify which kids understood the text structure and which were getting a few pictures right by chance.

Structure-based questions. Test items 16, 21, and 22 were also problematic. In McDonald's (2016) study, these test items had children retell the text using the completed graphic organizers as visual aids with follow-up questions given verbally by administrators when children gave vague or incomplete answers. It was noticed that there was a difficulty in maintaining consistency between administrators for when to use these back-up prompts. For this pilot study, it was decided that all four follow-up prompts would be given to every child to increase consistency. For example, with the firefighter text, instead of "Tell the person sitting next to you the problems firefighters take care of and how they fix them" the prompt was changed to individual questions including, "What is one problem firefighters help with?" After the child gave an answer, the assessment asked, "How do they fix that problem?" It then proceeded to repeat those two questions for the other two boxes on the graphic organizer.

Table 1

Modifications Made to Problematic Test Items

Number	Test Item	Implemented Changes
1	Identifying fiction	Dichotomous scoring
2	Identifying nonfiction	Dichotomous scoring
5	Interpreting graphics	No change
15	Mapping compare/ contrast passage	Changed prompts, dichotomous scoring
16	Compare/ contrast structure questions	Split up prompts
20	Mapping problem/ solution passage	Changed prompts, dichotomous scoring
21	Problem/ solution structure questions	Split up prompts
25	Mapping sequencing passage	Changed prompts, dichotomous scoring
26	Sequence structure questions	Split up prompts

Training of Administrators

A meeting was held to train graduate and undergraduate students on the administration of the pilot prior to data collection. One of the BYU faculty members provided direct instruction at this meeting on how to administer the assessment and record data for the pilot study. Test protocols were given to each administrator to individually review so they could become familiar with the administration procedures.

Participants

Twelve preschool students who were attending the BYU early childhood development program served as participants. The students were between the ages of 4 and 5 and included 5 boys and 7 girls. The participants all spoke English as their primary language. None were reported as having any delayed language abilities. Only students with parent permission received the EECA assessment.

Setting

The children all received the assessment in their regular classroom on the same day. The assessment was administered at three tables situated on the side of the classroom with two children at each table. Six children at a time were individually given the assessment by six administrators. Thus each administrator presented the assessment individually to two different children.

In addition to the six administrators, a BYU faculty member observed the administration process. Each test administration was audio recorded and most were video recorded. Each assessment lasted around 20 minutes.

Administration Procedures

The assessment was administered on iPads. Each administrator had a testing protocol where appropriate verbal follow-up prompts were located (See Appendix B). The children's answers were manually written onto the testing protocol. The administrators were also instructed to take notes of any problems they observed or potential changes they might suggest. In addition, they were given a qualitative feedback guide to give a subjective rating for engagement and how well children responded to the assessment's prompts (see Appendix C).

Subjective Analysis of Data

Information about the manner in which the digitized format of the EECA functioned was obtained from examining how the children responded to each of the revised test items and from reviewing notes from administrators. Children's responses were analyzed by viewing their performance on each of the problematic test items to get an indication as to whether or not the item itself functioned as intended. This was done by observing whether the children exhibited confusion with any items by their visual or verbal reactions (e.g., expressed confusion or displayed confused facial expression) during the test as reported by administrators. We also looked at patterns of incorrect responses within each individual's assessment and collectively across all 12 participants to see if anything stood out as unusual. For example, if an individual child got all but one question correct or all but one question incorrect, it may suggest that an item might be either too difficult or too easy. Likewise, if all children participating in the study got an item wrong, then that particular task might also be considered too difficult. Modifications were then suggested to prepare the measure for the future full-scale study where these test items would be quantitatively analyzed for reliability and validity.

In addition, administrator feedback was compiled from the feedback sheets that were completed by administrators at the conclusion of each administration of the EECA. This included ratings and comments on participants' engagement and responsiveness, along with additional comments or suggestions about problems that occurred. (see Appendix C). Recommendations for modifications to the digitized format were made based on this feedback.

CHAPTER 3

Results

Item-by-Item Analysis

Items were scored according to the guidelines given by McDonald (2016). A summary of the number of children who correctly responded to each problematic question is listed in Table 2. For one participant, the iPad malfunctioned half way through the assessment, and this participant did not complete the second half of the test. This is why only the responses from 11 participants were recorded, beginning with the problem/solution map. The following observations and suggested improvements for each of the problematic items from McDonald's (2016) study came from studying both the patterns noted in Table 2 and the problems reported by administrators.

Identifying fiction and nonfiction. McDonald's 2016 study suggested making the scoring for Items 1 and 2, identifying and explaining the difference between fiction and nonfiction, dichotomous (a right vs. wrong response) to better understand which children could identify genre. The results from the pilot showed only one or two children correctly answered both collapsed questions (i.e., being asked to identify a nonfiction vs. fiction book *and* explain their reasoning) to receive credit for either the fiction and nonfiction titles. However, some of the answers children gave as the explanation for their choice gave the impression that, while understanding the task, the children were unable to give explicit verbal reasoning to receive credit. For example, when explaining why he chose the correct fiction book one child explained, "The giraffe, because I think it is the right one." He later explained that he chose the nonfiction book, "Because it has real giraffes." This child received credit for the nonfiction question but not for the fiction question even though it subjectively appears that he possibly had understanding of both genres.

A suggested change to implement for the full-scale study is to separate the scoring for these two items as it was originally in McDonald's (2016) study instead of making the identification and the explanation of picking the correct book dichotomous. Instead, an additional question could be added to help eliminate the chance the child identified both books simply by guessing. For example, after asking the child which book they would read if they wanted to read a pretend story about giraffes and having them give an explanation of why they chose the book they chose, they could be asked a third question such as, "If you looked at a pretend book about giraffes, could the giraffes in the story go to school and sing songs?" If they identified the first question and this third question correctly they would then get one point for identifying the correct picture.

Interpreting graphics. The graphic image in item 5, a baby giraffe drinking milk from its mother, continued to be a problem in this trial study. While many children identified something that was happening in the picture, only one girl actually identified what the baby giraffe was doing. It is not conclusive whether the problem with this graphic lies in the subject matter or the picture itself, but it appears that children do not understand the concept of a baby giraffe nursing.

It is recommended that the nursing giraffe image be changed to include different subject matter for the children to describe, such as a giraffe bending over to drink water. The full-scale study can then test whether the newer image continues to be problematic.

Table 2

Pilot Results for Problematic Test Items

Number	Test Item	Pilot Results	Recommendation
1	Identifying fiction	1/12 received full credit 7/12 identified correct fictional book	Make identification and explanation polytomous; Add a third question
2	Identifying non-fiction	2/12 received full credit 8/12 identified correct non-fiction book	Make identification and explanation polytomous; Add a third question
5	Interpreting the nursing giraffe picture	1/12 received full credit	Replace with a new picture
15	Mapping compare/contrast passage	2/12 received credit	Keep dichotomous scoring Instruct the child that a picture can be used for more than one place or remove foil
16	Retelling compare/contrast passage with map and prompts	7/12 received full credit for comparing 4/12 received full credit for contrasting 4/12 received full credit for both comparing and contrasting 6/12 received credit for using signal devices in retell	Give follow-up questions if a child does not respond or gives an incomplete answer

20	Mapping problem/ solution passage	6/12 received credit	Keep dichotomous scoring; Examine prompts for possible changes
21	Retelling problem/ solution passage with map and prompts	5/11 received full credit for retelling one connected problem and solution 6/11 received full credit for retelling a second connected problem and solution 5/11 received full credit for two sets of problem/solution 4/11 received credit for using signal devices in retell	Give follow-up questions if a child does not respond or gives an incomplete answer
25	Mapping sequencing passage	2/11 received credit	Keep dichotomous scoring.
26	Retelling sequencing passage with map and prompts	7/11 correctly placed the first picture 7/11 correctly placed the second place 3/11 correctly placed the third picture 7/11 correctly placed the last picture 7/11 received credit for using signal device	Give follow-up questions if a child does not respond or gives an incomplete answer

Mapping. Changes made to Items 15, 20, and 25, where children completed graphic organizers, consisted of changing the wording of the prompts and scoring. Generally the children that filled out the chart correctly were also were able to correctly answer the following retell questions where they used a correctly completed organizer to answer the questions, more so it appears than the children who incorrectly filled out the chart. However, three administrators reported that the prompts for mapping the problem/solution passage appeared to be confusing. When examining the scores for the children that these administrators evaluated, two of the children answered all four retell questions for Item 21 but were unable to correctly fill out the related graphic organizer in Item 20. It is possible that the prompts for these charts are still confusing and need to be modified.

Another concern noted by an administrator was with the compare/contrast mapping in Item 15, where there is one picture that is given as an option that is not a correct answer for the chart. One child seemed confused by the picture options for this question. This child was able to explain that both lizards and frogs eat crickets in both the unaided retell in the preceding item and in the aided retell following the mapping question. However, when presented with Item 15, she appeared to be confused by the extra option and may have chosen the ladybug as one of her answers because she believed she needed to use all four given pictures. It is recommended that the instructions given prior to the prompts be changed to include the explanation, "You can use the same picture in more than one box." This may help alleviate possible confusion of believing you need to use each of the four different pictures provided. Another possible option would be to remove the foil completely.

Another noted pattern was the small number of children who were able to fill out the mapping tasks found in Items 15, 20, and 25. Despite the low number who received points for

these items, the dichotomous scoring used in this pilot may be a better way to determine which children actually comprehend the text structure instead of correctly guessing the right pictures by chance. It is recommended that the full-scale study of this assessment use this dichotomous scoring to see if the items are still statistically analyzed to be problematic.

Structure-based questions. Some noted problems were observed in response to the changes of the prompts for Items 16, 21, and 26 that dealt with retelling the texts from the graphic organizers. Previously in McDonald's (2016) study children were given just one main prompt (e.g., Tell the person sitting next to you the problems firefighters take care of and how they fix them). If children gave incomplete or vague responses additional follow-up questions were given. In our study instead of asking one question, we explained the task and then asked each of the individual follow-up questions to all of the children to increase administrator consistency (e.g., We are going to use this chart to talk about problems firefighters take care of and how they fix them. What is one problem firefighters help with? How did they fix that problem? What is another problem firefighters help with? How do they fix that problem?) Multiple children did not listen to the individual questions but instead give the complete answer in one telling when asked the first question. When the assessment continued to ask the follow-up questions one of the children remarked, "I already told you." It was also noted with Item 27, where children received a point for using signal devices, that the only children who received a point in their retell were the children that answered the retell in one instance rather than waiting for each follow-up question. The only two children who waited and gave the correct answer in response to each of the individual follow-up questions did not include any signal devices in their answers. It appears that administrating all of the follow-up questions had a direct impact on the use of signal devices. This may be because the signal devices are already used in each of the

follow-up questions thereby making it unnecessary for children to use them in their answers. For example, with the bean sequence item, by asking, "What happens first?" the child can say, "a seed is planted" without much need to use the signal word with the phrase (e.g., "First, a seed is planted.") It is recommended that instead of giving each of the follow-up questions to every child, one main prompt should be given as it was in McDonald's study (e.g., Tell the person sitting next to you the problems firefighters take care of and how they fix them) and the follow-up questions should be given when needed. These changes in the administration of the prompts will encourage the use of signal devices and may prevent children from becoming frustrated when they feel they are continually giving the same answer.

Observations Reported by Administrators

Input from the qualitative feedback guides obtained from the administrators (Appendix C) was compiled onto a list found in Appendix D. This feedback dealt with children's engagement and responsiveness to the test prompts and led to suggested changes to improve engagement.

Engagement. The results of the rating scale for engagement (i.e., yes, the student was engaged; most of the time engaged; sometimes engaged; not engaged) were variable but the highest given answer, reported by 5 out of 11 administrators, was that the children were "sometimes" engaged throughout the assessment. When further examining the feedback from the administrators who marked a "sometimes" engagement rating, it appeared many of these children were distracted by environmental stimuli. It was hard to distinguish between whether or not children had a hard time maintaining attention to the iPad screen due to lack of interest or from environmental distractions. However, some insights on engagement were gained by further evaluating administrator feedback. One of the children rated as "sometimes" engaged was

reported to have said, "Are we done yet?" about half way through the assessment. In addition, the administrators for 2 of the 5 children who were "sometimes" engaged reported the least engaging task to be listening to the audio recorded voice. Additional informative observations reported by two administrators were that parts of the instructions were long and slow. These insights may show that engagement could have played a role in child performance despite external distractions being present.

Based on administrator input, one suggested change to improve engagement is to re-record the audio recordings for the stories and questions with a different voice actor. In addition, another suggestion is to examine the prompts and stories to see if anything could be trimmed to reduce the length of each of the sections.

Technical problems. Multiple technical errors occurred during administration with the iPad. One administrator reported that a child had zoomed in on the assessment by tapping the screen too many times. When attempting to zoom out, the assessment ended prematurely. Another administrator also noted problems with the assessment zooming in and out. In addition, multiple administrators reported that the assessment was not retaining the responses children had selected. For example, when completing a mapping organizer, after the child had selected a picture for one of the boxes and moved on to the next box, the picture they had selected for the previous box would disappear. These errors should be evaluated and addressed by the web developers of the assessment before the full-scale study occurs.

Impulsive responding. Two out of 11 administrators reported that the children they were assessing were impatient and kept tapping the iPad impulsively before certain slides were done, causing the administrator to continually have to back track to the correct place in the assessment. When observing one of the two children that were video-recorded, it was noticed that one boy

started to tap on the right answer before the instructions and screen were ready for him to put his answer in the correct box. Since the correct answer wasn't highlighted at that point, he then started tapping on different answers until he found one that highlighted. He then moved the foil into the box; and because the box accepted the answer, he said, "Yes! I did it right." This was then observed with the next box where he again prematurely started tapping on the correct answer. However, because the instructions weren't finished and the screen was not ready for him to move the item, he had started tapping on other pictures to see if his actions would result in an acceptable response. This experience highlights the importance of controlling impulsivity during assessment administration.

Suggested changes to the EECA measure to limit impulsive responding could include adding administration instructions to tell the children that only administrators can tap the button that leads to next task item. Administrators could also be trained to cover that area of the screen with their hand to prevent children from using it. Instruction could also be given to the children at the beginning of the assessment to wait for the audio narrator ("Jane") to finish talking before the child attempts to answer the questions. These changes could prevent possible administration issues with the iPad, such as administrators losing their place in the assessment or the iPad not recording accurate responses.

Responsiveness to task prompts. Multiple administrators made note that they had to add additional prompts to help children who were not tapping on the iPad screen to select their answers. Making simple changes to test prompts by switching the instructions to say "Tap on…" instead of "Point to…" may help with these prompts.

CHAPTER 4

Discussion

The purpose of this study was to pilot a revised version of the EECA before submitting it to a full-scale study to determine reliability and validity. While there are inherent limitations to a pilot study, beneficial information was collected that will permit researchers to refine the EECA measure. The pilot provided insights into the creation of a text comprehension assessment and the use of digitized tools as an assessment medium.

Value of Piloting the EECA Measure

Conducting this study illustrated how trying out a measure is a crucial process in test development. By running this pilot study, important observations were gained in several different areas of the assessment. While we initially assumed most useful information would come from administrator feedback, it became apparent that doing an item-by-item analysis of trends in children's performance gave important information as to the effectiveness of certain test items. This analysis included observing children's behaviors and noting correct vs. incorrect responses. Some additional information was obtained by looking at each child's performance profile.

Part of the analysis was observing the accuracy patterns for individual items across all 12 participants (e.g., Were all 12 children unable to give a correct answer?). This was useful in examining Items 1 and 2, identifying fiction and nonfiction and item 5, interpreting the baby giraffe picture. For these three items, most children were unable to provide the correct answer. Since these were already problematic answers in McDonald's (2016) version of the EECA, this error consistency among participants provided insight that these items may still need to be further revised to be more functional.

We also looked at trends in individual children's performance profiles. This proved beneficial with Items 16, 21, and 26, which were the questions involving answering retell questions using a completed graphic organizer. The way the questions were written appeared to have a direct influence on Items 17, 22, and 27, where the children were given points for the inclusion of signal devices in their answers on the preceding question. This pattern was likely not to have been detected without taking the time to look at individual trends among participants. Looking at the patterns of responses within individual participants served to be an important source of information in identifying possible changes to make in the items.

Insights into Preschool Children's Abilities

Studying comprehension patterns that individuals exhibited in this assessment brought insight into the skills preschoolers exhibit. Having an assessment tool that probes children's comprehension skills can help teachers and other education professionals understand which skills need more direct instruction. However, while we expect preschoolers to perform at different ability levels, the continued overall difficulty of certain items on this assessment brings forth the question of knowing when and when not a certain item may be too difficult for most preschoolers. While it is not appropriate to expect all children to get every question right, we would want to build in a sufficient level of difficulty that would ensure that we can differentiate children with and without preschool-level expected comprehension abilities.

This pilot study highlighted continued overall difficulty with different comprehension tasks such as identifying a text's purpose and mapping individual text structures. It is possible that after our recommended changes are analyzed in the next full-scale study, the challenging items highlighted in McDonald's (2016) study may still be problematic. Perhaps continued difficulty with these items may indicate that we are expecting too much of preschoolers or that

the task demands, rather than the skills being tapped, are challenging. In this case, more scaffolding and support could be incorporated into the assessment. For example, the assessment could provide more trial items that would demonstrate how a text should be mapped before requiring children to complete one such item on their own.

Factors Influencing Children's Performance on the EECA

While the purpose of the pilot was to observe how factors inherent in the tool itself (e.g., wording of questions, task requirements, visual display) might influence performance, the administrators also made some observations in regard to how distractions in the external environment could have influenced children's performance. Many of the administrators commented on how other children in the room provided distraction to the ones involved in taking the test. Children who were not taking the test were engaged in other activities and play in the classroom that often caused the children to stop looking at the test to see what the others were doing. In addition, the close proximity of the participants to each other sometimes affected the children's ability to hear the audio being played from the iPad. In future studies, the environment should be controlled and kept consistent across assessments to help control this variable. The environment should be kept as free of distractions as possible.

Insights into the Use of Digital Assessments

The version of the EECA created for this pilot study relied on digitized media to increase consistency amongst administrators. The completion of this pilot study highlighted both pros and cons of administrating an assessment with digital media via an iPad. While we did not explicitly evaluate administrator consistency, having most of the test administered via an iPad helped increased administrator ease of use. Administrators no longer had to pull out additional materials to use with the children but had everything they needed in one place. This ease of use

helped administrators be more consistent with administration from child to child since the need for administrator assistance during the test was reduced. For example, since the informational texts and questions were all audio recorded, typically the only time the administrators needed to speak was when they were repeating questions when children did not respond. In addition to improving administration, another positive result of digitization was the effect it had on children's engagement. Overall, the children seemed to enjoy using the iPad as evidenced by their tendency to tap on the iPad to see what type of response they could elicit.

While digitization can have positive influences, there were some drawbacks noted in this pilot regarding engagement. Administrators noted that seven of the children had a hard time paying attention to the iPad when they had to listen to the recorded audio narrate the stories. Often these children looked around at other kids in the classroom to see what they were doing when the iPad narrator (the recorded requests made by or presented on the iPad itself) was providing verbal information or explanations. Some of the children also had problems answering questions asked by the audio iPad narrator and in these cases the real-life administrators had to verbally repeat the question a second time. This information draws attention to some questions involving the impact digital assessment tools can have on child engagement and attention. While digitizing the assessment is increasing standardization procedures, we may lose important person-to-person interactions that influence comprehension such as the manner in which people read a book to a child. Are some children more adept at listening and following recorded voices than others? Future research could tease out the influence that digitizing tasks can have on children's responses, not just with this measure but also with comprehension measures in general.

Conclusion

To increase exposure to and support in comprehending informational texts, teachers must understand the elements of these texts in order to teach them to their students. A preschool comprehension assessment that focuses on informational text comprehension will help teachers understand a child's ability to identify the texts' purpose and features, retell important information in an organized fashion, and incorporate signal devices to reveal understanding of text structure organization. The Early Expository Text Comprehension Assessment has great potential to fit this need. Previous iterations of this assessment have been found to be reliable and valid, however; continued development of problematic items of the EECA is needed. Results found in this pilot will help guide continued refinement of this assessment.

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APPENDIX A:
List of Items in EECA

Number	Test Item
1	Identifying fiction
2	Identifying nonfiction
3	Matching picture to text
4	Matching picture to text
5	Identifying graphic
6	Identifying label
7	Identifying label
8	Identifying label
9	Identifying label
10	Identifying label
11	Identifying label
12	Identifying label
13	Retelling compare/ contrast passage (unaided)
14	Using signal devices in Item 13
15	Mapping compare/contrast passage
16	Retelling compare/ contrast with map and prompts
17	Using signal devices in Item 16
18	Retelling problem solution passage

(unaided)

19	Using signal devices in Item 18
20	Mapping problem/ solution passage
21	Retelling problem/ solution with map and prompts
22	Using of signal devices in Item 21
23	Retelling sequence passage (unaided)
24	Using signal devices in Item 23
25	Mapping sequence passage
26	Retelling sequence with map and prompts
27	Using signal devices in Item 26

APPENDIX B:
EECA Pilot Protocol and Recording Sheet

Hi! My name is Jane. Today we are going to read some books together so we can help some of my friends. I'm going to ask you some questions about the books. Some of the questions might be easy. Some of the questions might be tricky. Don't worry - just do the best you can.

Practice
With some questions you will have to tap on a picture and then tap on a yellow box. Let's have a practice. Move me into the yellow box by tapping on me and then tapping on the yellow box.

Great work!

Giraffe Text
Here are pictures of two different books.

> 1a. Which book should I choose if I want to read a pretend, make-believe story about giraffes? Point to the book that I should choose.
> *If no response, say, "If I want to read a pretend, make-believe story about giraffes which book should I choose?"*
>
> Fiction   Nonfiction   No response (after 1 prompt)
>   If you circle this skip to Q3
>
> 1b. Here is the book you chose. Tell the person sitting next to you why you chose that book.
> *If no response, say, "Why did you choose that book?"*

Here are pictures of two different books, again.

> 2a. Which book should I choose if I want to read about where real giraffes live and what they eat? Point to the book that I should choose.
> *If no response, say, "If I want to read about where real giraffes live and what they eat which book should I choose?"*
>
> Fiction   Nonfiction   No response (after 1 prompt)
>   If you circle this skip to Q5
>
> 2b. Here is the book you chose. Tell the person sitting next to you why you chose that book.
> *If no response, say, "Why did you choose that book?"*

I'm going to read some of this book. See if you can find the pictures that go with what I read.

3. Giraffes use their long necks to reach leaves at the top of trees. Point to the picture that goes with what I just read.
If no response, repeat, "Giraffes use the long necks to reach leaves at the top of trees. Point to the picture that goes with what I just read."

Yes   No   No response (after 1 prompt)

4. Giraffes can sleep standing up. Point to the picture that goes with what was just read.
If no response, repeat, "Giraffes can sleep standing up. Point to the picture that goes with what I just read."

Yes   No   No response (after 1 prompt)

5. Tell the person sitting next to you what is happening in this picture (baby drinking milk from mother)
If no response, repeat, "What is happening in this picture?"

On this page there are some words with lines pointing to different parts of the pictures. The words are labels for different parts of the giraffe.
If no response, repeat, "Point to the label that says _____"

6. Point to the label that says horn   word   line   item   incorrect no response (after 1 prompt)

7. Point to the label that says tongue   word   line   item   incorrect no response (after 1 prompt)

8. Point to the label that says legs   word   line   item   incorrect no response (after 1 prompt)

9. Point to the label that says ear   word   line   item   incorrect no response (after 1 prompt)

10. Point to the label that says tail   word   line   item   incorrect no response (after 1 prompt)

11. Point to the label that says eye   word   line   item   incorrect no response (after 1 prompt)

12. Point to the label that says neck   word   line   item   incorrect no response (after 1 prompt)

Great work!

Lizards and Frogs text

Now we are going to read about some different animals. My friend Anna is getting a new pet. She is getting a lizard or a frog. She needs to know how to take care of them. Let's read about lizards and frogs. As we read, listen for how lizards and frogs are the same and how they are different. Then we can help Anna know how to care for lizards and frogs.

Pet Lizards and Frogs
Lizards and frogs make cool pets. Lizards and frogs eat the same things. They eat crickets. You can buy crickets at the pet store. In some ways pet lizards and frogs are different. Lizards and frogs need different things in their tank. Lizards need a warm tank with sand. Frogs are different. Frogs need a tank with water and rocks. If you get a pet lizard or frog remember what it needs. What type of food does it eat? What does it need in its tank? That will help you take good care of your pet!

13. Here is my friend Anna. Tell her what you learned about lizards and frogs.
If no response, prompt: "What did you learn about lizards and frogs?"
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

We are going to organize what we just read about lizards and frogs onto this chart. It will help Anna see how lizards and frogs are the same and how they are different. This says lizards (lights up) and this says frogs (lights up). We are going to answer these questions (light up) about lizards and frogs. You will tap on the picture that shows the answer and then tap on the box that it goes in.

 check each box with a correct picture

15a. Lizards…What do they eat? What do lizards eat? Tap on the picture that shows what lizards eat and then tap on the yellow box.

If no response, prompt: "What do lizards eat? (point to the box) Tap on the picture that shows what lizards eat and then tap on the yellow box"

15b. Frogs…What do they eat? What do frogs eat? Tap on the picture that shows what frogs eat and then tap on the yellow box.

If no response, prompt: "What do frogs eat? (point to the box) Tap on the picture that shows what frogs eat and then tap on the yellow box"

15c. Lizards…What do they need in their tank? What do lizards need in their tank? Tap on the picture that shows what lizards need in their tank and then tap on the yellow box.

If no response, prompt: "What do lizards need in their tank? (point to the box) Tap on the picture that shows what lizards need in their tank and then tap on the yellow box"

15d. Frogs…What do they need in their tank? What do frogs need in their tank? Tap on the picture that shows what frogs need in their tank and then tap on the yellow box.

If no response, prompt: "What do frogs need in their tank? (point to the box) Tap on the picture that shows what frogs need in their tank and then tap on the yellow box"

Here is the chart all filled out. Now, we are going to use this chart to talk about how lizards and frogs are the same and how they are different.

16. Use the chart to tell the person sitting next to you how lizards and frogs are the same and how they are different.

How are lizards and frogs the same?
If no response, prompt: "Use the chart to tell me how lizards and frogs are the same."
After child finishes response ask, ***"Anything else?"*** *(only use this prompt once)*

How are lizards and frogs different?
If no response, prompt: "Use the chart to tell me how lizards and frogs are different."
After child finishes response ask, ***"Anything else?"*** *(only use this prompt once)*

Firefighters
My friend Carlos just found out that the firefighters are coming to his preschool. He is so excited! He wants to learn about what firefighters do and how they help people. Will you help Carlos learn about firefighters? We can read about what firefighters do and how they help people in a book. Then when Carlos is here you can tell him what you found out.
Firefighters
Firefighters drive a red fire truck. They wear special clothes. They do a very important job. Firefighters put out fires. Have you ever seen something on fire? A car can catch on fire. A tree can catch on fire. Even a house can catch on fire. A house on fire is a big problem. The firefighters will fix the problem. The firefighters will spray water on the fire. This will stop the fire and fix the problem. Sometimes a cat gets stuck in a tall tree. This is a problem. Firefighters can fix the problem. They can use the ladder on the fire truck. A firefighter will climb up the ladder and get the cat out of the tree. This will solve the problem. Firefighters work hard to fix problems. They are brave. They help keep people and animals safe.

18. Here is my friend Carlos. Tell him what you learned about firefighters.

If no response, prompt: "What did you learn about firefighters?"
After child finishes response ask, "Anything else?" (only use this prompt once)

We are going to organize what we just read about firefighters onto this chart. It will help Carlos see the problems firefighters take care of and how they fix them. This says problem (lights up). This says solution (lights up). A solution is how somebody fixes a problem. We are going to answer some questions about the problems firefighters take care of. You will tap on the picture that shows the answer and then tap on the box that it goes in.

 check each box with a correct picture

20a. What is one problem firefighters take care of? Tap on the picture that shows one problem that firefighters take care of and then tap on the yellow box.

If no response, prompt: "What is one problem firefighters take care of? Tap on the picture that shows what firefighters take care of and then tap on the yellow box (point to the box)"

20b. How do firefighters fix that problem? Tap on the picture that shows how firefighters fix that problem and then tap on the yellow box.

If no response, prompt: "How do firefighters fix that problem? Tap on the picture that shows how firefighters fix that problem and then tap on the yellow box (point to the box)"

20c. What is another problem firefighters take care of ? Tap on the picture that shows another problem that firefighters take care of and then tap on the yellow box.

If no response, prompt: "What is another problem firefighters take care of? Tap on the picture that shows another problem firefighters take care of and then tap on the yellow box (point to the box)"

20d. How do firefighters fix that problem? Tap on the picture that shows how firefighters fix that problem and then tap on the yellow box.
If no response, prompt: "How do firefighters fix that problem? Tap on the picture that shows how firefighters fix that problem and then tap on the yellow box (point to the box)"

Great work!

Here is the chart all filled out. We are going to use this chart to talk about problems firefighters take care of and how they fix them.

21a. What is one problem firefighters help with?
If no response, prompt: "Use the chart to tell one problem firefighters help with."
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

21b. How do they fix that problem?
If no response, prompt: "Use the chart to tell me how firefighters fix that problem."
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

21c. What is another problem firefighters help with?
If no response, prompt: "Use the chart to tell another problem firefighters help with."
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

21d. How do they fix that problem?
If no response, prompt: "Use the chart to tell me how firefighters fix that problem."
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

Beans

My friend Sam loves to eat beans. He wants to know how we get beans. Let's read a book so we can teach my friend about how we get beans.

How Do We Get Beans?

Have you ever planted a bean seed? Have you ever wondered what will happen? First the bean seed will start to grow roots. The roots will grow down into the dirt. The roots are like tiny straws. They suck up water from the dirt. The water helps the bean seed to grow. Next the bean seed grows a shoot. The shoot pokes up out of the dirt into the air. The shoot is also called the stem. Then leaves will start to grow on the stem. The bean plant needs sun and water to grow. Later beans will start to grow on the plant. Finally, the beans will be big. They will be ready to pick.

23. Here is my friend Sam, tell him what you learned about beans:
If no response, prompt: "What did you learn about beans?"
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

We are going to organize what we just read about how we get beans onto this chart. It will help Sam know how we get beans. This says 'first' (point to the word). This says 'next' (lights up). This says 'then' (lights up). This says 'finally' (lights up). We are going to answer some questions about how we get beans. You will tap on the picture that shows the answer and then tap on the correct box.

NOTE: IF a child asks what a picture is tell them (bean plant with beans, bean plant with leaves, bean seed with roots, bean seed with a shoot).

first	next	then	finally
1	2	3	4

check each box with a correct picture

25a. What happens first when beans grow? Tap on the picture that shows what happens first when beans grow and then tap on the yellow box.

If no response, prompt: "Use the chart to tell me what happens first when beans grow." After child finishes response ask, ***"Anything else?"*** *(only use this prompt once)*

25b. What happens next when beans grow? Tap on the picture that shows what happens next when beans grow and then tap on the yellow box.

If no response, prompt: "Use the chart to tell me what happens next when beans grow." After child finishes response ask, ***"Anything else?"*** *(only use this prompt once)*

25c. What happens after that when beans grow? Tap on the picture that shows what happens after that when beans grow and then tap on the yellow box.

If no response, prompt: "Use the chart to tell me what happens after that when beans grow."
After child finishes response ask, ***"Anything else?"*** *(only use this prompt once)*

25d. What happens last when beans grow? Tap on the picture that shows what happens last when beans grow and then tap on the yellow box.

If no response, prompt: "Use the chart to tell me what happens last when beans grow." After child finishes response ask, ***"Anything else?"*** *(only use this prompt once)*

Great work!

Here is the chart all filled out. We are going to use this chart to talk about how beans go from a seed to becoming a bean.

26a. What happens first?

If no response, prompt: "Use the chart to tell me what happens first when beans grow."
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

26b. What happens next?

If no response, prompt: "Use the chart to tell me what happens next when beans grow."
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

26c. What happens after that?

If no response, prompt: "Use the chart to tell me what happens after that when beans grow."
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

26d. What happens last?

If no response, prompt: "Use the chart to tell me what happens last when beans grow."
After child finishes response ask, **"Anything else?"** *(only use this prompt once)*

Great work! We're finished. I hope you enjoyed reading about giraffes, lizards and frogs, firefighters, and how we get beans.

APPENDIX C:
EECA Administrator Feedback Guide

1. Child engagement
   a. Was the child engaged during the assessment? (circle one) If no, please briefly describe the problem.

   yes   *most of the time*   *sometimes*   *no*

   b. Which tasks were most engaging to the child?

   c. Which tasks were least engaging to the child?

   d. What other observations do you have about child engagement?

2. Response to Prompts
   a. Did the child respond to the questions given on the iPad? If no, please briefly describe the problem.

   yes   *most of the time*   *sometimes*   *no*

   b. Was the child able to manipulate the pictures and respond to tasks (touching labels, selecting pictures, etc.) on the iPad?   If no, please briefly describe the problem.

   yes   *most of the time*   *sometimes*   *no*

   c. Which questions/prompts were most confusing?

   d. What other observations do you have about the questions/prompts?

3. Share any additional observations about other aspects of the EECA.

APPENDIX D:
Administrator Feedback

Administrator Answers on Engagement Questions

Administrator Feedback Guide	Engagement Rating	Most Engaging	Least Engaging	Other Engagement Observations
1	Most of the time	Beans	No response	Distracted by iPad of another tester
2	Yes	Labeling Giraffe	Putting pictures in boxes	Wanted to keep clicking pictures w/out waiting for "Jane" to finish talking
3	Sometimes	Tapping into yellow box	Listening to voice telling a book	Very distracted by other kids playing in classroom; child impatient and kept tapping arrow and I had to backtrack
4	Most of the time	Graphics; putting things into boxes	Telling the examiner answers; listening to voice going through a book	Distracted by background noise and other children in classroom coming up behind him or playing nearby
5	Yes	She liked tapping	Firefighter	Sometimes didn't know correct answer and just picked the picture closest
6	Sometimes	Giraffes	Bean story	Very distracted and always looking around at the kids in the room and the student taking test across from her. Seemed to listen well.

7	Yes	Firefighter chart	Lizard and frogs story	Listened well and only got distracted a bit- shy though
8	Sometimes- distracted by the iPad	Beans	Firefighters	Student didn't want to elaborate
9	Sometimes	Putting pictures in boxes	Listening to stories	Got distracted by friends and things outside
10	Most of the time	Firefighters- seemed to enjoy topic	Second half of assessment- was really distracted	Some parts were too slow. Distracted by other things going on in classroom.
11	Sometimes- was frequently distracted and looking around room.	Similarly, in contrast, however, on the other hand, different, alike	Beans and labeling	Most engaged when moving things on iPad

Administrator Answers on Responsiveness Questions

Administrator Feedback Guide	Responsiveness Rating	Ability to Manipulate Pictures and Respond to Tasks on iPad	Questions/Prompts Most Confusing	Other Prompt Observations
1	Most of the time	Most of the time	Putting pictures in quadrant charts	Sometimes the instructions were too long and got distracted
2	Most of the time- had to reread a lot	Most of the time- often times instructor had to read instructions	Firefighter diagram	NR
3	Most of the time- when not distracted she did	Most of the time- glitches didn't record her responses	Open response questions	NR
4	No- he only responded after administrator gave prompt, never to the iPad	Yes	Open response questions	NR
5	Most of the time	Yes	Firefighter Chart	NR
6	Yes	Most of the time	Firefighter chart	NR
7	Most of the time	Sometimes- hard for her to click it just right so the picture would be highlighted	Understanding bean sequence	Sometimes the highlighting was off with the voicing. pictures of the giraffe didn't show up after she selected them which confused her.
8	Most of the time the iPad	The iPad was acting weird- it zoomed it and	NR	NR

		out. The tap was hard for him.		
9	Sometimes- had a hard time hearing	Yes	Putting the girl in the box during practice	Wouldn't listen to questions before moving pictures
10	No- always needed one prompt. At first, because intimidated to answer, later because he was distracted.	Yes	Might have been confused by prompts to talk to the kid on the iPad instead of the evaluator	Answered sequence questions before prompts (wanted to tell sequence in one go). Confusing to know whether to keep giving prompts
11	Yes	Yes	Would point to instead of 'tapping' labels	Again answered sequence questions before prompts
12	NR	Tapped too many times and it zoomed in. When trying to zoom out, it went too far and it closed and ended assessment	NR	NR

Additional Observations

Administrator Feedback Guide	Additional Observations
1	Sometimes yellow box lagged.
2	When explaining the boxes, the yellow highlighting was off. Eye and horn labels were hard to distinguish.
3	Child said "Are we done yet?" about halfway through. A few pages wouldn't load or glitch. All the graphs didn't keep her responses.
4	Child was reticent.
5	This was a difficult setting to give this EECA.. I gave instructions to listen and to not push my orange box.
6	The lizard/frog highlighting was off.
7	NR
8	He had a hard time getting the touch screen to work.
9	Seemed to put the picture that was closest or in order into the yellow box.
10	NR
11	NR
12	NR

APPENDIX E:
Annotated Bibliography

Akhondi, M., Malayeri, F. A., & Samad, A. A. (2011). How to teach expository text structure to facilitate reading comprehension. *Reading Teacher*, *64*, 368-372. doi:10.1598/RT.64.5.9

This informational article emphasized the importance of understanding text structures as a comprehension strategy. It cited research literature that supports the claim that targeting text structure improves comprehension. It outlined what the different expository text structures are along with their identifying features. It then outlined suggestions on how to teach expository text structures. This includes introducing the text structures one at a time and emphasizing the signal words and phrases unique to each structure. Then it recommended having the children identify these words in short texts followed by experimentation with writing short paragraphs of their own. Following those steps, it recommends using graphic organizers and lowering support until the children can complete blank ones on their own.
      Relevance to current work: The assessment created for our study is built upon the principles cited in this article as being effective for facilitating comprehension. This includes the emphasis of text structure instruction via the use of signal words and graphic organizers.

Catts, H. W. (1997). The early identification of language-based reading disabilities. *Language, Speech, and Hearing Services in the Schools, 28,* 86–87.

The article highlighted research supporting the claim that children that are at risk for reading failure can be identified before reading instruction actually occurs. This will allow early intervention to help mitigate reading failure and its negative consequences (e.g. reduced motivation to read and reduced reading practice). Some early indicators of at-risk children could include problems with expressive language (e.g. morphology or syntax), problems with comprehension of language, or problems with phonological processing. The author designed a simple checklist for educators to use at the end of kindergarten or beginning of first grade to identify children that might be at risk for language-based reading disabilities.
      Relevance to the current work: This article supported the emphasis of early identification of reading comprehension problems in children before reading instruction begins. It emphasized that some of the factors that makes comprehension difficult include understanding decontextualized language, the need for a strong vocabulary, the understanding of structural components and function words; and understanding the rules of language. This article supports the current study's claim that the sooner comprehension difficulties are identified the sooner intervention can be implemented in order to reduce reading failure.

Culatta, B., Hall-Kenyon, K. M., & Black, S. (2010). Teaching expository comprehension skills in early childhood classrooms. *Topics in Language Disorders, 30*, 323-338. doi: 0b013e3181ff5a65

The purpose of this 16-week pilot study was to evaluate the efficacy of teaching expository comprehension skills to pre-school children through a playful theme-based unit involving compare/contrast and problem/solution tasks. This study included 71 preschool children from four classrooms. A pre-post design without controls was used. These pre-post assessment tasks were used to examine students' comprehension of expository tasks through

mapping and recalling orally presented information from both problem/solution and compare/contrast texts. Results showed that most of the children displayed gains in both tasks. Teachers and parents reported that the children were engaged and motivated by the instruction. Despite study limitations, this study concluded that clear and purposeful expository instruction was beneficial. Teachers' awareness of how expository instruction could be engaging and relevant was also increased.

        Relevance to the current work: This study adds to the literature that preschool children do benefit from clear and purposeful expository instruction that is focused on engaging and relevant topics. Mapping was shown to be a valuable way to help children internalize the patterns used in expository readings.

Duke, N. K., & Kays, J. (1998). "Can I say 'once upon a time'?": Kindergarten children developing knowledge of information book language. *Early Childhood Research Quarterly, 13,* 295–318.

        Due to scholars calling for an increased inclusion of expository texts in young children's curriculum, the authors of this study wanted to see what these children knew and could learn about the language of expository text. This study included 20 preliterate kindergarteners who were read aloud informational books almost everyday in school for about 3 months. They were assessed by having them pretend to read an unfamiliar information book at the start of the school year and again in December. This study showed that the December readings contained a greater use of informational book language and in a greater amount of children. They also observed that many of the young children interacted voluntarily and spontaneously with informational books during the three months. From these results the study concluded that while they cannot say from the study that increased exposure to expository texts caused these gains, the inclusion of expository texts in early school is well advised. The study added to the literature that children enjoy and are capable of learning from expository texts.

        Relevance to the current work: This article adds to the literature review of the current study that preliterate children enjoy and are capable of interacting with informational texts. These authors also support the claim made in the current work that research should work to improve the teaching of expository forms.

Duke, N. K. (2000). 3.6 minutes per day: The scarcity of informational texts in first grade. *Reading Research Quarterly, 35*, 202-224. doi: 10.1598/rrq.35.2.1

        With the increasing amount of support of using more informational texts in early grade classrooms, the author wanted to provide some comprehensive data about how much is actually being included. This study examined and provided descriptive data about the types and amount of informational text experiences children were being exposed to in 20 first-grade classrooms. These classrooms were from two distinct socioeconomic settings in the Boston area; 10 classrooms were from the six districts with the highest socioeconomic status (SES) and 10 were chosen from 4 of the 6 lowest SES districts. Each classroom was visited randomly for four full days spread over a school year. Results found a scarcity of informational texts used in activities as well as in print in the classroom environment, including classroom libraries. Results showed children were getting a mean of spending only 3.6 minutes a day with informational texts during written language activities in the classroom. This was even lower for the low-SES school districts, which had an overall mean of 1.9 minutes a day. The study concluded that despite the

call for greater inclusion of informational texts, narratives were the predominant genre used in the participating classrooms. Informational texts were rare or non-existent in some of these classrooms leading to further emphasis of the idea that children are not getting enough exposure in order to have success with these informational texts in later grades. It also showed that children from lower SES districts were exposed even less to informational texts than the higher SES districts.

   Relevance to the current work: This study provides background to the definition of informational texts and its value in society. It also provides rationale and a literature review for the importance of inclusion of expository texts for young children. The study suggests that low levels of performance in informational reading may be because these children do not have enough experience and exposure to these texts in the classroom.

Griffin, S. (2002). *The reliability of a preschool story comprehension measure* (Master's thesis).
   Brigham Young University, Provo, UT.

   This study aimed to develop and test the reliability of an informal preschool story comprehension tool named the Preschool Story Comprehension Measure (PSCM). This type of measure had not yet been previously developed. The purpose of such a measure is to identify those children who need intervention with narratives or at least need to be monitored. A preschool assessment can identify children at risk before formal instruction begins in order to focus on children's needs. Thirty-one preschool children participated in this study. The measure consisted of commercially available books divided into 3 levels of complexity. Each book used in this assessment had 6 accompanying comprehension questions. The first level consisted of stories about concrete, everyday events. The second level consisted of observed events. Finally, level 3 consisted of less commonly experienced events. This measure was analyzed with a MIVQUE (Minimum Variance Quadratic Unbiased Estimators). Results indicated that the PCSM is a reliable tool.

   Relevance to the current work: This study highlighted the importance of assessing text comprehension in preschool in order to identify children who need intervention. While this article focuses on narratives, many of the arguments and research highlighted also applies to our study on comprehending informational texts.

Hall-Kenyon, K., & Black, S. (2010). Learning from expository texts: Classroom-based
   strategies for promoting comprehension & content knowledge in the elementary grades.
   Topics in Language Disorders, 30, 339-349.

   The authors review some of the challenges children encounter with expository texts along with strategies teachers and SLPs can use to help them with comprehension. In order to access the information from expository texts, specific skills need to be taught to navigate through these challenges. They group the main challenges into three categories: understanding the relationship between text structure and content, dealing with the expository language, and using text features for finding and understanding information. The authors provide strategies for these three main categories. Teaching an awareness of text structure can be targeted through graphic organizers, such as mapping. Language can be targeted through classifying and selecting high-function words to providing interesting and engaging experiences with. Text features (e.g., graphics, bolded words, text boxes, and picture captions) need to be explicitly taught. The authors

conclude that by teachers and SLPS collaborating together to teach these skills, children with or without language difficulties can learn how to work with expository texts.

Relevance to the current work: This article provides relevant background information to the current study by explaining which components of expository texts need to be explicitly taught, in order to build an appropriate assessment.

Hall, K. M., Markham, J. C., & Culatta, B. (2005). The development of the early expository comprehension assessment (EECA): A look at reliability. *Communication Disorders Quarterly, 26*, 195-206. doi: 101177/15257401050260040201

Educators have begun to emphasize the importance of early exposure and instruction with informational texts beginning as early as preschool. This includes developing an awareness of text structure. Assessment tools to examine preschool children's understanding of these texts are not available. This study aimed to create a tool to examine preschool children's understanding of compare/contrast text structures using a compare/contrast passage and three response tasks (retelling, mapping, and comparing). Two different versions were given to 37 preschool children. The test was then analyzed for reliability and was found to be a reliable measure based on both version and order not having any significant effect on the response tasks.

Relevance to the current working: This study explains the initial development of the EECA (Early Expository Comprehension Assessment) which has developed into the current version used in our study. It provides relevant research and background information for our assessment.

Hall, K. M., Sabey, B. L., & McClellan, M. (2005). Expository text comprehension: Helping primary-grade teachers use expository texts to full advantage. *Reading Psychology an International Quarterly, 26*, 211-234.

The purpose of this study was to see how effective an intervention program focusing on text comprehension strategy is when used in small groups. This program had already been proven successful when taught to a whole class. Seventy-two participants from 6-second grade classrooms were organized into four guided reading groups in each class. The 6 classrooms were randomly assigned to three different testing groups: text structure, content (which focused on background knowledge and vocabulary), and no instruction. The children were administered pre-post assessments. Post-interview measures included summaries, strategies, and concepts. The summaries included three compare/contrast texts and one unstructured text. Strategies included recall of clue words, the ability to use a graphic organizer, and overall use of clue words in their summaries. The concepts category included a measure of vocabulary and a conceptual understanding of compare/contrast. In all of these measures the text structure group tested significantly higher than both the content and no instruction group. There were no significant differences between the content and no instruction groups. The conclusion of this study was that text structure instruction was an effective strategy

Relevance to the current work: This study provides background information on narratives and informational text differences. The effectiveness of text structure training provides a foundation for the assessment created in the current work, which examines how well a child can use the strategies of clue words and a graphic organizer.

Harding, T. (2014). *Determining the reliability of an early expository comprehension assessment* (Master's thesis). Available from http://scholarsarchive.byu.edu/edt paper 4316.

This study further developed the EECA (Early Expository Comprehension Assessment) by adding and testing the validity of a problem/solution text structure and response tasks, along with other comprehension tasks identified as important in the Common Core. These additional tasks included identifying the purpose of the text and connecting pictures to texts. Two versions of the assessment were given to 37 preschool children between the ages of 4 and 5. Results indicated that overall this version of the EECA was a reliable tool. However while three of the new tasks were found reliable (identifying purpose of the text, problem/solution retelling, and problem/solution mapping), two tasks were unreliable (graphics and problem/solution questions).

Relevance to the current work: This study was another preliminary study to our current study. It tested a new text structure and response tasks and provided insight into future changes that needed to be made and problems that needed to be examined in future EECA studies.

Hebert, M., Bohaty, J. J., Nelson, J. R., & Brown, J. (2016). The effects of text structure instruction on expository reading comprehension: A meta-analysis. *Journal of Educational Psychology*, *108*, 609-629. doi:10.1037/edu0000082

The purpose of this study was to perform the first meta-analysis of literature examining the effects of text structure instruction on expository reading comprehension across different contexts and ranges of participants. It looked at whether text structure intervention improves proximal measures of comprehension, and whether effects transfer to near-transfer measures in an untaught structure and to far-transfer measures of reading comprehension in general. Results found that teaching text structure did improve comprehension, keeping in mind that the quality of many of the studies were moderate. Evidence from the analyses also indicated that the positive results also transferred to the other transfer measures. However, with the far-transfer measures (measured across modalities and knowledge domain) it is important to note that 44% of the studies had a negative effect. The authors also noted that instructing in more than one text structure resulted in significantly larger effects.

Relevance to the current work: This study increased the literature that text instruction increases reading comprehension of informational texts. Text structure is an integral part of the assessment developed in the current work, allowing teachers to see what children understand about different text structures in order to target intervention. Hebert, Nelson, & Brown also point out that instruction in more text structures resulted in statistically significantly larger effects. This supports the use of multiple text structures in our assessment.

Justice, L. M., Invernizzi, M. A., & Meier, J. D. (2002). Designing and implementing an early literacy screening protocol: Suggestions for the speech– language pathologist. *Language, Speech, and Hearing Services in Schools, 33,* 84–101.

An important time period in gaining foundational skills for literacy occurs before formal literacy instruction begins in kindergarten to first grade. Those who lack preliteracy knowledge are at risk for having difficulties with literacy when formal instruction begins. The purpose of this article is to provide a rationale for the implementation of an early literacy screening. It outlines which literacy areas to target and which children to test. These targeted areas include written language awareness, phonological awareness, letter name awareness, grapheme-phone

correspondence, literacy motivation, and home literacy. The results of such a screening can identify those that are at risk for later reading failure, and results can guide intervention and further instruction to these children.

Relevance to the current work: While this article does not deal with reading comprehension or informational texts, it does provide a rationale and background to the importance of preliteracy screenings in being able to identify children that are at-risk for later reading deficiencies. It supports the argument of the current work that giving a early literacy screening can help guide educators in knowing how to plan intervention with a child.

Justice, L., Mashburn, A., & Petscher, Y. (2013). Very early language skills of fifth-grade poor comprehenders. *Journal of Research in Reading, 36*, 172-185.

This study wanted to test the hypothesis that poor comprehenders in fifth grade would have shown deficits in early childhood (before reading instruction) in both language comprehension and production; these deficits would be enough to distinguish them from poor decoders. The study used the database of the NICHD Early Child Care Research Network which consists of 1364 children who are followed longitudinally through adolescence. From this database they picked 62 children who had completed 5th grade reading assessments for the present study. Based on their assessment results they were divided into three subgroups: poor comprehenders, poor decoders, and typical readers. They then look at the language measures that were collected from these children at 15, 24, 36, and 54 months in terms of general language production and language comprehension. Results showed that fifth-grade poor comprehenders had the lowest ability of the three groups on each assessment of language comprehension and production at each of the evaluated months. However, some of these were not significantly different. The difference between poor comprehenders and typical readers were significantly different and the effect size was large at both 36 and 54 months. Therefore this study only tentatively supports the idea that those with comprehension deficits exhibited deficits during early childhood.

Relevance to the current work: This study provides some support for the ability of identifying children who will later having reading comprehension problems, before school entry during early childhood.

Mantzicopoulos, P., & Patrick, H. (2011). Reading picture books and learning science: Engaging young children with informational text. *Theory Into Practice*, *50*, 269-276. doi:10.1080/00405841.2011.607372

Using the authors' background with working with the Scientific Literacy Project (SLP) in kindergarten classrooms in combination with research literature, this article highlights the importance of informational text inclusion in early grade classrooms. The authors express the concern that lack of experiences with informational books early on in life may curtail children's engagement and comprehension of these books. Despite the prominence of fictional instruction, they assert that children's understanding of narratives does not translate the needed skills for comprehending informational texts. This article highlights the features and functions of informational texts and outlines common concerns teachers have with incorporating these texts into their classrooms. The authors present evidence to support their claims that boys and girls are equally interested in informational texts, young children are capable of understanding these texts, and informational books can facilitate children's cognitive and effective engagement. This

cognitive enrichment includes vocabulary growth, improved connections between science and daily life, and constructed views that support findings in science (e.g., asking questions, making predictions, making observations, and stating conclusions).

      Relevance to the current work: This article provides evidence for the support of early inclusion of informational texts into classrooms. It also highlights some the common concerns teachers have in regards to informational texts.

McDonald, A. (2016). *A look at the reliability of an early childhood expository comprehension measure* (Master's thesis). Brigham Young University, Provo, UT.

      This study highlighted the importance of developing the EECA (Early Expository Comprehension Assessment) in order to aid teachers in understanding what students need to know in order to comprehend these types of texts. It also gives teachers the ability to monitor their student's comprehension development. This study further developed the EECA (Early Expository Comprehension Assessment) by making modifications to the previous iterations and adding a third text structure. In addition, parts of the EECA were digitized for the first time to aid in increasing administration consistency. Two versions of the EECA were given to 128 preschoolers between the ages of four and five in seven different title one classrooms. They were also given the TSC subtest of the *Narrative Language Measures (NLM) Preschool Assessment*. Correlations between these two tests were calculated to determine the validity of the EECA. A Many Facets Rasch model was used to test the reliability and to examine individual test items. Results indicated that the EECA R-2 was a reliable and valid measure. However certain items were found to be problematic in relation to the calculated probability of children obtaining a correct score on each of these items based on the facets of the children's ability, item difficulty, rater variability in scoring, and the different content between the two different test versions.

      Relevance to the current work: This study was one of the studies undertaken prior to our follow-up study. This study outlines the problematic items that need to be addressed and piloted in our updated version.

McGee, L.M. (1982). Awareness of text structure: effects on children's recall of expository text. *Reading Research Quarterly, 17*, 581-590.

      Previous research has shown that adults' retell of informational tests is influenced by text structures, indicating they are aware of them. However prior to this study there was not much research done in the way of determining whether young children were aware of text structures. The research that had been done was conflicting in their conclusions on whether young kids are sensitive to them. This study aimed to add to the research. They created two expository passages using a description text structure. They then tested these passages on 60 children. Twenty of these children were third graders rated as good raters. Twenty were poor readers and fifth grade and the final twenty were good readers in fifth grade. Each of these children read an expository passage, answered a distractor math question, and then was asked to recall as much as they could remember from the passage. Their answers were analyzed to determine similarity to author's text structure. Fifth-grade good readers recalled proportionately more total and superordinate idea units and were more aware of text structure than fifth-grade poor readers, and fifth-grade poor readers performed higher in those measures than third-grade good readers. This study found that third-grade good readers did not appear to have awareness of text structures. It also found that text structure awareness correlated with the amount of recall. This study pointed to the need for

further research to determine how effective intervention pointed at text structure is, and which children it would be most beneficial with and at what time.

Relevance to the current work: This study found that the amount of text structure awareness correlated with increased amounts of recall, indicating that text structure awareness could be an important strategy in helping children become better comprehenders of informational texts.

National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common core state standards*. Washington, DC: Authors.

The common core standards outline what a student should be able to do at the conclusion of each grade level in both mathematics and English language arts/literacy. They were designed by a collaboration of school chiefs, administrators, teachers, and other experts to provide a framework for educators and aim to provide a consistent standard across the country.

Relevance to the current work: These standards include a section on informational texts and outline different skills that kindergartners should learn to do. Some of these skills were implemented into our assessment, such as describing the relationship between illustrations and texts.

Neuman, S. B., & Roskos, K. (2012). Helping children become more knowledgeable through text. *The Reading Teacher, 66*, 207-210. doi: 10.1002/TRTR.01118

This article focuses on the changes made by Common Core to the amount of expository text included in the classroom. Common Core has shifted it to 50% literary and 50% informational text. This article emphasizes the importance of not ignoring books that often blur the line between genres because of this shift. The main feature of the article outlines recommendations for teachers to help children with informational books, including using a text set with multiple genres.

Relevance to the current work: This article gives background information on the impact the Common Core standards have made on the inclusion of informational texts in the classroom. It also gives background information on the types of skills informational texts require students to use. It also highlights the need that teachers have in gaining knowledge of how to teach with informational texts.

Pappas, C. C. (1991). Fostering full access to literacy by including information books. *Language Arts, 68*, 449-462.

The author sought to disprove the former philosophy that "narrative is primary," and that children only learned and enjoyed stories. The author looked at the readings of a 5 year old kindergartner from a previous study. This child did repeated readings of 2 books (one narrative, one informational) over 3 consecutive days. Each of the days the researchers read each book and then had the child pretend to read it. Her utterances were transcribed to see how she incorporated the use of informational features in her retellings. It was found that the child was just as successful of tackling the informational discourse features book as she was the narrative. Her third reading showed even more sensitivity to the distinct features of each genre. The researchers also asked the children which book they liked the most, and in all 3 sessions almost all of the

children preferred the information books. Children are capable and enjoy working with informational texts.

Relevance to the current work: This article gives further support to the idea that children enjoy working with informational texts and are capable of comprehending them. It also supports the argument that we need to give exposure and instruction on how to deal with these texts.

Price, L. H., Kleeck, A. V., & Huberty, C. J. (2009). Talk during book sharing between parents and preschool children: a comparison between storybook and expository book conditions. *Reading Research Quarterly, 44*, 171-194. doi: 10.1598/RRQ.44.2.4.

During shared book reading parents help mediate texts for their children through their interactions in order to scaffold comprehension and engagement. This scaffolding has been shown to improve language development and literacy. In this study, the authors examined the influence the genre of a book had on the amount and type of talk parents and children have during shared book reading. They examined 62 parents reading with their 3-4 year olds. There were 31 girls and 31 boys in the study. On two different occasions, the parents were videotaped reading two unfamiliar storybooks and two unfamiliar expository books. Parent's extratextual utterances were coded to examine their length of utterance and their diversity of vocabulary. Multiple results were found. First, parents were more likely to read the entire storybook text compared to the expository text; 98% of the storybook texts were read compared to 89% of the expository texts. Expository texts also took longer to read and both parents and children had about twice the number of extratextual utterances during these texts; the interaction took five minutes longer on average. Both parents and children also used an increased number and rate utterances with higher cognitive demand during expository book reading. Parents also used twice the amount of feedback and acknowledge utterances during expository texts, and also showed a greater diversity of vocabulary words and longer utterances. These findings suggest that the book genre can influence the quality and amount of talk that happens during book sharing by influencing the content, vocabulary, and sentence length.

Relevance to the current work: Since this study shows that expository texts lead children and parents to talk at higher levels of cognitive demand, children's later literacy abilities will likely be positively influenced. This provides further support on the importance of using expository texts during early childhood. Conversations between adults and children that help them take information from expository texts may be helpful for later literacy.

Skarakis-Doyle, E., Dempsey, L., & Lee, C. (2008). Identifying language comprehension impairment in preschool children. *Language, Speech, and Hearing Services in Schools, 39*, 54-65. doi: 0161-1461/08/3901-0054

The first purpose of this study was to examine the validity of two newly developed oral story comprehension tests along with a traditional tests; the second purpose was to see if a combination of them could classify children with and without language comprehension impairment. To do this they examined 37 children with typical language and 12 children who had been previously identified with language impairment. These children were between the ages of 30 and 61 months. The oral story comprehension measures used were the Joint Story Retell task, the Expectancy Violation Detection task, and comprehension questions. Results showed that each of the analyses were valid for successfully identifying the pre-identified groups. The combination of all 3 measures had a 96% accuracy in identifying the correct status. Results

showed the procedures tested were valid measures and could be used to identify children with language comprehension impairment.

   Relevance to the current work: The results from the study add to other research that comprehension can be measured through orally presented stories in young children. This study suggests that oral language comprehension struggles that could interfere with later literacy can be identified before children learn decoding.

Witmer, S.E., Duke, N.K, Billman, A.K., & Betts, J. (2014). Using assessment to improve early
   elementary students' knowledge and skills of informational text. *Journal of Applied*
   School Psychology, 30, 223-253. doi: 10.1080/15377903.2014.924454

   This study highlights how little attention has been paid to creating assessment tools to monitor progress and provide instruction with informational texts in early grades. This study looked at the use of a previously created assessment, the Concepts of Comprehension Assessment (COCA) in first and second grade classrooms. This assessment included four subscale categories: vocabulary, text features, graphics, and comprehension strategies. They measured whether training teachers on how to use and implement the COCA in their classrooms would result in increased growth in children's comprehension skills. Eleven teachers were randomly assigned to either the experimental group or the control group. Teachers in the experimental group were trained in the use of the COCA and gave it to six of their students at the beginning, middle, and end of the school year. Graduate assistants gave the assessment to six other students in the same classrooms as well as twelve students in each of the control classrooms. An informational text writing prompt was also given to see whether gains occurred outside of the assessment. Results showed a higher COCA score of statistical significance at the winter spring assessments. For the writing assessment, the experimental group was also found to have a significantly higher mean than the control group during spring. Results suggest that teachers administering the COCA has a positive affect on both children's knowledge and skills at knowing how to comprehend informational texts.

   Relevance to the current work: This study encouraged the use of an assessment that is read aloud to students in order to get accurate measurement of skills for comprehending expository text. The reason is to eliminate the possible confounding variable of decoding skills. The study highlighted the importance of teaching reading comprehension before children learn decoding skills. This reasoning provides support for the assessment developed in the current study, which relies on listening comprehension. It also provides background reasoning for the importance of using informational text assessment in early grades. The current study focuses on an assessment for preschool children, for whom the Concepts of Comprehension Assessment (COCA) does not work for.

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