Influence of Reader Testimony With Storytelling on Children's Learning

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Abstract

A tool used in religious communities to tell stories and cultivate understanding of unbelief in the unseen (eg., God, angels, divine intervention) is testimony. A religious testimony is a personal oral story about one's experience with God. Testimony could be helpful as children are beginning to develop skills in deciphering which parts of a story apply to reality and which parts are fantasy, but there is little research on this possibility. This study set out to examine children's learning outcomes (moral comprehension and detail recall) when told a testimony after different genres of read aloud stories. It was hypothesized that children's learning outcomes of stories will improve when testimony is employed to highlight the moral takeaway of the story when compared to when there is no testimony given. Additionally, it was hypothesized that the expected benefits of testimony inclusion will be less prevalent for learning assessments of reality-based stories because there is less need for an aid in discerning the moral of a story and its application in a realistic context. Results are limited in their piloting phase, but data collection with current study design will continue until a large enough sample size is obtained. The results of this study inform future research on how children learn from storybooks, the effects of testimonials on children's cognition, and expansion into investigating the efficacy of other religious storytelling aids in non-religious contexts.

Influence of Reader Testimony Within Storytelling on Children's Moral and Content Learning

Historically, children's religious education has functioned to teach children about God, faith, and other abstract concepts. Testimony, or a personal story about one's experience with God, can be employed to make concepts or entire stories more relatable and draw parallels. For example, a testimony could show that the way(s) God functions in a fantastical story is similar to the ways God functions in the present reality.

Testimony is common in religious education, as is storytelling in other forms of education. However, there is little research on how personal oral storytelling impacts learning outcomes in children. As the practice of reading children's storybooks is common within youth education, it is important to learn more about how the influence of the reader on the story –specifically through testimony– could affect learning outcomes. A goal of this study was to bridge the gap in the literature between what we know about how children learn from storybooks with abstract or fantastical concepts and the effect that the reader of read-aloud storybooks could have on children's cognition.

A possible function of testimony is that it serves as an aid in solving the reader's dilemma. The reader's dilemma refers to the crossroads that people face when discerning what part of a piece of media applies to reality and what is fantasy (Gerrig & Prentice, 1991; Hopkins & Weisberg, 2017). Correctly solving the reader's dilemma is a skill that improves with age (Morison & Gardner, 1978; Woolley & Cox, 2007). To correctly solve the reader's dilemma means to derive the correct or intended interpretation of a story. In biblical storytelling, testimony could highlight the correct interpretation of the story by drawing parallels between the story and the experiences of the testifier. For example, if a child hears the story of Jonah being

swallowed by a whale, they must decide what takeaway, if any, is of that story. For a youth minister, the incorrect answer to the reader's dilemma would be for the child to reduce the story to a silly story about a guy getting swallowed by a whale. To help them to find the correct solution to the reader's dilemma, one could provide a testimony about a time they prayed to God and were saved from a scary situation.

Understanding how children learn from stories is crucial to creating an educational curriculum that is scientifically supported. As children continue to struggle with various school subjects, the field of psychology can aid teachers and students by examining the efficacy of the tools they are using. This review will examine the current knowledge of the field on the reader's dilemma, how children learn from storybooks–fantasy and realistic–and oral storytelling, and directions for a future study on the effects of testimony on children's learning outcomes.

Children and Fiction

The current body of work on children's cognition in regards to reading fiction reports mixed findings on the effects of fantasy elements in stories. Some research has demonstrated that fantasy is less effective than realistic stories at teaching children new information. For example, Richert & Smith (2011) focused on pre-school aged children's ability to transfer problem-solving solutions from fantastical to real stories. In this study, a two-group analysis was used to compare children who heard a fantastical story to those who heard a realistic story. The fantasy book told a story of astronauts trying to escape from a giant robot on the moon. They escaped from the robot by hiding behind something, designated a *point-of-view problem*, and by using a suction cup to pull the robot away, designated a *pulling problem*. The realistic story was about kids hiding from a babysitter who also engaged in solving a *point-of-view problem* and a *pulling problem.*

Participants were then presented with dolls and other props in an open space that simulated the same problems presented in the books. They found that children who had read the fantastical story were less likely to apply the solutions taught in the stories than the children who had read the realistic story. Preschoolers, aged 3 ½-5 ½, were more successful at transferring solutions of a problem taught in a story to a similar, real-life example when realistic characters were used in the story. Assessments of memory of the story were not significantly different between the two groups, so the difference between the two groups' ability to transfer solutions cannot be attributed to one group simply remembering the story better. Richert & Smith (2011) propose that one possible explanation is that children do not expect fantasy stories to tell them something that would apply to real-life contexts. This would make children resistant to the choice to transfer information from a fantasy book to a reality-based problem, thus quarantining information from a fantasy context separate from information originating from a realistic setting.

Other research has shown improvements in children's learning when fantasy is used. In one study, children were exposed to different levels of fantasy in books (Hopkins & Lillard, 2021). A sample of 95 5-year-olds were randomly assigned to a condition that manipulated the amount of fantastical elements that were present in a storybook. While all the children read stories of identical plots (a protagonist matched to the participant's gender trying to feed a dog some food), three out of the four possible stories had some to all of the elements altered to add fantasy to the story. For example, one story included a setting where the grass was orange and the sky was green and another added onto this fantastical setting with fantastical actions eg., flying down the stairs instead of walking and moving through walls instead of using a door. The children who received the books with the most fantastical elements were more accurate at related

problem-solving tasks after reading the books than children who read realistic or less fantastical books.

As compared to individual studies with stronger correlations, recent meta-analyses on the effects of children reading fiction have shown a small positive relationship between reading fiction and cognitive benefits (Wimmer et al., 2024). The general conclusion of this analysis is that there are small cognitive improvements correlated with children who were regularly exposed to fiction books. The cognitive benefits of focus for this meta-analysis ranged from empathy and Theory of Mind, knowledge acquisition from stories, and increases and reductions in biases and prejudices. The meta-analysis highlighted a need for more research in this area to increase the reliability of the results as it compares only 70 experimental studies on the cognitive effects of children reading fiction for the first analysis and 114 experimental studies on the lifetime exposure to written fiction correlated with cognitive skills for the second analysis (Wimmer et al., 2024).

The Reader's Dilemma in Children

Regardless of mixed research finding on the benefits of engaging with fiction, it remains a popular form of entertainment and education for children. It is important to understand the nuance of media genre and the potential downsides. Thus, the reader's dilemma should be discussed as it introduces an opportunity for children to have an incorrect, or undesired, takeaway from a story. Aforementioned, the reader's dilemma refers to the crossroads that people face when discerning what part of a piece of media applies to reality and what is fantasy (Gerrig & Prentice, 1991; Hopkins & Weisberg, 2017). This is a more prominent issue for younger children since correctly solving the reader's dilemma is a skill that is thought to improve with age (Morison & Gardner, 1978; Woolley & Cox, 2007).

The reader's dilemma arises often for children as fantastical settings, characters, and events are prevalent in their media. For example, talking animals are seen in *Mickey Mouse Clubhouse*, *The Three Little Pigs*, and Aesop's fables. Children's media often combine fantastical and realistic elements, creating many opportunities for children to correctly or incorrectly identify what parts of the story apply to their lives. For example in the children's show *Sesame Street*, child actors interact with puppet characters that are anthropomorphic monsters (e.g., Oscar the Grouch) and animal-based (e.g., Big Bird). Examples such as this require a high level of discernment that provides many opportunities for children to mistakenly believe that something applies to reality when it was just a fictional aspect of the media.

A 2017 review from Hopkins & Weisberg examined the current understanding of how younger children interpret media and engage in the reader's dilemma. It was found that the literature largely supports children learning new information from fiction, an example of correctly solving the reader's dilemma. Children were generally able to learn and apply information from fictional stories. It was also found that children were vulnerable to accepting misinformation from fiction, interpreting fantasy elements as reality. This is an example of incorrectly solving the reader's dilemma.

Hopkins and Weisberg (2017) also addressed current knowledge on the effectiveness of fiction compared to nonfiction, which has been studied focusing on children's attention and engagement with different stories, the progress of children's learning across age groups, and how children retain information from different genres of media. The comparison of fiction and nonfiction is broadly inconclusive in the current body of research.

Oral Storytelling

As a medium of storytelling, oral storytelling differs from read-aloud stories in the ability to use gestures and eye contact to address the audience more directly. It is also more flexible in its ability to cater to a given audience. This is especially demonstrated in word choice; oral stories related to adults can use more specific, difficult words. Oral stories for children are able to manipulate their language that allows for an ease of their understanding.

There is a general lack of research into the effects of verbal storytelling without the use of text. One study conducted by Lenhart et al. (2020) addresses this literature gap by examining the effects that oral storytelling could have on children's vocabulary acquisition. They found that oral storytelling could be at least an equally effective method to convey information and stories to kindergarten aged children. This study was primarily focused on vocabulary acquisition as the dependent variable along with story comprehension. This was hypothesized to be a result of the reader's ability to gesture with their hands to emphasize different parts of a story and maintain eye contact with the audience to increase engagement.

There is currently no research published on the impact of testimony given by a narrator on learning outcomes for children. This was a clear gap in the literature as oral, often impromptu, testimony is a common practice that is utilized by many groups to communicate the relevance of ideas and relatable spiritual encounters. The Christian church is one of these groups with testimony being a notable feature of how they communicate ideas and stories from the Bible to others as well as express their own experiences interacting with God and the divine.

Previous Measures of Learning from Storybooks

Walker and Lombrozo (2017) conducted a study to evaluate if prompting children to provide explanations throughout a story aided in them correctly identifying the moral content of

storybooks. They found that children, five to six years old, who were asked to explain the events of a story midway and at the end were slightly better at extracting and applying the moral of a story than children who were asked to just report the events of a story midway and at the end. The measures of this study were nuanced and could provide a replicable framework for evaluating children's learning from storybooks. Of note, this study provided multiple tasks that attempted to measure children's ability to identify a moral of a story, identify that moral being used in stories with novel surface content (the visual components of a story), and generalize a moral to a novel, real-life situation. These measures are valuable because of the opportunity for free-response answers from children that could better capture the scope of their lesson comprehension. The methods of Walker and Lombrozo could be transferred to other studies concerning children's moral comprehension from storybooks when different interventions are used.

Additionally, Walker & Lombrozo (2017) was composed of two experiments which allowed for a revision of their methods to better capture possible changes in learning. Alterations were done in the second iteration of the experiment to avoid a possible limitation of data analysis by reducing children's ability to reach ceiling in the scoring of their assessments after stories. A concern of the first experiment was that children were able to answer all questions correctly without difficulty which could be a possible interpretation of a null effect between conditions causing a potential ceiling effect in the results. To obtain a wider picture of children's comprehension of the lesson of a story and their memory of the story content, they increased the difficulty of questions (e.g., adding more specific memory questions relating to smaller details of the story) and added measures to see how effective children were at transferring a story's lesson to a real-life situation and identifying the lesson of a story within other vignettes.

Conclusions

As discussed in this review, there are possible small benefits to children's learning from fiction. However, fiction introduces a reader's dilemma in which children could misinterpret the target moral of a story. Further research on storytelling techniques could inform what could be implemented to mitigate the risk of children falsely transferring fictional aspects of a story as relevant to reality. Research on oral storytelling has found that it is more effective than read-aloud stories in children's comprehension of vocabulary. This is hypothesized to be a result of oral storytelling's ability to cater to the audience and employ engaging body language.

Oral storytelling combined with the structure of read-aloud stories is a practice observed in Christian children's ministry. Biblical stories can be seen as a unique genre of fantasy that always has the goal of instilling a belief in its audience. This is on the spectrum of the wider fantasy genre in which some are for purely entertainment. In this context, testimony is utilized to make a story more relatable to young, modern audiences. The consequences of an incorrect solution to the reader's dilemma in Biblical stories are higher as it relates to developing the spiritual beliefs of children. As Christianity has been able to pass on beliefs to generations of people and popularly uses testimony, studying the possible function of testimony could provide more generalized knowledge of how to educate children with fiction while minimizing the risks of children incorrectly identifying the takeaway of the story.

This study was proposed to examine the possible effects of testimony included with a read-aloud story on children's learning outcomes. This study evaluated how the inclusion of a testimony given by the reader could impact children's detail recall and moral comprehension. It was hypothesized that children who received a testimony with a read-aloud story would demonstrate higher learning outcomes as compared to children who do not receive a testimony.

This hypothesis was motivated by the emerging literature on the impacts of oral storytelling and elaborative practices with stories begun in Lenhart et. al (2020). This was tested by a two-group analysis in which children were read a series of stories and evaluated for learning outcomes. One group of participants received a relevant testimony after each story.

A second hypothesis was that testimony inclusion would have the greatest impact in Biblical and contexts and less so when used with a realistic story. This was because the need to highlight what information is relevant to reality is less present in a realistic story. Therefore, the story content could be sufficient material for children's decision-making on moral identification and application.

The third hypothesis was that children from families that reported a high level of religiosity would be effective at learning from Biblical stories because of a probable practice effect from routinely hearing stories in which fantastical events happen to people. If children were often involved in hearing and discussing morals from stories as these, there could be less need for a testimony to explain the relevance of events in a story because moral identification from Biblical stories has already been modeled.

Methods

Study Design Overview

A sample of 5-6-year-old children were randomly assigned to one of two conditions. In both conditions, children were read two unfamiliar stories by a research assistant in a lab space. One story was an unfamiliar Bible story and the other was a realistic story. After each story, children completed a set of tasks relating to the target story. These included evaluations of memory and moral learning. In the Testimony Condition, a research assistant gave a testimony to

the child relating to the moral takeaway of the story. These testimonies were scripted anecdotal accounts of events that a research assistant recited as having happened to them. In the Summary Condition, children were told a summary of the story they just read that was a similar word length to the testimonies given to the other condition. A visual representation of the study design is shown in Appendix B.

This study consisted of three main hypotheses. Firstly, children's learning outcomes for the Biblical stories would improve when testimony was employed to highlight the moral takeaway of the story as compared to when there was no testimony given. Secondly, the expected benefits of testimony inclusion would be less major for learning assessments of reality-based stories because there could be less need for an aid in discerning the moral of a story and its application in a realistic context. Lastly, children whose families scored higher on a demographic religiosity measure would demonstrate better learning outcomes on Biblical stories.

Participants

Participants were 2 children, between the ages of 5 and 6 years-old, with one in each condition. Participants and parents were fluent in English as a requirement for participation in this study. Families were recruited to participate in this study through a database for a research center at The University of Texas at Austin, a large public university in the southwestern United States. Additional participants were also recruited through community flyers at parks, children's museums, and local children's ministry programs at churches. Consent forms were completed electronically by parents prior to the study. No participants were excluded from the piloting phase of data collection. Compensation was offered to participants in the form of choosing a small toy from a box at the end of the study.

Material and Measures

Upon arriving at the study appointment, parents completed demographic information on their families and children that included a religiosity assessment (Appendix A). This religiosity measure used open-ended and multiple choice questions to evaluate the religiosity of a household and specifically the extent of children's interaction with religious stories. Distinct from general religiosity measures, this survey also addressed children and families engagement with the stories of their given religion if any. In the piloting phase of this study, this questionnaire was not scored or used for any data analysis. Then, children were read two stories with the same moral, an unfamiliar Bible story and a realistic story. These stories were written for the needs of this study and illustrated by Microsoft Co-Pilot, a generative AI program. The books were presented to all participants digitally with page-turning animations to simulate a physical book while keeping the stimuli consistent across participation modalities.

Participants were read either Book Set 1 or Book Set 2. Book Set 1 had a reality-based story with a moral about standing up to bullies and a Biblically-inspired story with a moral about sharing with others (Figure 1). In Book Set 2, the genres and morals were opposite (reality-based moral of sharing with others and Biblically-inspired moral of standing up to bullies). The design of the book sets was developed to control for potential preference and experience of learning a singular moral. If a participant has a strong understanding of a given moral prior to participation in the study, the learning assessments would address their prior knowledge instead of their ability to learn from the story just read. The current design allows to examine possible influence of genre and testimony inclusion while controlling for preference towards one moral by allowing each genre to be paired with the two morals included in this study.

Figure 1

Comparing Book Set 1 and Book Set 2

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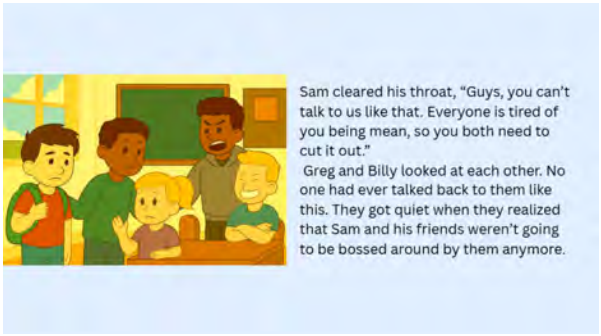
<td> 
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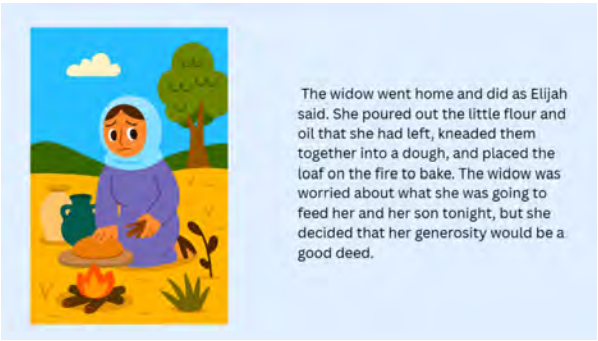
<td> 
</td>
</tr>
<tr>
<td>Sam's School Project
Reality-based moral of standing up to bullies</td>
<td>Elijah and the Widow
Biblically-inspired moral of sharing</td>
</tr>
</table>

<table>
<tr><th colspan="2">Book Set 2</th></tr>
<tr>
<td> 
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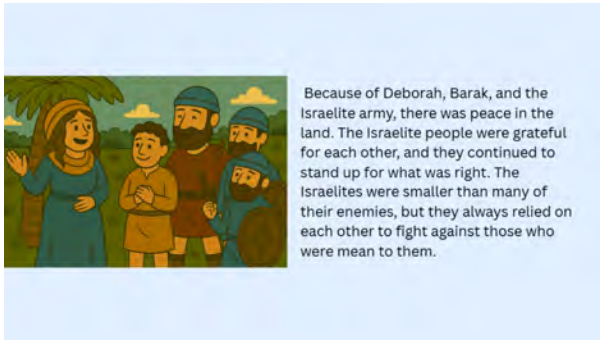
<td> 
</td>
</tr>
<tr>
<td>Jack and the Book Fair
Reality-based moral of sharing</td>
<td>Deborah and the Big Battle
Biblically-inspired moral of standing up to bullies</td>
</tr>
</table>

Assessments were completed by answering questions on an iPad and audio recording of open-ended responses. Assessment questions and scoring were adapted from Walker and Lombrozo (2017) to allow for possible exploratory comparisons. These assessments included the following areas in order:

Memory:

Children were asked to respond whether 8 statements about the target story were true or false. 4 statements were true, 2 of which were created to be easier to correctly identify as true and 2 that were more challenging. Additionally, 4 of the statements were false, 2 of which were written to be easily identified as false and 2 that were more challenging. These statements were given in a randomized order. Children were awarded 1 point for each correct answer for a possible 8 total points for memory assessment.

Lesson Identification:

A research assistant asked the participant to identify the lesson of the target story in their own words. They recited the following script, "I want to teach you what a lesson is. Some stories have a moral or a lesson – which is what the person who made up the story wanted us to learn from it. Do you think that this story has a lesson?" Children were asked to respond yes or no to this question. Then the researcher responded with "I'm going to read this story to another child later today. What do you think I should tell them is the lesson of this story is?" Verbal responses were recorded and coded based on whether the child's answer was lesson-based (provided a moral for the story), content-based (repeated details or events of the story), or irrelevant. Children who provided a lesson-based answer were given 1 point for this task.

Vignette Selection:

This task assessed if children were able to identify the lesson of the story by picking between two sets of vignettes. One set of vignette pairs was a lesson probe that provided two descriptions of novel stories that pit the target story's lesson against a novel lesson. These vignettes had identical novel surface content, i.e. they will visually look the same but in a new way from the target story. This was accomplished by describing two books with the same main character name but in two different scenarios. The other set of vignettes was a content probe that provided descriptions of two more stories. One vignette contained the same surface content as the target story but with a novel lesson. The other vignette had novel surface content but with the target story's lesson. This was accomplished by providing a description of one book in which the main character of the target story engaged in a new moral and another book description in which a new main character engaged in the target moral of the story. An example of a vignette selection task is shown in Figure 2.

Figure 2

Vignette Selection Task for Elijah and the Widow (Biblically-Inspired Story for Book Set 1)

Content Probe	Lesson Probe
The first story is called Jack and the Book Fair. Jack and the Book Fair is about a kid who forgot his money for the book fair, but his friend Sammie helped him out by letting him borrow some of hers. The second story is called Jack at the Park. In Jack at the Park, Jack stands up to a bully who isn't sharing the slide with the rest of the kids at the park. Which story do you think best matches what the author of Elijah and the Widow wanted us to learn from that story?	The first story is called Elijah and the King. Elijah and the King is about a time Elijah stood up to a mean king who was being unkind to Elijah and his friends. The second story is called Sally at the Beach. In Sally at the Beach, Sally shares her sand castle making toys with a kid at the beach that didn't have any toys. Which story do you think best matches what the author of Elijah and the Widow wanted us to learn from that story?

Children were told "I'm going to tell you a couple quick sentences about two more stories. Then, I will ask you which story best matches the lesson of the story we just read. I want you to pick the one that best matches the lesson of the story we just read, [say the target story's title]. Remember, you only get to choose one story. Pick the one that you think best matches what the author of [say the target story's title] wanted us to learn from the story." Then, they were presented with one set of vignettes, either the lesson probe or conflict probe. A shorter version of this script was recited before the children were presented with the other set of vignettes. The vignette pairs were presented in a randomized order. Each vignette pair was 1 possible point for a total 2 possible points for this task. Points were awarded for correct answers.

Generalization:

In this task, children attempted to apply the lesson from the target story to a novel, real-world situation. This task was presented as a real event that happened to the research assistant that day that the child is being asked to give advice on. For example, if a target story's lesson was to share with those who are more needy than you, a generalization task would be an experimenter saying "Hey, I just got all this new stuff for my birthday! I got new shoes and a new jacket! My old shoes and jacket are in my closet and I'm trying to decide what to do with them. They're still in pretty good shape because I got them only a year ago for my last birthday. I could keep them and have multiple jackets and shoes to wear or I could donate them to a friend that was telling me the other day that his old jacket and shoes were getting holes in them from being worn out. What do you think I should do?" The generalization task was matched to the lesson of the target Bible or reality-based story once those are decided. Verbal responses were

recorded and coded as either “in line” with the lesson of the target story or “not in line”. Children who provided an answer “in line” with the target moral of the story were awarded 1 point.

Procedures

Upon arriving to participate in the study, parents and children were given an overview of the study to ask questions and affirm consent. Then, parents completed a demographic questionnaire that included a religiosity measure (Appendix A). Next, a research assistant read a story, either Biblical or reality-based, and completed a set of learning assessments with the child in a separate study room. Parents were able to observe their children during the study from an observation room hidden from the child to limit any potential influence on their child’s answers. After one story and learning assessment set was completed, the same procedure was repeated for the second story and following learning assessment. See Appendix B for a visual of study design procedural order.

Results

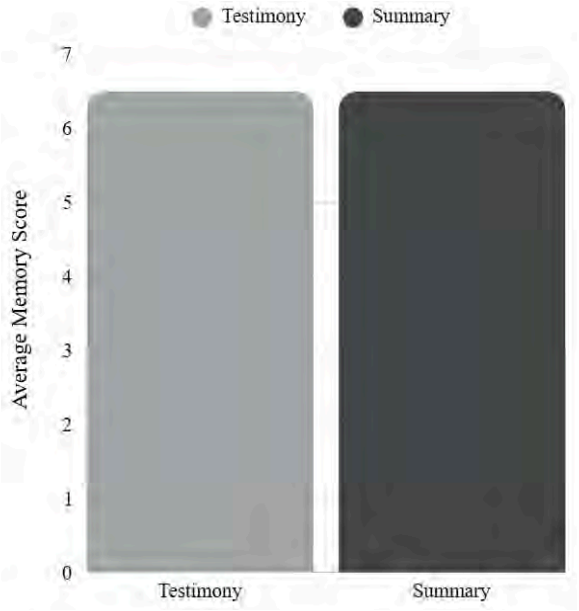
The piloting phase of data collecting was composed of two participants to identify potential issues in methodology. Both participants were 5-6 years old and studies were conducted in person. Each condition had one participant, and both participants were read Book Set 1.

Pilot participants were able to fully complete the duration of the study with little to no signs of disengagement or frustration in the duration and tasks of the study. Parents of participants showed signs of frustration in the length of demographic surveys and Family Religiosity Questionnaires that occur prior to their child’s participation. To address this, parents are now given the option of completing the necessary forms while their child conducts the study to shorten the overall length of their study appointment.

Descriptive analysis of pilot participants is too limited in size to affirm or negate the hypothesis of this study. Both participants, regardless of condition, achieved the same memory assessment scores when comparing the means of their two memory assessments as seen in Figure 3 (N=2, M=6.5). There were slight differences between the means of their two moral learning assessments with the participant in the Summary Condition scoring on average one point higher than the participant in the Testimony Condition (Figure 4). This difference is not significant at the current sample size.

Figure 3

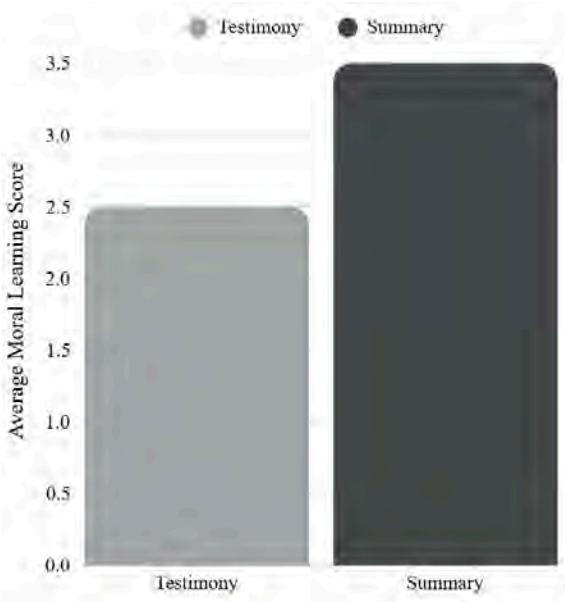
Memory Assessment Scores Between Conditions



Note. This figure shows the score of each participant's memory assessments when finding the mean between their memory scores for the first and second book read to them.

Figure 4

Moral Assessment Scores Between Conditions



Note. This figure shows the score of each participant's moral assessments when finding the mean between their moral scores for the first and second book read to them.

In the piloting phase of this study, the entirety of the Family Religiosity Questionnaire was not yet analyzed. One family reported a dual religious affiliation with Judaism and Catholicism. The other family did not report any religious affiliation. Additionally, this sample size was not yet able to inform the second hypothesis of this study to investigate if testimony was effectual across genres.

Discussion

The results of this study are limited in their ability to inform the proposed hypotheses of this study, but preliminary data collection has informed the feasibility of the methodology of this study. As research on children within this age range faces many developmental limitations, it is important to develop studies that are able to accurately capture their cognitive state, beliefs, and

learning capabilities. From the two pilot participants, it is concluded that this study in its current state is able to engage children and assess aspects of learning from storybooks through the learning assessments.

Despite limited results from pilot participants' learning assessments, the initial hypotheses of this study remain the same. It is expected that as sample size increases, children in the Testimony Condition will achieve higher scores on the memory and moral learning assessments than children in the Summary Condition. This is expected because one possible function of testimony is that it may model a correct solution of the reader's dilemma by isolating the moral takeaway from a story and engaging with it in a real-life scenario. By modeling a correct solution of the reader's dilemma, children could be better at identifying what the intended lesson of a story is. It is also hypothesized that children in the Testimony Condition will perform better on the Biblically-inspired story than the reality-based story as testimony is more commonly used and possibly more necessary to aid understanding in a more fantastical style book. Finally, it is hypothesized that children whose parents report a high level of engagement and experience with religious stories are going to perform better at learning assessments regardless of condition. This is expected because religious stories offer a lot of practice in solving the reader's dilemma through the fantastical and historical elements that children must parse through to identify the information that applies to their reality. This practice is expected to benefit children's learning from stories overall. Further information on how these hypotheses will be tested can be found in Appendix C.

Possible explanations for future results that are contrary to the expectations of the hypotheses will now be discussed. If it is found that participants in the Summary Condition perform better, this could be due to an incorrect hypothesis that testimony inclusion has an

impact on learning or ineffective methodology that does that properly operationalize testimony. This null result could inform future research on the benefits of summarizing content for children's learning in addition to more well-informed methodological approaches at studying religious education tools in new contexts.

If it is found that children in the testimony condition perform similarly regardless of genre, then this could be explained by a potential lack of influence testimony has on learning or the possibility that testimony is equally effectual as a learning aid across multiple genres. This null result could indicate the need for future research on testimony applied to literary genres not explored in this study with particular interest to a more extended range and variety of fantasy book types. If children in the testimony condition perform better on learning assessments for reality-based stories, this could also be due to confounding variables not captured in the data collection of this study such as the media children consume in school and at home and their individual range of experience with fantasy and realistic media. If in school and at home children are more often engaging with reality-based media, then they may learn better from that genre regardless of condition.

If it is found that religious engagement is not positively correlated with higher learning outcomes, then this could be explained by a couple possibilities. Firstly, this could be a result of the future sample collected. As this study uses Judeo-Christian texts as the only religious story type represented, it is possible that a potential sample that reports high levels of religious engagement in other religious traditions (Islam, Buddhism, Hinduism, etc.) do not transfer the learning techniques of their tradition to other religious story types. Another explanation is that children's religious experience may have little to no effect on how they process reality-based stories.

This study and area of research is important as we search to better understand how children learn from storybooks, children's understanding and application of morals, and what are the most effective tools in teaching children abstract concepts. As previously discussed, there is a fair amount of literature on children's learning from storybooks and how children learn morals. However, this is an area that is still in need of further research to draw more definitive conclusions.

The most compelling and unique aspect of this research is the attempt to apply religious education techniques to new settings. Religion is specialized in the quality of faith, a belief in things that one cannot see, touch, or feel. This is useful to study as we consider how academic institutions can best teach students about intangible topics. This study is interested in how we may best teach children about morals, laws of physics, biological systems and other things that are not easily made tangible and looks to religious education as a potential source for techniques in teaching on these intangible topics.

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Appendix A

Family Religiosity Questionnaire (Vaden and Woolley, 2011)

Note to parents: Children in this study will be read storybooks. We would like to know whether religious background affects how children perceive the stories. To help us assess that, we ask that you provide us with some information about your religious affiliation and related activities and beliefs.

1. Do you have a religious affiliation? Yes No
2. If so, what is your religious affiliation? _____
3. (If yes to #1) How would you classify your level of involvement with your religion?
   Very active Moderately active Inactive
4. (If yes to #1) If you are active, what sort of religious activities do you engage in?
At home: _____ At your place of worship: _____
5. Do you read or study a religious text or book? Yes No
   (e.g., Torah, Bible, Qur'an)
6. If so, which text or book do you read? _____
7. What do you believe about the content of this religious text? or What do you believe about religious texts in general if you are not specifically affiliated with one? (More than one may apply. Please check all that apply)

_____ events/characters existed in real life a long time ago
_____ events/characters are symbolic of the teachings/principles of religion
_____ events/characters could exist in real life today (in modern times)
_____ events/characters did not ever exist in real life
_____ events/characters are not symbolic of the teachings/principles of religion
_____ events/characters could not exist today (in modern times)

8. Do you talk with your child about religion? Yes No
9. If so, what do you talk about?
10. If so, how often do you and your child talk about religion?
Frequently (more than 5 times/week) Sometimes (1–5 times/week) Infrequently (less than once/week)
11. Do you talk to your child about stories from a religious text? Yes No
12. If so, do you initiate the conversation or does your child initiate it? Myself only Child only Both
13. If applicable, how often do you initiate conversation about stories from a religious text?
Frequently (more than 5 times/week) Sometimes (1–5 times/ week) Infrequently (less than once/week)
14. If applicable, how often does your child initiate conversation about stories from a religious text? Frequently (more than 5 times/week) Sometimes (1–5 times/ week) Infrequently (less than once/week)
15. How do you (or how would you, if the subject came up) explain the reality of religious stories to your child? (please check all that apply)

_____ events/characters existed in real life a long time ago
_____ events/characters are symbolic of the teachings/principles of my religion
_____ events/characters could exist in real life today (in modern times)
_____ events/characters did not ever exist in real life
_____ events/characters are not symbolic of the teachings/principles of my religion
_____ events/characters could not exist today (in modern times)

16. How strongly do you encourage your child's involvement in religious activities?
Very strongly Moderately Not at all

17. Please list any religious activities in which your child participates.
At home: _____ At your place of worship: _____

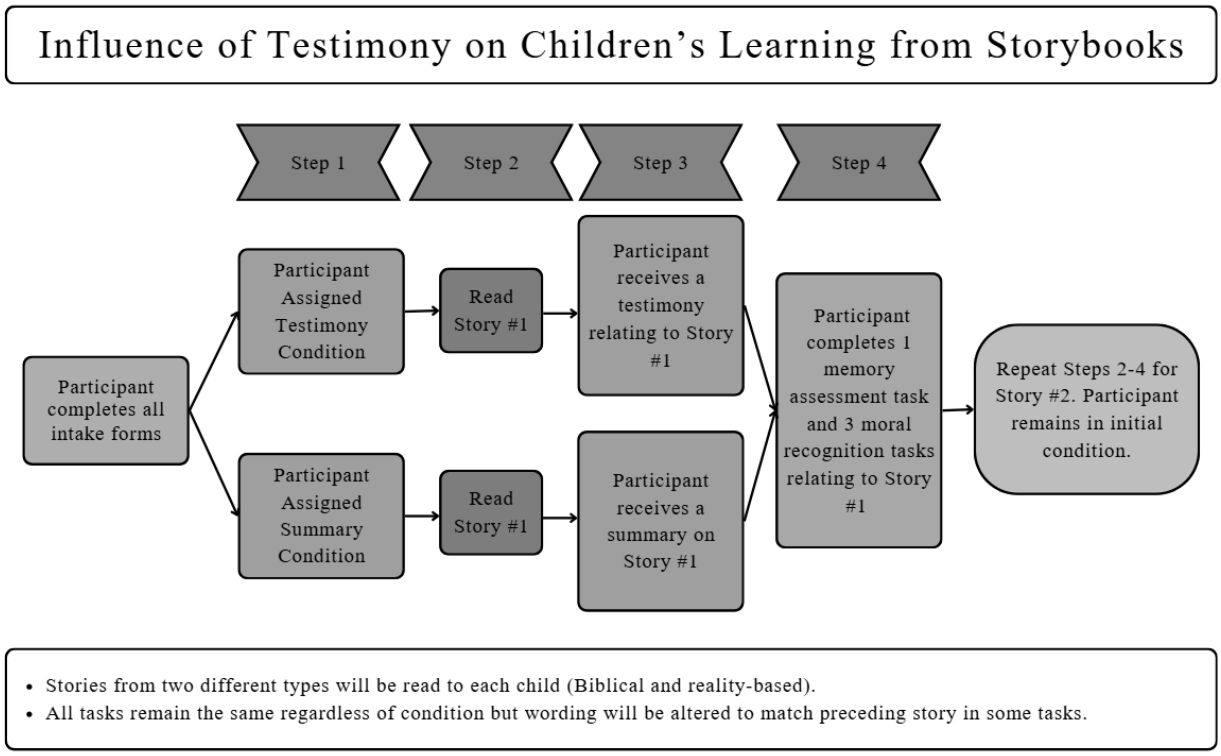
18. How often would you say your child engages in the sorts of activities you listed above?
Frequently (more than 5 times/week) Sometimes (1–5 times/week) Infrequently (less than once/week)

19. Does your child attend a religious school/preschool during the weekdays? Yes No

20. Does your child hear religious stories? Yes No
_____ at home _____ at school _____ at your place of worship (please check all that apply)
If so, how often?
(e.g., once at home and twice at school = 3 times per week) Frequently (more than 5 times/week) Sometimes (1–5 times/week) Infrequently (less than once/week)
If so, which stories does your child hear most frequently? _____

Appendix B

Study Design Procedure



Appendix C
Future Data Analysis Plan

Each participant will receive two scores from their learning assessments. There are 8 possible points for the memory assessment task, 1 possible point for the lesson training task, 2 possible points for the vignette selection task, and 1 possible point for the generalization task for a maximum score of 8 on memory assessment, 4 on moral recognition tasks. This will result in 12 total points for each participant for each story. These scores will be compared between conditions to evaluate if the participants who received a testimony perform better on learning assessments. An ANOVA test will be used to evaluate only memory assessment across conditions (scores out of 8 possible points). Another ANOVA test will be used to evaluate the scores on moral recognition tasks across conditions. A chi-squared test will be used to evaluate the differences between conditions across each individual task.

Additional analysis will be performed to evaluate differences within-subjects in each condition. An ANOVA test will examine possible differences between learning assessment scores on the Biblical story and the reality-based story. Results of these tests will inform the second hypothesis of this study – that testimony inclusion will be most effective when employed with a Biblical story because of the increased need for an aid in identifying the moral of a story and its relevant applications when the story is not fully reality-based. Analysis will also be conducted to inform the third hypothesis of this study– that participants whose families who report higher levels of religiosity will score higher on the learning assessments for Biblical stories, regardless of condition, because of probable prior practice in hearing and working with the themes of stories in which fantastical things happen to people. A regression analysis and a Pearson's correlation coefficient will be used to evaluate these variables.