A PLAY-BASED NARRATIVE INTERVENTION FOR CHILDREN WITH SPECIFIC

LANGUAGE IMPAIRMENT

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ABSTRACT

Narrative development is an important measure of language development as well as an indicator of reading and academic skills. Thus, assessing spoken narrative production of preschool children with specific language impairment is an important assessment tool for speech language pathologists. Successful narratives are also imperative in social settings. Interaction with one's peers allows a child to practice and improve their language skills. One social context where narratives frequently occur during the preschool years is play. At this age, play is a highly motivating activity. Very little is known about the effects of narrative intervention with this population and the use of play. Therefore, the purpose of this presentation is to examine the effects of a play-based narrative intervention for children with specific language impairment.

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I. INTRODUCTION

The ability to communicate is a necessity for social interaction. Much of the time, people communicate via conversations. Another common form of communication is sharing a story through the use of a narrative. A narrative is a summary of what happened during some event in the past (Ukrainetz, 2015). Good narrative production and comprehension allows a listener to participate in social interaction with any number of one's peers. Not only that, but proper narrative production contains many literary elements that are tied to later literacy success (Peterson, Jesso & McCabe, 1999). Poor narrative production can also be a predictor of future academic difficulties (Feagans & Appelbaum, 1986). One group that noticeably struggles with narrative production is children with specific language impairment (SLI). This may be due to difficulties in both vocabulary acquisition and morphosyntax (Leonard, 2014).

Current research on narrative intervention shows improvements for school-aged children. Children with SLI, who are primarily diagnosed in preschool, may benefit from improved narrative research before entering the school-aged years (Leonard, 2014). Currently, there is limited research on improving the narrative skills of preschool children. This study specifically looked at a play-based intervention since we know that play is a natural context for children to socially engage in.

II. REVIEW OF LITRATURE

Narrative Development

Oral discourse is a vital tool used in everyday communication. Much of this communication involves conversations, a type of discourse that involves two or more speakers, social cues, informal communication and contextualized language (Sacks, Schegloff, & Jefferson, 1974; Peterson, 1990). These characteristics aid both participants to make the conversation a shared task. Another common purpose for oral discourse is to share a past experience. A narrative is a verbal summary of an event or of "what happened" (Ukrainetz, 2015).

There are also specific features of a narrative that make it unlike everyday conversation. Narratives rely heavily on decontextualized language to describe events that did not occur in the present (Peterson, Jesso & McCabe, 1999). Posing events in such a way creates a frame of reference solely through the use of language for the listener who was not there to witness the event (Snow, 1991). For children, this event may include recalling the school day or retelling a fictional story. As a result, the speaker is responsible for combining many sentences and frames of thought to produce a logical story (Peterson, Jesso, & McCabe, 1999). Also, narratives require one person to be the primary speaker while another person functions as the listener (Peterson, 1990). The speaker will begin telling the story without any contributions from another person, thus forcing them to use their language effectively.

Narrative structure starts developing during the preschool years. Around the age of 3, children will recall narratives that include traumatic experiences (McGregor, 2000). From the ages of 3 to 5, children transition from this traumatic recall to a more temporal story (McGregor, 2000). These stories work toward a bigger picture and may even have a goal in mind. For

instance, a child may tell the story about how they won a goldfish at the fair. Wolf (1985) found that by the school-aged years, children should have all the skills required to produce a narrative (as cited in McGregor, 2000, pg. 55).

To measure a child's narrative ability, we analyze key literary elements (Labov, 1972; Griffin, Hemphill, Camp & Wolf, 2004). One way to analyze a narrative includes macrostructures. These macrostructures include characters, setting, opening (e.g., Once upon a time) and closing statements (e.g., The end), sequence of actions (e.g., First, next, last) and orientation of a character (e.g., One day, the knight was hungry). Another important analysis for narratives is utilizing the microstructures of a story. Microstructure refers to the sentence-level grammatical complexity of a narrative. These include the total number of words, number of different words, mean length of utterance (MLU), or number of clauses per utterance (e.g., clausal density) (Hessling & Brimo, 2018). Since the listener was not there to witness an event, the speaker must recreate a full picture of what occurred. With increased control over both macrostructure and microstructure, a child will develop a more well-rounded narrative.

Importance of Narratives for Academic Success

The ability to produce an organized and detailed narrative is a strong predictor of future academic success. Narrative discourse contains many literary elements, such as decontextualized language, that are crucial in the later academic years and tied to literacy success (Peterson, Jesso & McCabe, 1999). Compared to narratives, conversational skills showed little correlation to literacy in elementary school (Snow, 1983; Griffin, Hemphill, Camp & Wolf, 2004). Feagans and Appelbaum (1986) found that narratives were strong predictors of future academic difficulties (as cited in Spencer & Slocum, 2010, pg. 179).

An analysis of a narrative helps to identify children who are at risk for future academic and language problems before entering school (Paul & Smith, 1993; Peterson, Jesso & McCabe, 1999). Bishop and Edmundson (1987) found that the ability to tell a story at 4.0 years while looking at pictures was highly correlated (r = .76) with persistent language impairment and school success at 5.5 years (as cited in Spencer & Slocum, 2010, pg. 179). One population susceptible to this is children with specific language impairment, an important reason they were targeted for this study.

Importance of Narratives for Cooperative Play

One social situation that is highly motivating for children in preschool and where narratives are evoked is during play. Cooperative play, where one or more children organize a set of rules appropriate for play within the group, provides opportunities for children to use and learn language (Garfinkle, 2004). While playing, children exchange information about personal and fictional events that is different from topics covered in classroom conversation. Narratives establish a way to communicate with one's peers. To produce a narrative during play, a child must introduce the idea and organize and expand the events of the idea (Wolf, Rygh & Altshuler, 1984; Griffin, Hemphill, Camp & Wolf, 2004). For example, if two children wanted to produce a narrative about a knight fighting a dragon while playing with toy figurines of knights, they would first need to determine who is in the story. The setting and beginning actions also would be necessary to set the scene of the story. After these overarching themes are set, they can begin to fill in the story with details.

Pretend play is used to predict later literacy success (Pellegrini, 1993; Griffin, Hemphill, Camp & Wolf, 2004). Bryant, Peisner-Feinberg and Clifford (1993) evaluated children in North Carolina public preschools using different language measures in the classroom. The Early

Childhood Environment Rating Scale (ECERS) was used to assess personal care routines, furnishings and appearance, language and reasoning, fine and gross motor activities, creative activities, social development and adult needs. They found that these schools all had developmentally appropriate scores on the ECERS with the exception of language and reasoning, which received the lowest score. Most importantly, there were low scores in the area of dramatic play when compared to other creative activities such as music or art. Though no direct conclusions were drawn between these two variables, one may question if each had an impact on the other. This study may show that if play skills are low, so are language skills. Though not directly addressed, this is an important reason why we addressed both play and language in the present study.

Narrative Intervention and Children with Specific Impairment

About 7% of the population is diagnosed with a condition called specific language impairment (SLI) (Leonard, 2014). Children with SLI express difficulties in multiple areas of language. Predominantly, children with SLI display deficits in morphosyntax (Leonard, 2014). Children with SLI make omission and commissions errors of articles, auxiliary verbs (e.g., She is running), copula verbs (e.g., She is funny), past tense -ed, third person singular, irregular third person and inappropriate use of pronouns (e.g., Her is late) (Leonard, 2014). Children with SLI also show deficits in vocabulary (Leonard, 2014). Children with SLI try to counterbalance weaknesses in vocabulary by pausing, using circumlocution, or using nonspecific general words (e.g., it or stuff) (Leonard, 2014). The combination of these characteristics results in narratives that are less complete, less organized and lack information.

Previous researchers report that preschoolers with SLI are less aware of story structures when compared to their typically developing peers (Bishop & Adams, 1990; Weismer, 1985;

Gillam & Johnston, 1985; Snow, Burns & Griffin, 1998). Preschoolers are expected to have decontextualized language skills when entering school, but children with SLI often do not have language skills to facilitate decontextualized language (Peterson, Jesso & McCabe, 1999).

Narrative intervention has been documented effectively in a variety of studies. Hayward and Schneider (2000) targeted 13 preschoolers (ages 4;8-6;4) with SLI. Children attended a preschool program which predisposed them to some narrative intervention strategies including vocabulary, repeated story exposure and story retelling. For the purpose of this experiment, the investigators added an additional component to target the structure and cohesiveness of narrative production. After a two-week baseline period, children entered into intervention. Narrative intervention was embedded into the preschool program where children were divided into small groups of two to three. Groups worked on identifying parts of a story using cue cards, sequencing parts of a story, identifying missing parts, and reorganizing mixed-up stories. All stories were either a causal or temporal structure.

Data collection utilized pictorial stimuli to elicit narrative productions. Five pictures, with enough information to formulate a story, were placed in front of the child. The child would first tell the story to a familiar listener and then an unfamiliar listener who was placed behind a screen and was unable to see the pictures. After each collection, stories were analyzed for story information units, or central details to the story. For example, "One day, Callie, my neighbor (1), walked her dog outside (2). Her dog ran away (3)." Each narrative earned a score that corresponded to the total number of story information units. Stories were also analyzed for episode levels. This measure was a scale that ranged from zero to five and corresponded to the completeness of a narrative production. After data was collected, scores were analyzed using a 2-way ANOVA. Hayward and Schneider found a main effect for time, meaning that there was a

significant difference from pre-testing to post-testing for both story information units and episode level. Although narrative intervention proved to be successful, the primary investigators failed to include a control condition.

McGregor (2000) targeted narrative intervention by using a peer model along with clinician prompting. The entirety of the study included three different sections, but Study 2 and 3 specifically targeted narrative improvement. In this study, twenty-six children who were 3 to 4 years old were paired into tutor groups. Child A, the stronger language producer or tutor, would tell a story to Child B, or the weaker language producer. Child B would then tell the story. Investigators then compared the percentages of shared story elements and lexical types, which was the unique or first production of some noun, verb or adverb (McGregor, 2000). The results showed statistically significant improvements in the number of story elements and lexical types within pairs. In order to extend this improvement to long term narrative production, McGregor (2000) conducted a third study. Study 3 used 4 children (2 pairs) that were identified to be the best and worst language producers in the class. The tutor of the group would randomly select one story and tell it to the tutee. The clinician would then give feedback regarding the tutor's story. During this feedback, the clinician would never fully retell the story, but prompt the tutor to expand their story and mention more story elements. At the end of 8 weeks, tutee 1 gained one to three story elements and increased their overall length and complexity. Tutee 2 maintained three story elements and also increased their overall length and complexity. Narrative production for the tutors were also monitored to ensure their productions did not decline. In fact, the tutors showed gains in the number of story elements used, as well.

Spencer and Slocum (2010) looked at an alternative intervention for story retelling and personal story generation in children with language delays. Their participants included children

with below-average language skills in a Head Start program. Children were asked to generate a personal story and complete a normative assessment. Subsequent data collection included retelling stories with the aid of cards that showed major components of the story and a puppet who served as a naïve listener. Regardless of who delivered the narrative intervention, it was shown that the use of a naïve listener (i.e. puppet) improves the holistic quality of the story (Kail & Hickmann, 1992; Hayward & Schneider, 2000). The intervention procedure broke down the story grammar components useful during retell. First, the instructor would retell a story using visual pictures on cards as cues. Next, each student would be responsible for contributing one story grammar component as the whole group retold the story. The instructors would then work their way down from individual retell with the support of icons and pictures to an individual generation of a story without any support. Results showed a significant improvement to these students' story retelling skills. All students demonstrated increased scores from baseline.

The literature fails to capture the exact population and intervention targeted in this research. Many studies focus on school-aged children, despite the importance of early intervention. Children with SLI are not commonly studied either, instead we see many studies about children with autism or typically developing children. Other studies on narrative intervention did not target a temporal story, but rather a causal story, which is thought to develop later in terms of language.

Current Study

Children with SLI have language deficits that interfere with their ability to social interact with their peers during play contexts. Social out-casting may start as early as preschool and children with SLI may even remove themselves from social interactions to avoid using language (Redmond & Rice, 1998; Hart, Fujiki, Brinton, & Hart, 2004). Without this social interaction,

children with SLI have fewer chances to build language proficiency (Hart, Fujiki, Brinton, & Hart, 2004; Spencer & Slocum, 2010). Play contexts may provide opportunities to teach language skills to tell stories and build social relationships with peers.

There is sufficient evidence analyzing the effectiveness of narrative intervention for school-aged children; however, information regarding preschoolers with SLI has not yet been examined, specifically using a play-based intervention technique. Therefore, this study aims to answer the question: Is there a functional relation between play-based narrative intervention and children's production of a temporal narrative?

III. Method

Participants

     Seven preschool children who ranged in age from 4;7 to 6;2 were recruited from a preschool program that was part of a southern university speech, language, and hearing clinic. Children received individual and group therapy; however, neither intervention targeted narrative production. All children passed a hearing screening and had no visual impairment that was not already corrected by glasses. Based on the recommendation of the supervising speech-language pathologist, participants were put into groups of two based on personality and language skills on initial narrative production collected. Participants who were able to retell some part of a narrative were paired with participants who did not produce any parts of a narrative or repeated the examiner's prompt only.

	Gender	**Age**	**Initial Diagnosis**	**Number of semesters at MSHC**	**Expressive Language Scores**	**Most Recent Testing Date**
Participant 1	Female	4;7	Expressive Language Disorder	5	106 Receptive PLS-5	1/15/16
Participant 2	Male	6;2	Mild receptive and moderate expressive language delay	2	61 Expressive PLS-5	8/17/2017
Participant 4	Male	5;6	Mild to moderate speech sound disorder	1	96, Expressive, CELF-2	2/18/2019
Participant 5	Male	5;4	Expressive and receptive language impairment	6	69, Expressive, CELF-2	3/1/2019
Participant 6	Male	5;9	Moderate to severe articulation disorder and	4	81 Expressive PLS-5	1/22/2016

			phonological disorder			
Participant 7	Male	5;7	Expressive and receptive language delay	9	89, Expressive, CELF-2	2/18/2019
Participant 8	Male	4;9	Mild to moderate speech sound disorder, fluency	2	91, Expressive, CELF-2	2/20/2019

Measures

Narrative Production Probe

Five stories were created with a temporal narrative structure (See Appendix A). There was an opening appendage (i.e. Once upon a time…), a setting, character that may or may not have a name, a beginning action of that character, three subsequent actions, three temporal terms and a closing statement. On average, these stories had 6.6 sentences with 50.8 words in the entire story. Each sentence was an average of 7.7 words. The stories contained simple syntax and early developing complex syntax (e.g., infinitival clauses like "to swim" or coordinating clauses). The narrative probe also included four pictures that represented the actions of the narrative.

Procedure

Baseline Testing

Children were administered a randomly selected narrative probe over the course of five sessions to establish a baseline. These narrative probes were used to determine a stable starting production level for each participant. Probe data was also used to group the participants into pairs.

The narrative probe was conducted over the course of two weeks with two sessions per week. Each session, the participant was instructed to sit down and listen carefully to one of five

randomly selected story prompts. The participants were told that Wally, a naïve stuffed dog listener, would "go to sleep" and not hear the story. The clinician would then wake up Wally and the child would be prompted to retell the story. At the end of each story retell, the clinician would ask the child if there was anything else that happened in the story. No other prompts were given.

These narrative probe sessions were audio recorded for later transcription and coding. Stories were evaluated across the areas of an opening appendage, setting information, characters, orientation, number of actions sequenced correctly, time and connective words and an ending (See Appendix B). Each of these elements was evaluated on a proficient, emerging or inefficient scale. Each story's microstructure was analyzed for grammatical morphemes and complex syntax, using the Systematic Analysis of Language Transcripts (SALT) conventions.

Treatment Testing

Once groups entered into intervention, the participants were tested once per week using the same procedures described above to track progress of the narrative intervention. The administrator ensured that the narrative probe was randomly selected and the child had not retold the story in two weeks.

Narrative Intervention

During the intervention phase, children received between 8 and 22 sessions. Sessions lasted for approximately 20 minutes. First, the clinician would sit the children down in a position for maximum interaction. Next, the clinician would introduce each of the toys associated with one of five randomly selected narrative themes. After reviewing all of the materials, the clinician would introduce the narrative activity for the day. For example, "Today, I'm going to tell you a story that goes with these toys. Then, we will tell the story together. Listen really carefully to my

story because after we are done it's your turn to tell it". Each story prompt was used in therapy for a total of four sessions. For the first two sessions, the intervention followed a modeled-guided approach. The clinician would begin by modeling the narrative script for the children using the toys. Next, the children and the clinician would retell the story together. For sessions three and four, the intervention followed a guided-independent approach. The clinician and children would begin by retelling the story together. Then, the children would retell the story independently. If the child needed support, the clinician provided prompting in the form of questions. During the guided phase of intervention, clinicians would use strategies (e.g, wait, model, prompt, question, expand/recast) to support narrative retells and elicit language. During the independent phase of intervention, clinicians would prompt a child by asking questions about the story without providing any language (e.g., "How do we start our story?" "Tell me your story"). At the end of each session, the clinician would review the story for the children while they put away the toys.

The themes for each of the narratives included a vet, chef, restaurant, farmer and zoo. All narratives followed a temporal order and included an introduction, at least three actions and a conclusion (See Appendix C). Each prompt included specific temporal words that were targeted to teach the participants a more complete narrative. These words included first, next, last, and some sort of time marker (i.e. One afternoon…). Each of these themes included toys that coordinated with the retell, as well. Toys for each theme included any characters, items for each action (e.g., "First, Mrs. Farmer picked carrots" → included carrots that could be pulled out of "dirt") and a setting (e.g., a barn).

Data analysis

Baseline and treatment probes were recorded, transcribed, coded using SALT and analyzed for macrostructure. Analysis was competed by a trained undergraduate research assistant and recorded in a Microsoft Excel spreadsheet.

Descriptive statistics for response to treatment were analyzed using line graphs. Graphs were generated based on a single-case design to show a causal relationship between the independent variable (intervention) and each dependent variable (fictional story production), along with the magnitude of change. In order to determine a causal relationship, participant's narrative productions needed to differ between the baseline and intervention phases. Graphs were also analyzed for level, trend, variability, immediacy of the effect, overlap, and consistency of data points.

Fidelity

Treatment fidelity was completed after each of the therapy sessions. The faculty mentor watched a video of the intervention and completed a fidelity checklist to ensure treatment procedures were followed (See Appendix D). Fidelity was 94%. The graduate clinicians were given feedback related to missing portions of the intervention. The graduate clinicians predominantly needed feedback to conclude the sessions by reviewing what was being taught.

Reliability

Two undergraduate research assistants were trained on transcription protocol and macrostructure coding. Both undergraduates coded and scored all of the audio recordings. These documents where then compared by a third undergraduate research assistant for 100% consensus on transcription and coding.

IV. Results

To determine effectiveness of the treatment, data was analyzed using a single-case design across multiple baselines (Appendix E):

Group 1 included results for participants 7 and 2. Starting with participant 7, narrative production remained fairly constant over the course of intervention. Mean production scores ranged from 14.8 in baseline and 12.9 during intervention. The line of best fit showed an improvement of .56 points each week after two therapy sessions. Within the treatment phase, there is variability above and below the line of best fit. Looking between phases, 40% of the data was not overlapping. Strong results for improved narrative production began to emerge around point 9, after the participant received 8 sessions of therapy. Participant 2, who presented with low narrative production, showed different trends in response to intervention. Mean narrative scores during baseline were 2.4 and increased to 4.3 during intervention. The line of best fit also showed a steeper slope of .51 points each week. Compared to participant 7, participant 2 had far more variability around their line of best fit. This participant also showed positive changes in narrative production after only 6 sessions of therapy. Due to one outlier during baseline, only 20% of data during intervention did not overlap with baseline.

Group 2 included data for participants 8 and 1. Participant 8 showed similar mean narrative production scored during baseline and intervention of 8.0 and 8.8, respectively. Although these scores remain similar, participant 8 had a strong response to weekly therapy, and increased .71 points each week. Scores varied both above and below this line of best fit. Looking between baseline and intervention phases, 42.9% of data points did not overlap. Also, unlike group 1, participant 8 showed an effect after 4 sessions of therapy. Participant 1 showed significant gains between intervention and baseline treatment. Mean narrative score during

baseline was 5.1 while the intervention phase was 10.5. This gain is also demonstrated in the trend of the intervention data as scores increased by one point each week. Scores fluctuated both above and below this line of best fit. Looking between phases, 62.5% of data points did not overlap with baseline data.

Group 3, which only contained participant 6, showed slightly different results compared to the two previous groups. This difference may be attributed to the fact that this child received therapy without another peer model. Mean scores increased from 8.7 during baseline to 8.1 during intervention. The trend line went up by .45 during the intervention phase. Despite a stable change in trend, scores varied week to week. Compared to the baseline phase, no points fell outside of this initial data. Data increased and remained consistent with baseline measures after 8 therapy sessions.

Group 4 contains data for participant 4 and 5. Staring with participant 4, mean narrative production scores increased from 6.6 during baseline to 11.0 during intervention. Scores increased almost immediately after starting the intervention with a slight decrease during the last treatment probe session. Looking between phases, 33.3% of the data points did not overlap with baseline data. Participant 5 showed an even larger effect in mean narrative production scores. Scores increased from 4.2 during baseline to 7.5 during intervention. Participant 5 showed strong increases in the trends of weekly narrative score improvement. During the 5 treatment probes, two of the weeks were identical with one point that varied from this average during the last session. 33.3% of this data fell outside of baseline probe data. A positive effect can be seen after 6 sessions, but scores remained fairly consistent overall.

V. Discussion

Per multiple baseline guidelines, this study met the minimum standard to be considered effective as there were at least three instances of change among the participants. There were also changes in the following two areas:

Narrative Production

According to multiple baseline guidelines, at least three instances of change must be evident to determine if the play-based narrative intervention was effective. Our study met this criterion and showed three changes in overall narrative production ability. Most participants showed improvement during the third or fourth weeks of receiving the intervention. One child in group 4, who had strong language skills, responded almost immediately to the treatment. This change provides sufficient evidence to conclude that there was a causal relationship between a play-based narrative intervention and the temporal narrative production abilities of children with specific language impairment.

Temporal Structure

With the exception of two children, the participants showed some sort of change in their use of temporal words after entering into intervention. Children both increased their use of these temporal words and became more consistent in their usage. This change occurred at multiple points during the intervention, so no conclusion can be drawn about how much exposure is needed to increase this word usage.

Our study was one of the first to target the improvement of temporal narrative structures in children with SLI. We wanted to use this story structure in the context of play because we know it is common at this age and difficult for children with SLI. We have seen that play is highly motivating at this age. Other studies have used picture cards (e.g, Hayward & Schneider,

2000) to teach children narratives, but these participants liked playing during the intervention. It allowed them to place this vocabulary and these narrative production skills in a meaningful context. Our themes also allowed participants to learn vocabulary in a wide array of contexts. Playing allows for a lot of repetition, which is what children with SLI need to acquire grammar (Leonard, 2014). It is known that pretend play is used to predict later literacy success (Pellegrini, 1993; Griffin, Hemphill, Camp & Wolf, 2004). Narrative production can predict later academic skills or literacy success (Feagans & Appelbaum, 1986; Peterson, Jesso & McCabe, 1999; Spencer & Slocum, 2010). As speech pathologists, early intervention is key to prevent some these difficulties from manifesting themselves.

Another trend seen through these results is narrative improvement for children with varying levels of language skills. Regardless of the expressive or receptive language scores, overall narrative production increased for most of our sample population. One area where language skills did impact results was in the acquisition of temporal words. Children with stronger expressive language scores generally saw more improvement in the use and consistency of temporal words compared to children with lower expressive language scores. These findings may be consistent with the trends and difficulties seen in children with SLI. Generally, children with SLI demonstrate difficulty in recognizing missing pieces of grammar (Leonard, 2014). In our case, this missing grammatical piece may apply to temporal words. These temporal words may be lost in the retell of the story as children focus on other parts of the sentence. Furthermore, children with SLI have shown difficulties in language processing. Processing and response speeds have been shown to be slower in children with SLI as compared to their typical language peers, though this speed is not linked to the severity of impairment (Leonard, 2014). Slower processing speeds may also affect language learning in such informal context and impede the

acquisition of temporal words (Leonard, 2014). Another area of difficulty which may affect the translation of temporal words is working memory. Many studies have shown a weakness in this area for children with SLI, although there are some that cite no difference compared to typical language peers (Leonard, 2014). As a whole, a child's recall is dependent on the lexical units contained within the utterance. A child is SLI is likely to recall high frequency words as opposed to low frequency words (Leonard, 2014). In our case, temporal words may be novel to the children with lower language skills and thus not translated into their narrative production.

There are a few limitations associated with this study. First, the sample size could be increased to be more representative of the entire population. Our sample size also did not allow one of our participants to receive the treatment in a pair. Next, our study could have continued for a longer duration. Participants in group 4, who entered therapy last, showed promising gains from intervention; however, they did not have the opportunity to continue. Finally, intervention could have been more consistent with the use of one graduate clinician. Teaching style or energy could have affected a child's individual response to therapy across the four groups.

The purpose of this study was to evaluate the effectiveness of a play-based approach to narrative intervention in preschoolers with SLI. The literature shows limited research about narratives for the population in this study. The closest study by Hayward and Schneider (2000) showed that preschool children could increase their use of narrative structures with explicit instruction in the classroom. McGregor (2000) showed that peer models could also improve narrative production for both the tutee and the tutor. Our study showed that children of all language skills could improve their narrative production. Also, children with higher language skills could improve in their use and consistency of temporal words. These results could be used to implement into a more naturalistic setting of a preschool classroom and improve the narratives

of a larger group of subjects. With this early intervention, we can target the early literacy skills

of children with SLI and prevent future difficulties with narratives.

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VII. APPENDIX

Appendix A

Prompt #1: A story about a hungry knight.
Once upon a time there was a knight.
He was hungry so he went into the woods to look for food.
First, he picked two apples to eat.
Next, he gathered some nuts in a basket.
Last, he sat at a table.
The knight found a lot of food to eat.
He was happy.

Prompt #2: A story about a girl who likes to ride her bike.
Once upon a time there was a girl named Grace.
One day, she rode her bike in the park.
First, she saw a man and his dog.
Then, she passed a playground with a slide.
Last, she said hello to her friends.
Grace had so much fun riding her bike.

Prompt #3: A story about a cowboy and his horse.
Once upon a time there was a cowboy named Tom.
He had to take care of his horse.
First, Tom washed his horse with water and soap.
Next, he brushed the horse's fur.
Last, he fed the horse some hay.
Tom was tired from taking care of his horse.

Prompt #4: A story about a superhero.
Once upon a time there was a superhero named Ace.
One afternoon, Ace was flying over a city.
First, Ace looked for bad guys.
Then, he flew over a giant cloud, but the cloud was cold.
Last, Ace said hello to some kids at the park.
Ace was an awesome superhero.

Prompt #6: A story about a farmer.
Once upon a time there was a farmer.
His name was Fred.
Fred had to take care of his farm.
First, he fed the cows some corn.
Next, Fred washed his tractor.
Last, he put the pigs in the barn.
Fred worked all day.
He was ready to go home.

Appendix B

Narrative Analysis Scoring Rubric

Macrostructure

Content	Proficient (3)	Emerging (1.5)	Inefficient (0)
Opening Appendage	Used opening appendage (e.g., Once upon a time, This story is about)	Used a general opener (e.g., there was…)	Did not use opening appendage
Setting information	Stated at least one location that was stated in the story.	Stated a location but was not the correct location.	Did not state any location.
Characters	Identified the character by name or label used in the story.	Character is mentioned but not stated by name used in the story or used the wrong name (e.g., a boy, a girl)	Did not identify character (e.g., she, he)
Orientation	Stated the correct action the character was doing at the beginning of the story.	Stated what the character was doing but not an action that was stated in the story.	Did not state what the character was doing at the beginning of the story.
# of actions sequenced correctly	Stated three different actions and two actions were correct and in the correct order.	Stated two different actions and one action was correct.	Stated one action that was not stated in the original story or stated no actions.
Time and connective words	Used at least three different temporal terms (e.g., First, Next, Last, Then)	Used at least two different temporal terms.	Used 0 or 1 temporal term.
Ending	Stated ending related to the story.	Stated a general ending (e.g., That's it, The end, All done)	Did not state an ending.

Appendix C

Chef Story Script				
Temporal				
Characters	Chef (primary) Child puppet (secondary)	Materials		Puppet (2) Pizza cooking utensils Pizza Oven Timer

Introduction: This is Maria. This is Chef Pete. This is a story about Maria learning how to make a pizza.

Story Script	Action
One afternoon, Maria went to visit Chef Pete. Maria wanted to learn how to make pizza. Chef Pete was in the kitchen. Chef Pete said, "Maria, let's make a pizza." **First**, Chef Pete found the dough, cheese, and pizza sauce. **Next**, Chef Pete rolled out the pizza dough. **Then**, Chef Pete spread the sauce and the cheese on the pizza dough. **Last**, Chef Pete put the pizza in the oven. Maria said, "The pizza smells good." Maria and Chef Pete ate the pizza. It tasted good.	*Chef and child pretend to exchange greetings. Mario walks over to Chef. Chef collects the ingredients/share ingredients with Maria. Chef rolls pizza dough. Maria copies. Chef spreads sauce and cheese. Maria copies. Chef and Maria put the pizza in the oven. Chef and Maria wait for the pizza to be done. They eat the pizza.*

Appendix D
Fidelity Checklist
Baseline Phase and Intervention Treatment Data Points (i.e., beginning of sessions 2 and 4)

	1	Materials are prepared (i.e., toys, prompts, audio recorder).
	2	Begin audio recording.
	3	Greet the child with enthusiasm.
	4	Position the child to maximize interaction with the clinician and materials.
	5	Gain the child's attention/engagement before introducing the activity.
	6	Show and review the materials associated with the narrative prompt.
	7	Provide a narrative prompt to the child.

Intervention

Setting the Stage

	1	Materials are prepared (i.e., toys, prompts, audio recorder).
	2	Begin audio recording.
	3	Greet the child with enthusiasm.
	4	Position the child to maximize interaction with the clinician and materials.
	5	Gain the child's attention/engagement before introducing the activity.
	6	Show and review the materials used for the narrative script.
	7	Describe the narrative activity in a child-friendly manner.

Intervention Story Sequence

	1	**Sessions 1 and 2** Graduate clinicians model the narrative script for the child.
	2	Graduate clinician and child retell the story together during play.
	3	**Sessions 3 and 4** Graduate clinician and child retell story together during play.
	4	Child retells story with toys and minimal clinician support or independently.

Intervention Techniques

	3	Clinician maintains enthusiasm.
	4	Clinician adheres to the dialogue and actions in the script.
	5	Clinician utilizes the props associated with the narrative.
	6	Clinician reminds / encourages child to use the props.
	7	Clinician balances turns with the child during retell.
	8	Clinician uses appropriate strategies to support child's communication during narrative retell (e.g., wait, model, prompt, question, recast / expand).
	9	Clinician redirects child as needed or addresses challenging behaviors consistent with classroom behavior management.
	10	Clinician provides positive comments supporting participation.

Closing

	1	Clinician reviews activity and cleans up materials with child.
	2	Clinician transitions the child to the classroom.

Appendix E

Group 1

Group 2

Group 3

Group 4

Probe