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CHILDREN CHOOSE THEIR OWN STORIES: THE IMPACT OF CHOICE ON
CHILDREN'S LEARNING OF NEW NARRATIVE SKILLS

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ABSTRACT

The ability to structure narrative during the early preschool years has been shown to have important consequences on cognitive development and academic achievement. However, only limited progress has been made in understanding how these narrative skills can be facilitated. The current study measured the effectiveness of a new narrative intervention conducted with 26 preschoolers, between the ages of 3 and 5 years. Each child participated in both an intervention condition and a control condition. During intervention, each child individually received 7-8 sessions (each lasting about 10-15 minutes) of highly engaging presentation and discussion of narratives that included multiple narrative challenges relative to the child's pretest narrative and language skills. Children were further assigned to one of two intervention conditions: a choice condition or a no-choice condition. In the choice condition, children were asked to choose between two possible options for each story grammar component such as Character, Problem or Attempted Solution. In the no-choice condition, the story components were pre-selected for the child.

Multiple narrative skill gains were evident for the active-choice intervention. Children given the active-choice intervention displayed significantly higher narrative skills at the final post-test –both in terms of comprehension as well as production of story grammar components in Story Telling using a wordless picture book– compared to children given the no choice intervention. Future implications on how stories might be presented to young children in order to more richly facilitate narrative skill acquisition are discussed.

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Chapter 1. INTRODUCTION

A considerable amount of empirical research has established a strong link between the ability to structure narrative in the early preschool period and emergent literacy (Feagans, 1982; Snow, 1983), early reading skills (Paris & Paris, 2003; Peterson & McCabe, 1983), as well as later academic success (Tabors, Snow & Dickinson, 2001, Fiorentino & Howe, 2004; Feagans & Applebaum, 1986; Fazio, Naremore & Connell, 1996). However, despite substantial evidence for the consequences of narrative development on cognitive abilities, only limited progress has been made in understanding how these narrative skills can be facilitated. Much of the research that has been conducted on narrative development has been descriptive in nature. Cross-cultural anthropological work indicates that a universal feature of all stories is that they usually chronicle some aspect of a dilemma or conflict faced by the protagonist, and focus on the subsequent appraisal of the problem as well as the solutions that are used to resolve it. This causal sequence can be seen as common to all types of narrative including both fictional stories as well as most factual narratives. Constructivist theories regarding fictional narrative, or stories, further emphasize the importance of understanding such goal-based episodes, or causal sequences, as a crucial skill necessary for the proficient comprehension and production of narratives (van der Broek, Lorch & Thurlow, 1996; Stein, 1988; Trabasso & Nickels, 1992). In accordance with this perspective, the maturation of a story concept or “story schema” (Johnson & Mandler, 1980; Stein & Glenn, 1979) that clarifies the links between story components has been suggested to be the mechanism by which children advance in their narrative ability. However, even though formal models have been outlined that specify the structure of story schema, and research has

uncovered a developmental trend wherein sensitivity to the causal structure of a story increases with age (van der Broek et al. 1996), less work has been conducted on the explicit teaching of story components, including the details of and reasons for ordered causal sequences, in order to refine the narrative skills of young children.

Also, a separate line of work from social developmental psychology that has yet to be combined with narrative development research indicates that providing children with choices and control over some aspects of a learning activity increases their intrinsic motivation and depth of engagement in the activity (Cordova & Lepper, 1996; Nelson, Prinz, Prinz, & Dahlke, 1991). The advantages of using a similar approach of manipulating motivational contingencies in a narrative teaching context are intuitively obvious but have yet to be fully explored. Strategic provision of choice and control over story components would allow not only greater attention to be directed towards the learning of these components, but in addition allowing children to witness how particular choices impact and change the course of a story might help improve their understanding of narrative causal structures. The primary aim of the present study then is to investigate whether explicit and engaging teaching of narrative structure accelerates narrative development and whether this effect is enhanced when choices are presented to the child at various points in the story corresponding to the story components being targeted.

Story Schema

Schemata are defined in the cognitive literature as “conceptually organized expectancies that guide comprehension and memory” (Yussen et al., 1988). Stories, or fictionalized narratives, have been hypothesized to conform to a certain schema, or story grammar structure, and this offers a possible framework for the mental organization of a story by adults and to varied extents

by children at different developmental levels. Research has shown that children may use such a framework, or story structure, to provide a basis for predicting and organizing linguistic input, and to assist them in listening comprehension and recall of stories. Specifically, stories that follow such a schema have been shown to be better comprehended and recalled by both adults and children than those that do not abide by a story schema (Mandler & Johnson, 1977; Hudson & Nelson, 1983). Similarly, when retelling a story, or producing a narrative, children are considered to be engaging in a constructive process that can make use of story schema as a method of organization of chronology and structure. Story schema can thus be considered an important scaffolding tool for the construction, production, and comprehension of narrative.

Mandler (1978) and Stein and Trabasso (1981), among others, have proposed formal models to describe the structure of story schema. These proposals take the form of a kind of grammar, referred to as “story grammar.” This grammar dictates a set of rules for the structural units present in a story. Not only are concrete units or building blocks of a story identified, but the manner in which they are related to one another causally and temporally is also specified. Story grammar analyses are typically structured around the explicit goals of the protagonist. Stein and Glenn’s story grammar (1979), for instance, listed six story grammar categories: Setting, Initiating events, Internal responses of the protagonist/ Goal formation by the protagonist, Attempts made by the protagonist to achieve the goal, Direct consequences of the attempt made by the protagonist and the protagonist’s Reactions to the consequences. Stein and her colleagues (Stein & Albro, 1997; Stein & Glenn, 1979) went ahead to define a complete episode as a narrative minimally containing an initiating event, an attempt, and a consequence.

According to this framework, an incomplete episode contained two of the three critical components.

Johnson and Mandler (1980) specified a slightly different but similar story grammar model, according to which a simple story was defined as typically consisting of a Setting, which identified the protagonist, and an Episode, which further consisted of a Beginning, Development and Ending. The Beginning included some initial event that involved the protagonist, whereas the Development took the form of a complex reaction on the part of the protagonist to the initiating event resulting in a Goal Path. This Goal Path included an Attempt to achieve the goal and the Outcome of that particular Attempt. The organization of more complex stories was accounted for by either repeating or embedding the above specified constituents. In other words, coordinated sequences of Episodes could occur or an episode could be embedded within another episode to form a more complex story according to the rules of this story framework.

Empirical Findings on Story Grammar Development

The development of story grammar in typically developing children has mostly been studied and indexed by using story recall tasks. Subjects in a typical story recall task will first listen to a story and then, either immediately, or following a short delay will be asked to retell the story to the experimenter. Recall is measured and indexed by the proportion of story grammar elements or components recalled in such a task.

Five- to six- year olds will typically have already internalized some aspects of a story schema and they demonstrate moderately good knowledge of story structure as a result. The amount of story grammar or information from a story recalled, however, increases with age between 3 and 10 years (Mandler & Johnson, 1977; Stein & Glenn, 1979). Furthermore, some

story grammar components are recalled more than others. Mandler and Johnson (1977) and Stein and Glenn (1979) both reported that the most salient story grammar categories seem to be the major setting (orientation) information, followed by initiating events and consequences. In the case of younger children (first graders and younger), story recall summaries typically exclude the mention of goals (Johnson, 1980). This results in incomplete summaries, where the motivation for a particular character's subsequent attempts is not immediately apparent. In fact, all instances of "evaluative" information that requires explicit inferences about a character's emotion or motivation or cognition state tend to be missing in the narratives of younger children (Labov, 1972).

In contrast to comprehension abilities, the ability to skillfully use story schema in narrative production takes a little longer to develop (Peterson & McCabe, 1983). There is a lot of convergent evidence from story production data to support the finding that orientation information is the most salient category of story grammar and can be found in the narratives of children as young as 2 years of age (Peterson, 1990; Peterson & McCabe, 1983; Kernan, 1977). However, empirical evidence suggests that younger children tend to focus more on identifying specifics like time, place and character's name, while older children's narratives in addition stress background information like mood (emotions), motivation (character's intent) and circumstance (situational details).

In sum, research findings converge to show that children who are seven years old or younger are able to include some major orientation and setting information, initiating events, attempts and consequences in stories that they generate, in stories that they retell and in comprehension assessments. However, the overall complexity levels handled by children are

worse for younger children and improve from 3 to 7 years of age. Furthermore, empirical evidence suggests that children between the much studied ages of four and five years especially have multiple limitations on the causal linking of story components (Peterson & McCabe, 1994). They also have a hard time recalling and elaborating on the character's inner states and motivations; in the event that they do include such "evaluative" information, this will generally take a conversational form rather than actual references to the character's cognitions and emotional states. Finally, empirical evidence also indicates that 4-5 year olds are far less likely than 7-10 year olds to generate or recall "complete" episodes, i.e. stories containing initiating events, attempts and consequences (Stein & Albro, 1997; Stein & Glenn, 1979).

Intervention Studies Conducted to Enhance Narrative Skills in Children

Very few studies have been conducted to facilitative narrative development in young children. Some earlier interventions assessed the impact of narrative teaching that was included as a smaller component of educational daycare programs primarily focused on teaching language skills (Gilliam, McFadden & Van Kleeck, 1995; Feagans & Farran, 1994). Children were shown to make gains on amount of information contained in their narratives as well as on phonic decoding and spelling skills. Story grammar components were not explicitly taught to the children, however, nor was story grammar knowledge assessed following the intervention.

In a separate study, Peterson, Jesso and McCabe (1999) examined parental influence on narrative development in preschoolers, specifically by encouraging mothers to use context eliciting questions and to encourage their children to produce longer responses. Instruction on this type of scaffolding behavior proved to be successful in part, as children provided more contextual and temporal information in their narratives in a follow up assessment conducted a

year later even though they did not show gains immediately after intervention. However, story grammar components comprising the causal network in a story were not taught or elicited in this study, nor was narrative competence measured. Rather it was simply the amount of narrative that seemed to have increased as a result of the intervention.

In a more recent intervention study, Zevenbergen and colleagues (2003b) utilized dialogic reading procedures to enhance children's use of evaluative devices in their story telling. Dialogic reading refers to an interactive reading technique aimed at encouraging children to take a more active role during reading by having the adult prompt the child with open-ended questions and back-channeling (e.g. "uh-huh", "tell me more"). Seventy-one Head Start four-year olds participated in a 30-week dialogic reading program. A control group was also included in the design of the experiment, although it remains unclear as to how well-matched the control group and intervention group were before the start of the intervention. By the end of the intervention, children in the intervention group used more evaluative information in their narrative, with specific references to the characters' internal states and dialogue, compared to the control group.

The results of the Zevenbergen et al. (2003b) study validate the effectiveness of a dialogic reading technique in improving children's use of evaluative devices in their story telling. However, only a single study has utilized a dialogic reading procedure in conjunction with explicit teaching of story grammar structure to improve children's narrative skills. Yue Xuan (2006), as part of her dissertation, conducted a six-week hybrid intervention study with 30 four-to five-year olds (half of which were assigned to a control group). The hybrid-intervention emphasized story grammar, linguistic complexity and evaluative information. The story grammar

components that were focused on in this study were settings, initiating events, attempts, internal responses, consequences and reactions. These story grammar components were explicitly taught based on extensions of a method devised and tested by Hayward and Schneider (2000) in which the story components were introduced to the children in language that they could understand and by using colored cue cards corresponding to each element. The children were instructed to match the cards to the relevant story content and to put the components in temporal order. Recasting was used to add narrative supporting syntax structure to the children's utterances and dialogic reading was used to facilitate evaluative information production in the children assigned to the intervention group.

After the intervention, children included more evaluative information in their narrative compared to the control group who did not receive the intervention. The structure of the intervention group children's narratives were also more complex and contained more story grammar components and more complete episodes (i.e. complete sequences of initiating events, attempts and consequences). The average of the combined Z-scores for the three narrative tasks was significantly higher for the intervention group compared to the control group, with a very large effect size of 0.68. Finally, language skills (sentence recalling skills and vocabulary) were found to be moderately correlated with narrative skill, ranging from 0.38 to 0.56. A key component of the hybrid-intervention, according to the researcher, was the inclusion of explicit story grammar teaching in the design. It should be noted, however, that given this emphasis on teaching children the meaning of story grammar components, there was less emphasis on the structural sequence of these components. Further instruction on how these components are

causally related to each other and organized in the story would be expected to result in more complete episodes and an increased percentage of classic narratives.

The Impact of Choice on Learning

Research evidence suggests that when individuals are allowed to affirm their sense of autonomy by choosing aspects of an activity, they exhibit enhanced intrinsic motivation, persistence, task performance and perceived competence (Patall, Cooper & Robinson, 2008). These positive outcomes have also been observed when choices are provided to participants in a learning context. In a study by Cordova and Lepper (1996) for example, children were provided with computer instruction for math skills and a critical manipulation was whether or not they had control over choices regarding incidental aspects of the task (e.g. the character's name or the specific icon that represented them in the activity). The results of this study show that providing subjects with choice and control over some aspects of the task resulted in increased engagement and persistence of learning efforts by the children. Similarly, in literacy tutoring using computer software, Nelson and colleagues incorporated extensive built-in active choice options for children in their learning episodes (Nelson, Prinz, Prinz, & Dahlke, 1991). These researchers found that deaf children achieved greater literacy gains when they made active choices in this computer-supported context compared to when they did not.

The effect of providing choice in a narrative teaching context has yet to be explored however. The only empirical investigation that has been conducted in a related direction has been to investigate the influence of interactive media on children's story memory (Ricci & Beal, 2002). Results from this study indicate that providing interactive opportunities to 6-7 year old children while they are presented with a narrative does not result in enhanced story recall or

comprehension performance compared to children who passively view a video clip of the story. However, as the interactions with the media were not always with material directly related to story grammar, it is possible that the provision of choice was not utilized in an optimal manner. It remains to be seen whether providing choices to children at points in a story corresponding to story grammar components –and thereby allowing deeper processing and encoding of those components –will lead to gains in story comprehension and production. Thus, the full potential of manipulating the presence of choices in a narrative teaching context as a technique to enhance motivational engagement and learning has yet to be explored.

Theoretical Framework of Current Study

Despite the fact that story grammar structure has been well specified and studied, the process by which children acquire story structure knowledge is less well understood. According to a dynamic systems framework (Thelen & Smith, 1994), different aspects of development relate to each other in changing ways throughout childhood, resulting in a systematic yet complex pattern of development. In this case it is likely, for example, that language skills may support the more complex aspects of narrative development at certain points in development. Considering that the most rapid development of story structure knowledge occurs between 3-8 years of age and that the plasticity of the system is generally greater at younger ages, it becomes especially important to consider how stories are presented to children in the early preschool years. In order to support abstraction of the more complex story grammar elements, children need to first of all be exposed to stories containing appropriate story grammar complexity with linguistic input relevant to their own current level. Ensuring that the stories are presented at the child's language level should in turn allow the child to direct more of their attention to the

structure of the story grammar components as well as the connections between them rather than getting distracted by sentences that are too challenging for the child's current language system. In the current study, the stories presented to the children were therefore tailored to their individual language level, ranging from stories containing simple syntactic structures to more complex ones. It should be noted, in addition, that the language complexity level did not remain the same over the course of the intervention as each child was challenged with planned modest increases in language complexity of the stories presented in the latter half of the intervention. This was done to scaffold the understanding of more complex story structures and allowed for the development of more advanced narrative comprehension and production skills in the children during intervention.

Similarly, it is important to address the child's emotional engagement or readiness to learn. Hence, a unique feature of the current study is that half of the children participating in the intervention were assigned to a choice condition, and were given control over how the story unfolded. At each point in the story, starting with the characters, participants were prompted to choose one of two possible options and were reminded that a particular choice would impact and change how the story developed. Similar choices were presented for the remaining story grammar components – settings, initiating events, problems, attempts/ solutions and consequences/ resolutions. The provision of choice on how the story develops is expected to increase children's intrinsic motivation and depth of engagement in the story telling activity (Cordova & Lepper, 1996). This is in turn expected to increase the salience of the story grammar component for these children and allow further attention to be directed toward these components enabling deeper processing, encoding and abstraction of these structures. Furthermore, the

emphasis on pointing out how one story grammar component impacts another serves as a means of providing the child with a better sense of causation and effectively guides them into the story making process. It is therefore hypothesized that children assigned to the choice condition will score higher on story telling and story re-telling measures at post-test compared to children assigned to the no-choice intervention condition.

Addressing the child's emotional engagement and cognitive ability fits well within the theoretical framework presented by Nelson and colleagues known as the "Dynamic Tricky Mix" Model (Nelson et al., 2001; Nelson & Arkenberg, 2008). According to this model, multiple conditions need to cooperate and converge to maximize learning. These conditions include the child's external environment, such as the availability of appropriate challenges and social support systems for the child, the child's own cognitive ability (including attention and memory capacity), emotional readiness (including motivation, expectations, and on-line internal states) and lastly the interactions that exist between a child and the environment. An individual child's learning rate can be boosted dramatically when highly positive Tricky Mixes of conditions are created (Nelson, Craven, Xuan & Arkenberg, 2004). The current study seeks to try and optimize some of these conditions to facilitate narrative understanding and production in preschoolers. The goal of the current study is to address the following questions: (1) Does explicit and engaging teaching of narrative structure that includes tailoring of intervention procedures to the child's current language level accelerate narrative development? (2) Is there increased responsiveness to learning story structure when children are given many active choices regarding how stories unfold during intervention? (3) Prior to intervention, do children with higher language levels also show higher narrative skill levels?

Chapter 2. METHOD

Participants

The study sample included 29 typically developing children, ages 3 to 5, recruited from two local daycares. There were 15 girls and 14 boys in the sample. The mean age of participants at pretest was 3.86 years old (SD= 0.69). Due to attrition of the sample, complete data for only 26 subjects was reliably obtained at the final testing point, and thus all analyses that examine gains made after pretest in narrative skills are based upon these 26 subjects. Signed consent was obtained from the parents of each child who participated in the study. Verbal assent was also obtained from each child prior to participation in the study. All testing was conducted on site at the daycares.

Procedures

Intervention Materials

Story Grammar Components. Even though the terminology used is slightly different, the story grammar components that were highlighted in this study are similar to those specified by Johnson and Mandler (1980), and Stein and Glenn (1979). The Setting and Character collectively constituted the Setting as defined by the previous researchers. The Initiating Event refers to what Johnson and Mandler (1980) call the Beginning of the story. The Problem in the current story grammar scheme explicitly specifies an obstacle and includes the character's reaction to the obstacle (what has been previously considered the Internal Response). The Solution refers to what has previously been listed as an Attempt. Finally, the Resolution refers to the Consequence and Reaction to the Consequence. The only story grammar element that was deliberately omitted

in this scheme was Goal formation due to empirical evidence that children at this age period typically are unable to comprehend character's motivations and cognition.

Story Templates. A total of eight different stories were constructed for the intervention, each containing two possible alternatives for any given story grammar element (see Figure 1 for sample template). The stories were kept simple and always contained a single central episode (a single initiating event that lead to a problem which resulted in a solution/attempt and finally a resolution/consequence). Furthermore, the problem in the story was always followed by a workable attempt/solution. This was done to ensure that the task was not too challenging for the children and allowed the components to be highlighted maximally at the same time.

Creation of Picture Cards. Once the story templates had been created for the stories, picture cards were created that corresponded to each story grammar component. Cartoon images were found via the internet for the characters, settings, initiating events, problems, solutions/Attempts and resolutions/ consequences for each of the 8 stories. Several sets of images were printed out and pasted on 3-inch by 5-inch index cards which were used in the intervention.

Story Paragraph Construction. Finally, paragraphs corresponding to all the different possible combinations of story grammar components were constructed for each of the eight stories. Additionally, the language complexity of these paragraphs was carefully manipulated so that three levels of language difficulty were developed for each story –the first level containing sentences with a single subject and verb (for example, “The bear looked up at the tree”), the second level containing sentences with complex verbs (for example, “The bear was walking and suddenly stopped”) and simple sentence complements (as in “The bees thought the bear was one

Setting 1: Forest

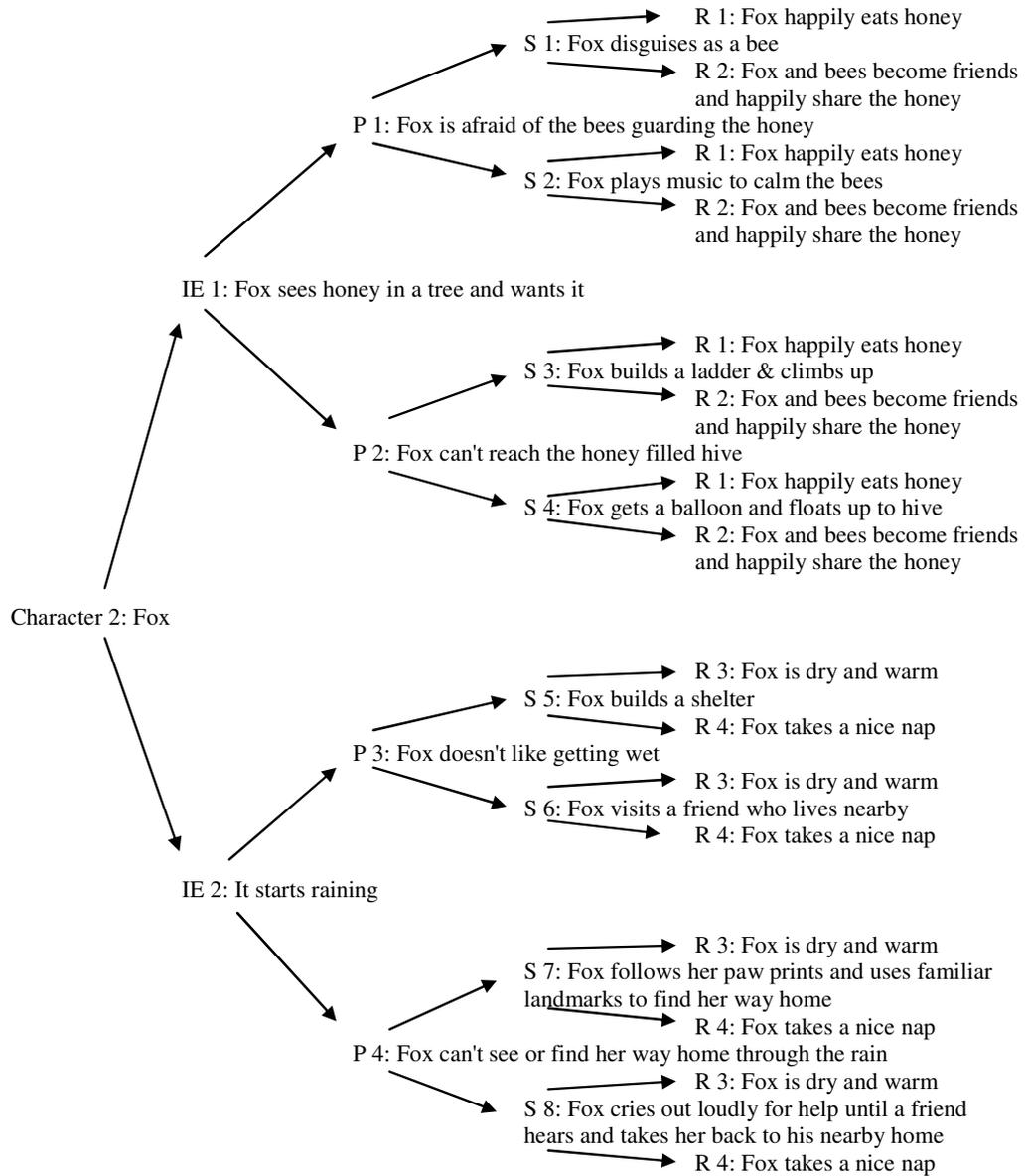


Figure 1. Story Template for Bear and Fox Story used in Intervention.

of them”) while the third and most advanced level of language difficulty contained sentences with multiple clauses (“He had seen different colored soil and clay by a nearby river and decided to paint himself with stripes to disguise himself as a bee”) and If-then statements (for example, “If he wore a disguise, then none of the bees would notice him”).

Intervention Procedures

Two types of interventions were conducted –one in which the children were presented with choice at 6 different points in the story corresponding to the story grammar components being taught, while the second type of intervention was identical to the first except that children were not offered choice for each of the 6 components. Different children were assigned to the Choice and the No-Choice conditions. This design enabled a direct comparison of narrative gains made as a result of each of two types of interventions, thereby addressing the question of whether or not “choice matters.”

Both intervention conditions involved 7 to 8 sessions, each session being 10-15 minutes long, conducted over the span of four weeks. A typical session included the child and an adult researcher who began by asking the child to participate in coming up with a story together. In the choice condition, children were asked to choose a picture card from two possible options for each of the 6 story grammar components targeted in the study (character, setting, initiating event, problem, solution/ attempt, and resolution/ consequence). Each story grammar element was highlighted in this way, and the child’s general motivation and engagement was maintained by the control that they maintained over the unfolding of the narrative. After a picture card was chosen, the experimenter reiterated that the child had just helped them select a particular story grammar component and re-stated what the child’s choice had been. Once all the 6 pictures cards

had been laid out, the experimenter then read the child the corresponding pre-written story paragraph related to the components that they had selected. The procedure was identical for the No-choice intervention condition except that story grammar components were instead pre-selected for the children.

A single intervention session involved presenting the child with two different stories. The first four sessions therefore allowed for a single presentation of all 8 stories. Starting with Session 5, the stories were re-presented to the children. For the choice condition, children were encouraged to choose different story grammar components this time. For the no-choice condition, different story grammar components were pre-selected for the eight stories to ensure that the resulting stories were different from those encountered in the first half of the intervention. These procedures ensured that the variations in encountered story sequences for the No-choice children were equivalent to the total variations encountered by the children in the Choice condition.

Language Levels presented. Another manipulation beginning with Session 5 was that the language level of the story paragraph read out to the children in the second half of intervention was raised by a single level. So for example, children starting out at Language Level 1 (Low Language Level at Pretest, see Condition Matching below) were presented with Level 1 story paragraphs during Sessions 1, 2, 3 and 4 but were presented Level 2 story paragraphs in Sessions 5, 6, 7 and 8. This was done to scaffold the understanding of more complex story structures, as many of the causal connections between story grammar components are conveyed by the more sophisticated syntax.

Procedural Checks: Session Length and Card Sorting. The length of each Intervention Session (for both choice and no choice Intervention sessions) was calculated using start and stop times recorded for each intervention session.

Starting with Session 5, the picture cards were scrambled by the experimenter towards the end of each intervention session. The children were then asked to put the cards back in the correct order. The child's ability to sort the picture cards correctly indicated two things. First, correct ordering indicated that the child had learned the sequence of the story grammar components. And secondly, the ability to put the cards back in the correct order indicated that the child was paying attention during the intervention session.

Condition Matching before Intervention

The pretest language scores allowed for children within the sample to be divided into two language levels. Children scoring below the mean of the summed raw scores on the two language assessments-- the EOWPVT and the Recalling Sentences subtest of the CELF-P2--were categorized as belonging to Language Level 1, or Low Language at Pretest. Similarly, participants scoring above the mean of the two summed raw scores on the language assessments were categorized as belonging to Language Level 2 or High Language at Pretest. Children were then matched/ranked within a particular language level, and one child from each matched pair was assigned to the intervention-first condition while the other child was assigned to the control-first condition. Children were also counterbalanced across intervention condition (choice or no-choice).

Post-testing

The intervention sessions were staggered across two phases so that following the two weeks of Pre-testing, only half of the participants in the study began the intervention. Among these fourteen participants, seven received the choice intervention and the remaining seven received the no-choice intervention. The remaining fifteen participants (out of which thirteen continued to complete the study) served as controls during this period. In the second phase, seven of these thirteen participants received the choice intervention and the remaining six received the no-choice intervention. The intervention-first group went through a control period during these four weeks. Following the four weeks of intervention on this group of children, a final Post-test B was conducted on all the participants in the study. This final post-test assessment provided data for all 26 children on the narrative comprehension skills (using the Prompted Comprehension measure) and narrative production skills (using a wordless picture book) displayed after each child had completed both their control period and their intervention period.

Measures

Language Ability. Children's expressive vocabulary was measured at Pretest using the Expressive One Word Picture Vocabulary Test (EOWPVT-R Gardner, 1990). The examiner showed the child a booklet containing colored pictures of objects after providing the following instructions: "I am going to show you some pictures. And I want you to tell me the word that names each picture or group of pictures." Four practice items were administered before proceeding with the actual task. Each correct label earned the child a point, and the total number

of points earned constituted the child's raw score on this test. Raw scores were re-coded into standard scores according to the test manual.

Another language test that was employed at Pretest was the Recalling Sentences subtest from the Clinical Evaluation of Language Fundamental –Preschool (CELF-P2, Wiig, Secord, & Semel, 1992). In this task, children were required to imitate sentences immediately after the experimenter said them. The test included a total of 13 sentences, which ranged from easy sentences such as “The boy is nice” to more difficult sentences such as “Because tomorrow is Saturday, we can stay up late tonight.” Children were scored on how closely their imitation matched the original sentences. Only the exact utterance got full credit and every error (adding or omitting a word, changing the word order) resulted in point deductions. This measure was used to assess children's syntax understanding. Raw scores were converted to standard scores which were used in analyses.

Story Telling Ability. Story telling, i.e. narrative production, was elicited from the children at pretest and at Post-test after the intervention had been completed by using a 29-page wordless picture book, “A boy, a dog and a frog” (Mayer, 1967). This particular story book was chosen as the pretest measure because it was the first in the series, and served the purpose of introducing the characters and story line to the participants in the study. The story contains a clear initiating event (spotting the frog), multiple attempts to catch the frog and a clear resolution whereby the frog finally follows the main characters home. In addition to this book, referred to as the Frog 1 familiar book henceforth, an unfamiliar book was also used at Post-test to elicit story telling from the children. This book was a sequel to the first book and therefore allowed for progression of the story line yet ensuring that the children viewed an unfamiliar book as well.

“One frog too many” (Mayer, 1975), referred to as the Frog 3 unfamiliar book, was used to elicit story telling at Post-test. This 28-page wordless picture book was chosen as it too contained a distinct initiating event (boy receives another pet frog as gift), multiple attempts to stop the old frog from bullying the new frog and a clear resolution whereby the new frog and old frog become friends.

The examiner on each occasion of using one of the Frog picture books presented the child with the following instructions: “We are going to look through this book together. And as we go through it, I want you to tell me whatever you are thinking about the pictures or the story.” The child’s page-by-page narrative picture walk was then recorded using a micro cassette recorder. The examiner also encouraged the children’s utterance by using prompts such as “What’s happening on this page?” and “What happens next?” or by simply repeating the children’s words such as “Oh, he saw a frog.” These audio recordings were later transcribed word for word by undergraduate research assistants.

Transcripts of the page-by-page story telling or “picture walk” were coded for the presence of several story grammar components constituting the main causal sequence or “episode” of the story: initiating event, problems, attempts, consequences and reactions. A score was given for number of times that these components occurred in their narrative.

The telling of the story by the child during the “picture walk” through each wordless picture book was followed by a prompted comprehension phase (Paris & Paris, 2001). The child was told that the examiner would ask some questions about the pictures. The examiner then guided the page-turning and pointed to specific pictures related to a series of eight comprehension questions. Five of these questions targeted explicit information and required

identification of the following story grammar components: setting, characters, initiating event, problem and resolution/consequence. Questions related to the latter three components were followed by “why” questions in order to promote responses that demonstrated the children’s comprehension and reasoning abilities. The remaining three questions targeted implicit information that required the children to make inferences from the pictures about the characters’ feelings, dialogue and causality. These questions were also followed by “why” probes in order to assess the child’s reasoning and inference making abilities. The scoring rubric that was used for the prompted comprehension questions was borrowed from the rubric designed by Paris & Paris (2001). All eight questions were scored by using a 0-1-2 point rubric. In general, 0 points indicated no response, incorrect or inappropriate responses; 1 point indicated partial or incomplete responses that relied on information from a single picture; and 2 points were awarded to coherent explanations consistent with the unfolding narrative that incorporated information from multiple pictures in the story. The highest score that could be obtained on this complete prompted comprehension measure was therefore 16 points. Due to an administration error related to a question targeting implicit information pertaining to the character’s dialogue, this question was dropped from the subsequent analyses. Thus the highest score possible on this measure was reduced to 14 points.

Chapter 3. RESULTS

Story Telling Results after All Children had completed Intervention

Overall Story Grammar Comprehension scores. Figure 2 represents results for the Prompted Comprehension of All Story Grammar components measure for children assigned to both the choice and no-choice conditions. At final Post-test B, after each child had completed their intervention period and control period, children assigned to the choice condition had significantly higher scores on the Prompted Comprehension of All Story Grammar components measure compared to children assigned to the no-choice intervention condition. A check on the possible effect of order on narrative performance revealed that group assignment (intervention first vs. intervention second) did not interact with intervention condition (choice vs. no choice). Thus, results across all participants could be meaningfully compared at the final time point. For the familiar wordless picture book (Frog 1), children assigned to the choice condition had a mean score of 11.61 points ($SD= 1.39$) whereas children assigned to the no choice condition had a mean score of 10.00 points ($SD= 2.49$). This difference between the mean Prompted Comprehension scores for the choice group and no-choice group was statistically significant, $t(23) = 2.03, p = .05$, with a large effect size ($d = 0.80$). For the unfamiliar wordless picture book (Frog 3), children assigned to the choice condition had a mean score of 11.29 points ($SD= 2.01$) whereas children assigned to the no choice condition had a mean score of 9.33 points ($SD= 2.87$). This difference between the mean Prompted Comprehension scores for the choice group and no-choice group was statistically significant as well, $t(24) = 2.03, p = .05$, with a large effect size ($d = 0.79$). An average z-score for Frog 1 and Frog 3 Prompted comprehension scores also showed that choice children (mean score = .39) scored significantly higher than no-choice

children (mean score = -.40) on Prompted comprehension of story grammar, $t(24) = 2.45, p < .02$.

At pre-test prior to any intervention, children who were assigned to the choice condition had a mean Prompted Comprehension of All Story Grammar components score of 7.53 points ($SD = 2.67$), while children assigned to the no-choice condition had a mean Prompted Comprehension score of 6.93 points ($SD = 3.08$). This difference between the mean Prompted Comprehension scores for the choice group and no-choice group was not significantly different, $t(27) = 0.56, p > .20$. These results indicate that even though both groups made gains over the course of the intervention, children assigned to the choice condition made gains that exceeded their matched peers on this story grammar comprehension measure that tapped into story grammar knowledge for all the components targeted in the intervention.

Production of Story Grammar Components in Children's Narrative. Table 1 contains the results for the story grammar component analysis of children's page by page story telling of the unfamiliar wordless picture book at final Post-test. Comparisons of total number of story components constituting causally-connected Episodes in children's narratives (i.e. total number of initiating events, problems, attempts, consequences and reactions) revealed that children assigned to the choice intervention included an average of 15.50 components ($SD = 2.82$) in their narratives, whereas children assigned to the no-choice condition included an average of 11.25 components ($SD = 3.57$) in their narratives. This difference in total number of components constituting episodes included in narrative was statistically significant, $t(24) = 3.39, p < .01$, with a very large effect size ($d = 1.32$). Furthermore, these differences were found to be most prominent for number of problems and attempts included in the children's narratives.

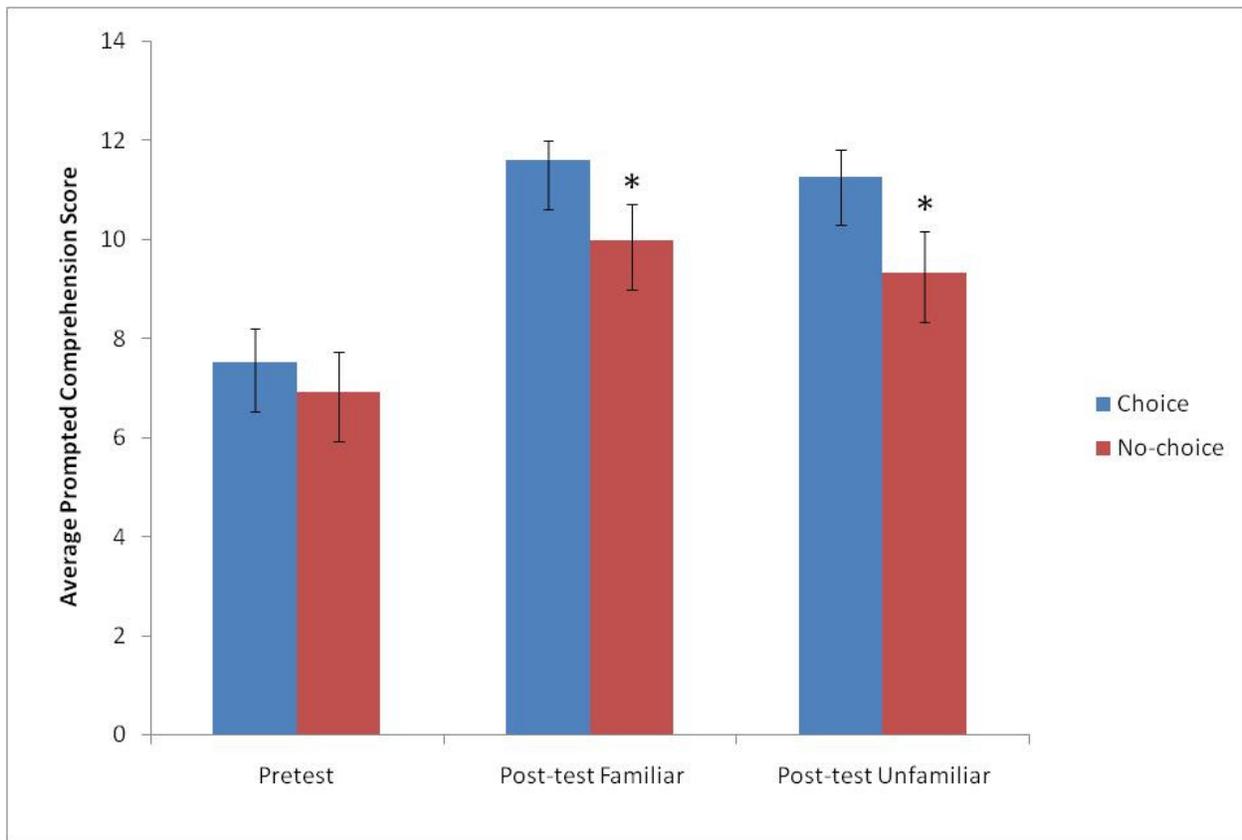


Figure 2. Comparison of Prompted Comprehension scores for All Story Grammar Components for children assigned to the Choice condition and No-choice conditions at Pretest and Final Post-test B. Results for both Frog 1 (familiar book) and Frog 3 (unfamiliar book) are included.

Children assigned to the choice intervention included on average 3.57 problems (SD = 1.16) in their narratives, whereas children assigned to the no choice intervention included on average 2.00 problems (SD = 1.04) in their narratives. This difference in total number of problems included in narratives was statistically significant, $t(24) = 3.61, p < .01$, with a very large effect size ($d = 1.42$). In terms of total number of attempts included in children's narratives, children assigned to the choice intervention included on average 2.50 attempts (SD = 1.09) while children assigned to the no choice intervention included on average 1.00 attempt (SD = 0.60) in their narratives. This difference in total number of attempts included in narratives was also statistically

significant, $t(24) = 4.24$, $p < .001$, with a very large effect size, $d = 1.70$. As seen in Table 1, for each of these results there was a very large effect size.

Table 1. Children's Production of Story grammar components in story telling for Frog 3 at Final Post-test B (unfamiliar story)

Measure	Choice	No-choice	t	p	d
Total (IE+P+A+R+C)	15.50 (2.82)	11.25 (3.57)	3.39	.002*	1.32
Problems (P)	3.57 (1.16)	2.00 (1.04)	3.61	.001*	1.42
Attempts (A)	2.50 (1.09)	1.00 (0.60)	4.24	.000**	1.70

N= 26; Means, Standard deviations, t-values, significance values and effect sizes for each measure are presented

Relations between Language Level and Narrative Ability at Pretest

Relations between pretest High and Low Raw language levels (two groups of children) to multiple narrative measures were found to be significant. Children with High Language skills had an average score of 8.76 points ($SD= 2.31$) on the Prompted comprehension narrative measure. Children with Low Language skills on the other hand had an average score of 6.00 points ($SD= 2.66$). This mean difference was statistically significant, $t(27) = 2.95$, $p < .01$. High language children also included a greater number of story grammar components in their narratives for the wordless picture book at Pretest compared to their low language peers. The average number of total story grammar components included in narrative by High language children was 10.15 ($SD = 2.51$). In contrast, the average number of total story grammar components included in narrative by Low Language children was 7.37 ($SD = 3.50$). This mean difference was statistically significant as well, $t(27) = 2.40$, $p < .02$. The relation between language level and a story grammar composite score containing number of Problems, Attempts and Consequences included in narrative was also examined. Higher language level children had an average score of 9.54 ($SD = 2.33$) on this story grammar composite, whereas lower language

children had an average score of 6.94 ($SD = 3.43$). The mean difference between higher language and lower language children for this story grammar composite was significant $t(27) = 2.33, p < .02$. These results indicate substantial relations between language ability and narrative ability at pretest. Additionally, it was found that Intervention condition (Choice vs. no choice) did not interact with language level on any narrative outcome.

Procedural Checks: Session Length and Card Sorting Results

The mean length of session for the Choice intervention condition was 11.54 minutes (5.77 minutes per story), whereas the mean length of session for the No-choice intervention condition was 10.62 minutes (5.31 minutes per story). This difference was not statistically significant, $t(24) = 1.73, p > .05$, indicating that the intervention sessions for the two conditions were similar in terms of duration.

Card Sorting results ranged from 0-6 points, where a 0 indicated that zero out of six cards had been sorted correctly and a 6 indicated that all six cards had been sorted in the correct order. Children in the choice condition averaged a Card Sorting score of 5.41 compared to an average score of 4.81 for children in the no-choice condition. This difference in Card Sorting scores is not statistically significant, $t(23) = 1.52, p > .05$, indicating that lack of attention to the task was not necessarily an issue and any differences in narrative skills that emerge at post-test are reflective of specific interactions by the children with the intervention material/ procedures for the contrasting active-choice and no-choice conditions.

Chapter 4. DISCUSSION

As predicted, after only four weeks of intervention, children assigned to the active-choice condition showed some significant skill advantages in story grammar knowledge and production compared to children assigned to the no-choice condition. The multiple post-intervention advantages observed for children given the active-choice intervention can further be readily attributed to intervention procedures considering that children in this condition were closely matched prior to intervention to the no-choice children.

At the final Post-test, after each child had completed both a control period as well as an intervention period, children assigned to the active-choice intervention condition performed significantly better than children assigned to the no-choice intervention on a comprehension measure targeting all of the story grammar components taught in the intervention. Higher scores overall on this measure also reflected the child's ability to integrate information across different pages to create coherent and connected understandings, and therefore serve as an indicator of enhanced comprehension at not only the story grammar component level (e.g., identification of the characters, setting, initiating event, problem, consequence/resolution) but also indicate improved comprehension at the causally-connected story level (e.g. how an attempt to solve a problem led to a particular consequence). An example of a child's response that illustrates this type of comprehension at the causally-connected story level and that would earn full credit on this measure is as follows: "The frog jumped away from the boy because he did not want to get caught." It is evident from this child's response that they are able to not only identify a particular problem in the story, but also understand why the problem arose in the context of the story. The significantly higher scores obtained by children in the choice condition on this measure may

therefore indicate improved causal understanding of story grammar components in relation to the stories.

Similar advantages for Choice-Intervention were also seen in children's production of narratives in the context of a wordless picture book. Children assigned to the choice condition included a significantly greater number of story grammar components that can be seen as constituting connected episodes –initiating events, problems, attempts, consequences and reactions– in their narratives at the final Post-test compared to children assigned to the no choice intervention. Furthermore, these differential gains in narrative production skills were most prominent for the number of problems and attempts included in their narratives; two story grammar components that were specifically targeted in the intervention and are central to causal sequences in stories.

It has been suggested in the literature that multiple conditions need to converge in real time in order for language learning to successfully occur (Nelson, 1989). According to this “Dynamic Tricky Mix” model, progress in language will only occur if there are dynamic convergences in social interaction between a learner and a more expert language user of at least these conditions –positive social and emotional engagement, high attention, low distracting demands, challenging language structures, and some specific enhancers of language processing built into the learning activity. Studies utilizing such a dynamic tricky mix approach in language teaching have been very successful for many varieties of language domains and language learners, including syntax facilitation in language-delayed and language-typical children (Fey, Cleave, Long & Hughes, 1993; Nelson et al., 2001), vocabulary learning acceleration in language-typical children (Nelson & Bonvillian, 1978; Nelson & Arkenberg, 2008), and reading

and sign language facilitation in deaf children (Nelson, Loncke, and Camarata, 1993; Nelson, Craven, Xuan & Arkenberg, 2004). In the current study, this “dynamic mix” was achieved by providing children control over choices for the different story components, by matching the language level of initial story paragraphs presented to the children to their initial language ability, and by increasing the language complexity of the story paragraphs over the course of the intervention.

Provision of choices for the story grammar components is hypothesized to have increased children’s attention and motivational engagement in the story telling activity, and consequently their readiness to learn. This hypothesis is supported by empirical work that substantiates a relation between provision of choice and increased attention and engagement in the learning activity (Cordova & Lepper, 1996). Additionally, according to a Dynamic Systems framework, providing children with choices sets up multiple opportunities for the learning of a particular set of skills. The provision of choice in the present choice intervention condition is thus expected to have dynamically nudged the children toward higher motivational engagement and attention which assisted in the learning of all the story grammar elements that were highlighted in this manner. Furthermore, as children got to witness on particular occasions and across multiple occasions how different logical causal sequences unfolded depending on certain choices that they actively made, it is expected that these children were dynamically nudged toward paying closer attention to and abstracting these causal sequences. Thus, according to a dynamic systems framework (e.g. Nelson, 1989, 2001; Thelen & Smith, 1994), deep processing on multiple occasions on the part of children in the choice condition resulted in greater levels of consolidated

representation of causal story grammar sequences that in turn supported enhanced story telling performances at post-test.

Addressing the children's initial language abilities in the study design may have also supported learning of the more complex story components. Children at High versus Low pretest language levels encountered, respectively, higher and lower levels of language complexity in the narratives employed during intervention. For children starting at a lower initial language levels, adjusting the syntactic complexity of the stories to their current language levels may have allowed them to devote the necessary processing resources toward encoding of new information about causal sequences and other story complexities into long term memory. However, keeping in mind that a lot of the causal structure of a story is carried by the more complex syntax, children in both intervention conditions were presented with more complex stories over the second half of the intervention. Thus, significant language challenges were offered for the children's possible learning of new vocabulary and syntactic structures along with any narrative structure learning they could achieve. Given that a lot of the causal connections between story components are made more and more explicit as level of syntactic complexity increases (Berman & Slobin, 1994; Xuan, 2006), it becomes important then to present children with stories that contain as much syntactic complexity as they can feasibly process. Future studies should examine the effects of an intervention in which even more complex stories consisting of multiple episodes are presented to children with higher language skills. These more complex stories would in turn allow for story paragraphs containing sufficient challenges in terms of syntax that might further boost complex causal sequence understanding in children with higher language abilities. This proposed approach of adjusting the syntactic complexity of input to the child's

current language level has been used successfully by some researchers in teaching children more complex language structures (Camarata & Nelson, 2006; Fey, Cleave, Long & Hughes, 1993; Nelson, 2001). In addition, in narrative intervention work by Xuan (2006), children were given syntactic recasting intervention on complement clauses and made gains on those as well as on the directly taught aspects of story grammar and story emotional/motivational "evaluative" expressions.

In addition to empirical support for an influence of linguistic and syntactic complexity of verbal input on children's language learning, there is also prior evidence that suggests that the particular manner in which children are read to is related to language gains made from a picture book reading experience (Whitehurst et al., 1988). Dialogic reading techniques –in which the adult provides the child with opportunities to become an active participant in the book reading experience by prompting them with open-ended questions –have been shown to be successful in improving language and emergent literacy skills in preschoolers (Zevenbergen & Whitehurst, 2003a). Xuan (2006) also used this dialogic reading technique in a narrative intervention context and found that children made gains on narrative ability following the intervention. Based on the results from these studies, it becomes readily apparent that utilizing techniques that allow the child to actively reflect on the unfolding story –in the case of dialogic reading strategies via prompts to the child regarding story content and accompanying discussion of story material– can when coupled with clear cut challenges help improve both children's language ability as well as narrative skill. In the case of the current study, the simple strategy of allowing children to choose various story components operates similarly to dialogic reading techniques in that both techniques encourage children to actively reflect on story components and story structure. The

advantage of providing children with choices for story components is that it allows them to further reflect on a greater number of story sequence possibilities and witness first-hand how causal connections play out based on the active choices that they make.

A comparison of the results in the current study and the prior intervention conducted by Xuan (2006) reveals some similar patterns. Children receiving Xuan's hybrid intervention –a combination of story grammar teaching, dialogic reading and recasting –demonstrated gains on total number of story grammar components in a story telling task using a wordless picture book. However, upon further examination of each individual story component, the only single component for which significant gains were observed was “Reactions” –a component that was targeted specifically using the dialogic reading method. In the current study, children in the active-choice intervention included more story grammar components overall in their narratives at post-test as well. However, individual components analyses revealed that children in the active choice condition were performing significantly better than their no-choice peers on two different components –Problems and Attempts. It should further be pointed out that in the prior study, intervention children only showed an overall story grammar advantage for a familiar picture book. In the current study, choice intervention children showed a story grammar comprehension and production advantage on an unfamiliar picture book as well indicating that these skills may have generalized.

An interesting implication of the current study is that the way in which stories are presented to children in many educational contexts might need to be re-evaluated. Stories are usually encapsulated within the " pages" of a physical or digital book, and each child who encounters a particular story sees or hears the same story. Incorporating some flexibility in the

script of a story, which the child then has some active control over, may facilitate preschool children's close attention to, and abstraction and retention of, narrative structures as well as language structures that help carry complex narrative sequences. The results of this study are particularly encouraging for considering the use of this technique with children who are lagging behind far enough in language and narrative skills to be at risk for multiple developmental disorders.

A further implication of the results from this study is that language adjustments are anticipated to be important in teaching contexts. Relations between pretest High and Low raw language levels (two groups of children) to multiple narrative measures were found to be significant in the current study. Children with High Language skills performed significantly higher than children with low language skills on all narrative measures. This provides further evidence that in preschool and early primary education contexts, and in special intervention efforts directed at facilitating narrative skills, it will be important to consider children's overall vocabulary and grammar skills as factors in how narrative programs are structured.

In sum, the current study provides empirical evidence for the value and importance of tailoring intervention procedures to allow for optimal levels of engagement on the part of the child. Advanced preparation and creation of an extensive set of alternative story lines and corresponding picture cards in the current study allowed children participating in the choice intervention to actively choose each story component and exert control over how the story unfolded. Thus, offering children on-line choice and control is feasible with sufficient preparation and training. Similar planning might allow for choices to be implemented at points in a story that would target higher skills in the domains of syntax, vocabulary and social context.

Some of the limitations of the current study include a limited sample size. While the sample size of the current study is substantial considering the typical sample size for prior narrative intervention studies, it presents certain constraints on the kinds of analyses that can be conducted. Another limitation of the study is that children were presented with simple stories consisting of a single episode. Future studies should assess the impact of an intervention using more complex stories on the narrative abilities of children with higher initial narrative skills and language skills. Another future direction would be to incorporate a greater number of choices into the stories. A final limitation is that the current study only employed narrative testing procedures that assessed children's understanding of and ability to produce story grammar components. While these components of story grammar do incorporate causal aspects of story structure, other measures should also be employed that allow for a more direct assessment of gains in causal understanding.

In conclusion, the current intervention provides empirical support for the theoretically-motivated assumptions that offering a preschool child the ability to choose story elements as well as manipulate the trajectory of the story when accompanied by challenging narrative structures can comprise a favorable "dynamic mix" for fostering improved understanding of causality and higher-order organization of stories. Additionally, presenting children with stories that are adjusted to their current language level and which contain engaging and challenging interactive opportunities has been proven to be a successful method of facilitating both comprehension and production of narratives. Results for the current study indicate that the gains in narrative production may reflect a shift to a higher-level top-down processing that employed the use of a well-learned, consolidated story schema or story script. Over time, these kinds of multiple gains

in narrative skills, shown especially by the children given active-choice interventions in the current study, are expected to in turn lead to improvements in future literacy and academic achievement as well.

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