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What is This?
Perspective Taking Through Narratives: An Intervention for Students With ASD

Janet L. Dodd¹, Alaine Ocampo¹, and Kelly S. Kennedy¹

Abstract
This study investigated the use of a narrative-based language intervention program for teaching perspective-taking skills to students with autism spectrum disorders (ASD). The participants consisted of 18 students between the ages of 9 years 7 months and 12 years 2 months (M = 10:8) who had a diagnosis of an ASD. Students received 500 minutes of either a narrative-based intervention that focused on teaching perspective taking (PTI) or a traditional narrative-based language intervention (NBLI) that focused on story elements and semantics. Intervention was provided in small groups consisting of five students and one speech-language pathologist. The participants who received the PTI demonstrated greater growth in their ability to retell the story from the perspective of different characters compared to those who participated in the NBLI. Clinical implications are included.

Keywords
autism spectrum disorders, perspective taking, psychological terms, narrative-based instruction

Narratives have been described as “among the earliest powers of mind to appear in the young child and among the most widely used form of organizing human experience” (Bruner, 1990, p. 9). The ability to tell a story or narrative requires both linguistic and social-cognitive abilities. Because narratives reveal linguistic and social-cognitive knowledge, a body of research has proposed using narrative skills as a means of investigating typical and atypical language development (e.g., Bishop & Edmundson, 1987; Hayward, Gillam, & Lien, 2007; Loveland & Tunali, 1993; Paul & Smith, 1993; van der Lely, 1997; Swanson, Fey, Mills, & Hood, 2005; Westby, 1984).

Typical Narrative Development
Based on studies that have examined narrative development among typically developing individuals, children as young as age 3 have been found to interpret a narrative from the perspective of the main character (Rall & Harris, 2000); by age 5, children demonstrate the ability to take the mental perspective of a character in a story irrespective of the character’s actual physical location (O’Neill & Shultis, 2007). Ziegler, Mitchell, and Currie (2005) studied the perspective-taking abilities of 120 neurotypical children between 4 and 9 years of age using narratives. Overall, they observed that although the children were able to adopt a perspective within a story, the adoption of a perspective and the ability to shift perspectives in a story were both facilitated when the story content was about a main character. Similarly, Hoggan and Strong (1994) reported that children found it easier to adopt a perspective when the narrative content was about the main character.

Narrative Language Abilities in Children With ASD
Narrative analysis has been used to examine the social-communicative abilities of children with autism spectrum disorders (ASD). Several researchers have asserted the theory of mind (ToM) hypothesis of autism to explain the social and language impairments presented by children with ASD (Baron-Cohen, 1988a; Frith, 1989; Happe, 1993). ToM is a description of cognitive systems that are collectively responsible for evaluating the behavior of other people on the basis of their mental states, such as their goals, emotions, and beliefs (Baron-Cohen, Leslie, & Frith, 1985; Premack & Woodruff, 1978). Baron-Cohen and Howlin (1993) suggested that difficulties in the area of ToM may negatively affect everyday social interactions for individuals with ASD. Specifically, it may limit one’s ability to

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empathize with and anticipate another’s intentions and desires as well as to interpret the motivation behind those intentions and desires. Studies of narratives produced by individuals with ASD have focused on the role of ToM because it is interpreted as a prerequisite for certain forms and levels of role-taking (e.g., Baron-Cohen, 1988b; Baron-Cohen et al., 1985; Bruner & Feldman, 1993). Through a narrative, the speaker has to organize information for the listener by selecting what is relevant (Sperber & Wilson, 1986) based on taking account of the listener’s knowledge and perspective (Astington, 1991).

Several researchers (Baron-Cohen, 1988b; Bruner & Feldman, 1993) have attributed difficulties in the narrative language abilities of children with ASD to deficits in ToM and, in effect, the understanding of the mental states of others (Capps, Losh, & Thruber, 2000; Tager-Flusberg, 1995; Tager-Flusberg & Sullivan, 1995). The ability to attribute mental states to a character and to make sense of the actions of characters in a story requires the ability to perceive the perceptions and intentions of others (Colle, Baron-Cohen, Wheelwright, & van der Lely, 2008). Studies of narrative development in children with ASD have found limited expressions of mental states (Baron-Cohen, 1988a; Baron-Cohen, Leslie, & Frith, 1986) and use of pragmatic markers such as time and space (Bruner & Feldman, 1993; Capps et al., 2000; Loveland & Tunali, 1993). In their comparison study, Baron-Cohen et al. (1985) found that children with autism did not use mental state verbs (e.g., thinking and knowing) in their narratives when compared to typically developing children and children with Down’s syndrome. Tager-Flusberg and Sullivan (1995) compared the narratives produced by adolescents with autism to those of IQ-matched controls. The performance of the participants with autism on second-order belief tasks significantly correlated with narrative measures such as number of emotional and cognitive terms and length of story. The difficulties reported were described as related to the capacity to understand the perspectives of others.

Garcia-Perez, Hobson, and Lee (2008) examined aspects of narrative role-taking abilities in children with autism. Using Feffer’s (1966) role-taking task, the children were asked to tell and then retell stories from perspectives of different characters. The children with autism were similar to the control group in their use of mental state terms; however, the children with ASD achieved significantly lower scores for adopting different characters’ perspectives and for shifting among complementary viewpoints. Results from the Garcia-Perez et al. study demonstrated that children with ASD have difficulty retelling stories from the perspectives of different characters. However, it is not yet known how a narrative-based language intervention can influence the perspective-taking abilities of students with ASD.

Purpose and Design of the This Study

The purpose of this study was to explore the influence of a narrative-based language intervention program on the perspective-taking skills in students with ASD. The rationale for the use of narratives in language intervention has been widely established (e.g., Hoggan, & Strong, 1994; Montgomery & Kahn, 2003; Swanson et al., 2005; Wallach & Butler, 1984; Westby, 1991). Narratives provide a bridge between oral communication, which often regulates social interaction, and writing (Westby, 1984). Because storytelling, story retelling, and storybook sharing are natural and familiar events in most children’s lives, narratives can provide an important means of supporting oral and written language development, and they “engage students in learning activities that support oral and written language development concurrently and inter-relatedly” (Hoggan, & Strong, 1994, p. 76). Speech-language pathologists (SLPs) are urged to provide educationally relevant therapy, which includes therapy that affects curriculum acquisition (American Speech-Language-Hearing Association [ASHA], 2001). Language therapy with school-age children should target specific language skills within activities that are related to the topic and content of children’s books (Gillam & Ukrainetz, 2006; Norris, 1989; Strong & Hoggan, 1996). Moreover, SLPs face mandates to use instructional methods that demonstrate effectiveness and efficiency and to apply evidence-based practice when making assessment and intervention decisions (Individuals with Disabilities Education Improvement Act, 2004).

Today, autism is understood to be a complex and heterogeneous set of related developmental disorders in which “no single cognitive mechanism or cause can account for the variety of symptoms and range in their expression” (Tager-Flusberg, 2007, p. 311). It has been argued that the social-communication impairments among individuals with ASD cannot be interpreted solely on the basis of ToM impairments. An emerging body of research is questioning the direct relationship of ToM impairments in ASD (Garcia-Perez et al., 2008; Tager-Flusberg, 2001) with perspective taking (Volden, Mulcahy, & Holdgrafer, 1997) and role taking (Hobson, 1984). That is, a failure in role taking might not necessarily arise out of children’s representational or conceptual limitations, as assumed by the ToM perspective, but by limitations in understanding self–other relations. Studies that have found children’s abnormal understanding of pronouns I and you fit in this category (e.g., Jordan, 1989; Lee, Hobson, & Chiat, 1994; Loveland, 1984) as well as another study that found individuals with ASD displaying an unusual lack of self–other comparisons in their talk about themselves, despite having an intact ability to express other self-characteristics such as their physical abilities and preferences (Lee & Hobson, 1998).
It is not yet known how a narrative-based intervention can influence the perspective-taking abilities of students with ASD. In their discussion of child language intervention research, Fey and Finestack (2008) emphasized the importance of adopting a systematic framework for evaluating existing interventions and developing treatment innovations. The goals of the first phase of Fey and Finestack’s five-phase system (i.e., pretrial, feasibility, early efficacy, later efficacy, and effectiveness) are to help with evaluating hypotheses for developing procedures and determining intensity of intervention necessary to ensure treatment effectiveness. The information collected during the pretrial phase is used to explain why treatment might be expected to work in the next phase: feasibility. The present study serves as the first phase of the development of a narrative-based language intervention to address the perspective-taking deficits of children with ASD.

Specifically, this research study examined the following research questions:

1. Do students with ASD show greater gains in their abilities to retell stories from the perspectives of different characters following a narrative-based intervention that specifically targets perspective taking compared to a narrative-based language intervention that does not include direct instruction in the area of perspective taking?

2. Do students with ASD show greater improvement in their ability to reference the mental states of the characters in their retell accounts (e.g., through the use of mental state verbs such as think, know, believe) following a narrative-based intervention that specifically targets perspective taking compared to students who receive a narrative-based language intervention that does not include direct instruction in the area of perspective taking?

**Method**

**Participants**

The participants were 18 students between the ages of 9 years 7 months and 12 years 2 months (M = 10:8, SD = 9:4) who had a diagnosis of ASD. All participants met the California Educational Code (California Department of Education, n.d.) criteria as having “autistic-like behaviors” (Section 56846), resided in monolingual English-speaking homes, and were highly verbal. According to the California Educational Code, a pupil with “autism” is a pupil who exhibits autistic-like behaviors, including, but not limited to, any of the following behaviors, or any combination thereof:

1. An inability to use oral language for appropriate communication
2. A history of extreme withdrawal or relating to people inappropriately and continued impairment in social interaction from infancy through childhood
3. An obsession to maintain sameness
4. Extreme preoccupation with objects or inappropriate use of objects or both
5. Extreme resistance to controls
6. Display peculiar motoric mannerisms and motility patterns
7. Self-stimulatory, ritualistic behavior (Section 56846)

Table 1 presents descriptive information about each participant (i.e., ASD characteristics, gender, chronological age in months, and grade). Based on the researchers’ therapeutic history with each participant from their school site, ranging from 12 to 36 months, the researchers were able to reliably identify the specific “autistic-like” behavior(s) exhibited by each of the students. Although the interventions occurred at two separate sites, the procedures were identical. All of the participants in the study demonstrated the behaviors listed as Item 2 from the California Educational Code (California Department of Education, n.d.): “A history of extreme withdrawal or relating to people inappropriately and continued impairment in social interaction from infancy through childhood” (Section 56846). Both groups were composed of fourth and fifth graders, with

<table>
<thead>
<tr>
<th>Treatment group or participant</th>
<th>ASD characteristics</th>
<th>Gender</th>
<th>CA</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTI 1</td>
<td>2, 5</td>
<td>M</td>
<td>133</td>
<td>4</td>
</tr>
<tr>
<td>PTI 2</td>
<td>2, 3</td>
<td>F</td>
<td>133</td>
<td>5</td>
</tr>
<tr>
<td>PTI 3</td>
<td>2, 6</td>
<td>F</td>
<td>120</td>
<td>4</td>
</tr>
<tr>
<td>PTI 4</td>
<td>2, 6</td>
<td>F</td>
<td>131</td>
<td>5</td>
</tr>
<tr>
<td>PTI 9</td>
<td>2</td>
<td>F</td>
<td>131</td>
<td>4</td>
</tr>
<tr>
<td>PTI 12</td>
<td>2, 3, 5, 6</td>
<td>M</td>
<td>127</td>
<td>5</td>
</tr>
<tr>
<td>PTI 13</td>
<td>2, 5</td>
<td>M</td>
<td>135</td>
<td>5</td>
</tr>
<tr>
<td>PTI 17</td>
<td>2, 4, 5</td>
<td>M</td>
<td>117</td>
<td>4</td>
</tr>
<tr>
<td>PTI 18</td>
<td>2</td>
<td>F</td>
<td>126</td>
<td>5</td>
</tr>
<tr>
<td>NBLI 5</td>
<td>1, 2, 3, 6, 7</td>
<td>M</td>
<td>135</td>
<td>3</td>
</tr>
<tr>
<td>NBLI 6</td>
<td>2</td>
<td>F</td>
<td>118</td>
<td>4</td>
</tr>
<tr>
<td>NBLI 7</td>
<td>1, 2, 3, 6, 7</td>
<td>M</td>
<td>131</td>
<td>5</td>
</tr>
<tr>
<td>NBLI 10</td>
<td>2, 3, 5</td>
<td>M</td>
<td>146</td>
<td>5</td>
</tr>
<tr>
<td>NBLI 14</td>
<td>2</td>
<td>M</td>
<td>115</td>
<td>4</td>
</tr>
<tr>
<td>NBLI 15</td>
<td>2</td>
<td>F</td>
<td>108</td>
<td>4</td>
</tr>
<tr>
<td>NBLI 16</td>
<td>2, 3, 5</td>
<td>M</td>
<td>125</td>
<td>4</td>
</tr>
<tr>
<td>NBLI 19</td>
<td>2, 3, 4, 3</td>
<td>M</td>
<td>138</td>
<td>5</td>
</tr>
<tr>
<td>NBLI 20</td>
<td>2, 5</td>
<td>M</td>
<td>134</td>
<td>5</td>
</tr>
</tbody>
</table>

ASD = autism spectrum disorder; CA = chronological age; PTI = perspective-taking intervention; NBLI = narrative-based language intervention; ASD Characteristics=numbers coincide with the list of autistic like behaviors referenced in the description of participants located in the methods section.
Table 2. Scoring Criteria for Perspective-Taking Score

<table>
<thead>
<tr>
<th>Scoring</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Participant failed to provide a story that was told from the perspective of the identified character (e.g., retells story using third person)</td>
</tr>
<tr>
<td>1</td>
<td>Participant provided “some” reference to the character’s perspective, such as using a quote</td>
</tr>
<tr>
<td>2</td>
<td>Participant demonstrated emerging role taking as evidenced by his or her reference and correct use of personal pronouns</td>
</tr>
<tr>
<td>3</td>
<td>Participant referenced the target character’s actions and perceptions or any two psychological terms: desire, perception, emotion, emotion–behavior, emotion, or cognition</td>
</tr>
<tr>
<td>4</td>
<td>Participant used two or more of psychological terms from the following categories: desire, emotion–behavior, emotion, or cognition</td>
</tr>
<tr>
<td>5</td>
<td>Participant used a minimum of four psychological terms (e.g., desire, perception, emotion, emotion–behavior, cognition), two of which must have been from the cognition category</td>
</tr>
</tbody>
</table>

one third grader in the narrative-based language intervention (NBLI) A group.

Procedures

Participants were randomly assigned to one of two treatment groups at their respective school sites. At each of the two school sites, one group of students received the perspective-taking intervention (PTI) utilizing a narrative-based intervention that focused on characters’ emotions, cognitive states of mind, and perspective taking. The other students received the NBLI that focused on story elements, sequencing and organization, use of transitional wording, and vocabulary knowledge unrelated to emotions and characters’ states of mind. The intervention was provided in small groups consisting of five students and one SLP. Each group met three times per week, 30 minutes per session, for a total of 6 weeks. All participants received a minimum of 500 minutes of intervention. A new story was presented every 2 weeks; thus, three different books were used. Widely recognized children’s books (Miss Nelson Is Missing by Harry Allard [1977], Too Many Tamales by Gary Soto [1996], and Thomas’ Snowsuit by Robert Munsch [1989]) were selected for their appeal as read-aloud stories (e.g., easily read to a group of students in approximately 10 minutes) and their inclusion of a clear problem and solution and at least two characters’ perspectives from which the story could be retold. The sequence of data collection and stories was identical across the two school sites, as follows:

1. Preintervention data collected
2. Intervention of 180 minutes conducted over a 2-week period; Miss Nelson Is Missing
3. Intervention of 180 minutes conducted over a 2-week period; Too Many Tamales
4. Intervention of 180 minutes conducted over a 2-week period; Thomas’ Snowsuit
5. Postintervention data collected

PTI. Moreau and Fidrych’s (1994) Story Grammar Marker (SGM) provided the framework for the PTI. In the first lesson, the selected book was introduced to the students and then read aloud. After reading the story, the SLP modeled retelling the story using the SGM, a hand-held manipulative with icons representing story parts. At this point, the students were given an opportunity to retell the story using their own SGM. Each subsequent lesson began with the SLP rereading the selected story. During Lessons 2 and 3, with guidance from the SLP, each student completed an adapted version of Moreau and Fidrych’s SGM Character Map. The SLP guided the students in the completion of the character map using open-ended and inferential questions. In the adapted version, students identified what they knew about each character (e.g., gender, physical traits, occupation) along with what they could infer about each character (e.g., information that was not explicitly stated). As the SLP guided the students through the story, the students identified the different emotions that the characters experienced throughout the story and the influencing factors. Lessons 4 and 5 provided direct instruction in analyzing the story from each character’s perspective utilizing the SGM Perspective Taking Map (Moreau & Fidrych, 1994). These two lessons focused on the students retelling the story as though they were the target character. The last lesson provided the students with a final opportunity to practice retelling the story from the different characters’ perspectives.

NBLI. The NBLI focused on story elements, organization and sequencing, use of transitional wording, and vocabulary. With the exception of the final lesson, each session began with the SLP reading the targeted story. In the first lesson, the selected book was introduced to the students and then read aloud to them. During this first lesson the students were introduced to Gardill and Jitendra’s (1999) advanced story map and began completing it with the SLP’s guidance. The advanced story map was completed during the second lesson. The advanced story map was utilized to assist the students’ identification and organization of the story elements. Lessons 3 and 5 provided the students with direct instruction in organizing and using transitional wording in their story retells. During the third lesson the students completed a beginning, middle, and end worksheet and brainstormed various transitional words they could use in their own story.
Table 3. Sample of Psychological Terms by Category

<table>
<thead>
<tr>
<th>Desire</th>
<th>Perception</th>
<th>Emotion</th>
<th>Cognition</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need&lt;sup&gt;a&lt;/sup&gt;</td>
<td>See&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Cry&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Hungry&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Realize&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Care</td>
<td>Hear&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Kiss</td>
<td>Tired&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Believe&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Want&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Notice&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Smile</td>
<td>Love</td>
<td>Forget&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Wish</td>
<td>Watch</td>
<td>Laugh</td>
<td>Sad&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Wonder&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Crave</td>
<td>Smell</td>
<td>Scream</td>
<td>Exhausted&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Remember&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Beg&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Spot</td>
<td>Giggle</td>
<td>Worry&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Know&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Feel&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>Lonely&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Think&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Look&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>Starving&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Surprised&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

Terms are categorized according to Levin (1993).

* Specific terms demonstrated by the participants in this study.

Retellings. The lesson concluded with the students providing their own recounts of the story selecting transitional words from a list they generated. During Lesson 5 students were given a list of statements or descriptions related to the story and asked to place them in the appropriate sequence. In their story retells students were encouraged to elaborate on the statements and descriptions provided and use a variety of transitional wording. Lesson 4 focused on semantic elements related to the story. For each story, students completed a Venn diagram comparing and contrasting a related vocabulary term or concept from the story. During the last session, students received a final opportunity to practice retelling their stories to their peers in pairs and then to the entire group.

Pre- and postintervention data collection. The baseline and postintervention data were collected using a story retell activity. Prior to hearing the story *Harry the Dirty Dog* (Zion, 1956) participants received the following instructions:

I am going to read this story to you. I will read it to you twice. After I read the story I am going to ask you to retell the story to me as though you were one of the characters. Then I will ask you to tell me the story again but this time you will be a different character.

Each participant listened to the selected story. After hearing the story twice, each participant was then instructed to retell the story first from the perspective of Harry and then from the perspective of one of the children. The students were given the following verbal prompts (adapted from Garcia-Perez et al., 2008): “I want you to retell the story that I just read to you as if you were Harry the Dirty Dog. Now I want you to retell the very same story but this time you are one of the children.” The following verbal prompts were used to elicit a full response from each participant: “What happened next? Is there anything more you can tell me about the story?” Data were collected for each participant individually in a quiet room. The same procedures and story were used for both baseline and postintervention measures. Each participant’s oral narrative retell samples were tape-recorded and transcribed by one of two licensed and ASHA-certified SLPs each with a minimum of 10 years of clinical experience.

Narrative analyses. Each narrative language sample was evaluated with regard to total number of words, perspective-taking score (PTS; adapted from Garcia-Perez et al., 2008), and total number of psychological terms used.

PTS. Garcia-Perez et al.’s (2008) PTS, which was an adaptation of Feffer’s (1966) role-taking shift, was adapted to examine each participant’s ability to retell the story from the perspective of the different characters. Each participant’s retell samples were independently evaluated with respect to the participant’s ability to retell the story from the character’s perspective (Table 2). Table 3 provides a list of sample psychological terms by category.

Reliability

An intrarater reliability analysis using percentage of agreement was performed to determine consistency among raters. The point system of the PTS, based on the research by Feffer (1966) and Garcia-Perez et al. (2008), was modified by the primary investigator and used for the present investigation. Reliability data were scored by the two primary investigators independently. For the PTS on the preintervention samples based on the main character’s perspective, there was an 83% agreement between the two raters. For the PTS on the preintervention samples based on the children’s perspective, there was a 50% agreement between the two raters. To address coding disagreements and a below criterion (< 90%) agreement on the PTS from the children’s perspective, the investigators discussed and resolved the disagreements by clarifying the narrative guidelines. Specifically, issues related to the appropriate use of pronouns to indicate the correct perspective were discussed and subsequently agreed on. The details regarding the expectation of the pronoun *I* as opposed to a third-person pronoun were then added to the analysis guidelines to ensure improved agreement for the postintervention samples. The stories were then rerated until 100% agreement was achieved. For the PTS on the postintervention samples based on the main character’s perspective and the children’s perspective, all disagreements were resolved through rerating the stories until there was 100% agreement between the two raters.

Results

Results of this study demonstrated the effectiveness of a PTI on participants’ ability to retell a story from the perspective of different characters. Each participant’s pre- and postintervention PTSs are presented in Table 4. One of the
primary research questions of this study was to determine if participants who participated in a narrative-based intervention that specifically targeted perspective taking (PTI) would show greater improvement in their abilities to retell a story from the perspectives of different characters compared to participants who received an NBLI that did not include direct instruction in the area of perspective taking. To address this first question, effect sizes (Cohen’s $d$) were calculated to measure the size of the impact that each intervention had on participant’s scores. Effect sizes are presented in Table 5. Cohen’s (1988) descriptive guidelines (i.e., 0.2 = small, 0.5 = medium, 0.8 = large) for interpretation of effect size magnitude are included. As demonstrated in Table 5, the differences between the means of the PTI and NBLI groups at pretest was small, indicating comparability among the participants before interventions occurred. The effect sizes ($d$) for pre- to posttest differences for the PTI and NBLI groups were 0.96 and 0.41, respectively, indicating greater growth in the skill of perspective taking for the PTI group. In addition, between-group differences postintervention demonstrated an effect size of 1.31, indicating a large difference between the two intervention groups.

The second question this study asked was if students with ASD showed greater improvement in their ability to reference the mental states of the characters in their retell accounts (e.g., through the use of mental state verbs such as think, know, believe) following a narrative-based intervention that specifically targeted perspective taking compared to students who received an alternative intervention. To examine this question, a comparison was made between each participant’s use of mental state terms pre- and postintervention. The number of mental state terms utilized by each participant before and after the interventions is listed in Table 6. As with perspective taking, effect sizes were examined for each treatment group (presented in Table 5). The differences in number of terms used for each group before intervention was very small ($d = 0.13$), indicating equivalency of the two groups. However, The effect size of the difference in posttest scores for each intervention group was large ($d = 1.05$). The effect sizes of pre- to postintervention number of mental state terms were similarly large ($d = 1.04$) and small ($d = 0.22$) for the PTI and NBLI groups, respectively. Thus, greater growth was found for the participants in the PTI group.

As a supplement to the primary analyses for the second research question of this study, the number of different mental state terms (as opposed to the total number uttered) utilized by participants after their interventions was also examined. These results are presented in Table 7. Effect sizes for use of different or distinct psychological terms follow the same pattern as the other results in this study, with effect sizes being small for pregroup differences ($d = 0.36$) and pre–post differences for the NBLI group ($d = 0.44$) and large for pre- and postintervention in the PTI group ($d = 1.17$). Similarly, the difference between the two intervention groups’ posttest scores was also large ($d = 0.97$).

Although inferential statistics were not utilized because of the small sample size in this study, effect sizes clearly demonstrate a differential impact of the two treatments on the perspective taking and use of mental state terms. In each case, effect sizes indicated greater differences in the postintervention scores of students who participated in the PTI.

### Discussion

The present study was designed to contribute to the existing body of research relative to the treatment of students with ASD. This investigation serves as the first phase in the

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**Table 4. Preintervention and Postintervention Perspective-Taking Score by Treatment Group**

<table>
<thead>
<tr>
<th>Measure</th>
<th>PTI group</th>
<th>NBLI group</th>
<th>PTI group</th>
<th>NBLI group</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>0</td>
<td>10</td>
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<td></td>
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<tr>
<td>7</td>
<td>8</td>
<td>8</td>
<td>3</td>
<td></td>
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<tr>
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<td>8</td>
<td></td>
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<tr>
<td>0</td>
<td>3</td>
<td>7</td>
<td>6</td>
<td></td>
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<tr>
<td>8</td>
<td>0</td>
<td>9</td>
<td>2</td>
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</tr>
</tbody>
</table>

**Table 5. Effect Sizes in Perspective-Taking Scores and Use of Psychological Terms Pre- and Postintervention, Within and Between Treatment Groups**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Comparison type</th>
<th>Group(s)</th>
<th>Effect size</th>
<th>Description</th>
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</thead>
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<tr>
<td>Perspective</td>
<td>Pre–post</td>
<td>PTI</td>
<td>0.96</td>
<td>Large</td>
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<tr>
<td></td>
<td>Pre–post</td>
<td>NBLI</td>
<td>0.41</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>Pre–pre</td>
<td>PTI, NBLI</td>
<td>0.39</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>Post–post</td>
<td>PTI, NBLI</td>
<td>1.31</td>
<td>Large</td>
</tr>
<tr>
<td>Use of psychological terms</td>
<td>Pre–post</td>
<td>PTI</td>
<td>1.04</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>Pre–post</td>
<td>NBLI</td>
<td>0.216</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>Pre–pre</td>
<td>PTI, NBLI</td>
<td>0.13</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Post–post</td>
<td>PTI, NBLI</td>
<td>1.05</td>
<td>Large</td>
</tr>
</tbody>
</table>

PTI = perspective-taking intervention; NBLI = narrative-based language intervention.
development of an NBLI designed to specifically address the perspective-taking challenges exhibited in children with ASD. This early phase investigation explored the use of a narrative-based language program to teach perspective-taking skills to students with ASD. For both treatment groups, six out of the nine participants showed improvement in their PTSs. For those participants in the PTI group who did not show improvement, their PTSs remained the same. Comparatively, the three participants in the NBLI group who did not show improvement in their PTSs actually showed a regression in their performance over the course of the study, as demonstrated by a collective loss of 10 points. For those students who showed improvement as a whole, the students who participated in the PTI group exhibited a collective total of 31 points improvement, compared to 22 points for the students in the NBLI group. These findings suggest that PTI is the preferred intervention to address one of the unique needs of students with ASD. As the data demonstrated, there was greater growth in the ability to retell the story from the perspective of different characters following the PTI compared to the NBLI.

An interesting finding was the use of a narrative-based intervention to teach emotion recognition to students with ASD. It has been well documented that students with ASD demonstrate significant deficits in emotion identification and internalization (Baron-Cohen, 2000; Baron-Cohen et al., 1985; Tager-Flusberg, 1995). As a natural extension of the PTI, the authors found the students not only increased their semantic understanding of emotional state terms but also improved their ability to recognize the underlying causes and/or influencing factors to changes in the character’s emotional states of mind. As a component of the PTI (see the appendix), participants identified changes in the emotional states of the key characters as they changed throughout the targeted stories. After identifying a character’s emotional state, the students were then asked to identify the cause or influencing factor of that particular emotion. For example, in the story Miss Nelson Is Missing, many of the participants in the PTI group described Miss Nelson’s initial emotional state as “frustrated,” which they attributed to her students being naughty and refusing to listen to her. As the story progressed, her emotional state was later described as “sneaky” by the participants when Miss Nelson disguised herself as Miss Viola Swamp. The use of the PTI to teach emotion recognition warrants further investigation.

Limitations

There were several limitations regarding the design and procedures used in this study. The small sample size and the use of an NBLI with the alternate treatment group may have made it difficult to demonstrate the significance of a PTI on developing perspective-taking skills in students with ASD. Both participant groups received an intervention program based on narrative language.

Another limitation may be related to the pre- and postintervention data collection procedures. Pre- and postintervention data were collected in a single session. Data collection in a single session does not provide an opportunity to evaluate the variability that often occurs among students with ASD as a result of attention and regulatory control difficulties (Ozonoff & Jensen, 1999; Tsatsanis, 2004). For example, limited attention and motivation may have influenced the performance of two participants initially recruited for this study. The data of these two participants had to be withdrawn because their preintervention narratives were, in the opinion of the researchers and based on their familiarity with these students, not representative of their true abilities. There was no protocol for

| Table 6. Total Number of Mental State Terms Used Pre- and Postintervention by Treatment Group |
|-----------------------------------------------|-----------------------------------------------|
| Preintervention | Postintervention |
| Score | PTI group | NBLI group | PTI group | NBLI group |
| 7 | 1 | 5 | 1 |
| 5 | 15 | 3 | 3 |
| 8 | 5 | 2 | 3 |
| 7 | 13 | 3 | 8 |
| 8 | 15 | 5 | 9 |
| 9 | 4 | 6 | 1 |
| 10 | 0 | 7 | 0 |
| 5 | 4 | 4 | 4 |
| 7 | 4 | 6 | 4 |
| M | 7.3 | 6.8 | 10.4 | 7.9 |
| SD | 1.7 | 5.9 | 3.9 | 4.2 |

| Table 7. Total Number of Different Mental State Terms Used Pre- and Postintervention by Treatment Group |
|-----------------------------------------------|-----------------------------------------------|
| Preintervention | Postintervention |
| Score | PTI group | NBLI group | PTI group | NBLI group |
| 5 | 1 | 13 | 2 |
| 3 | 3 | 9 | 8 |
| 2 | 3 | 8 | 3 |
| 3 | 8 | 5 | 8 |
| 5 | 9 | 6 | 5 |
| 6 | 1 | 11 | 5 |
| 7 | 0 | 7 | 5 |
| 4 | 4 | 7 | 2 |
| 6 | 4 | 2 | 6 |
| M | 4.6 | 3.7 | 7.6 | 4.9 |
| SD | 1.7 | 3.1 | 3.2 | 2.3 |
data collection procedures if compliance issues related to a student’s participation occurred. For the 18 participants in this study, the examiners considered their narrative language samples representative of each participant’s true ability based on the researchers’ prior knowledge of the participants.

Interrater reliability was an additional area of possible limitation related to this study. Improved guidelines for determining each participant’s PTS (e.g., the appropriate use of pronouns to indicate the correct perspective) were developed by the researchers to address discrepancies. The experience gained by the researchers in this study related to this limitation should be used in future investigations. Establishing interrater reliability prior to evaluating the narrative language samples is recommended.

Researcher bias was also a possible limitation. The first two investigators of this study were the data collectors as well as the clinicians who provided the interventions. Some bias may have been infused throughout the methodological procedures. As direct providers of the intervention, the investigators may have influenced how the procedures were executed based on familiarity with the clients’ abilities. For example, repetition, scaffolding, and focus on certain terms or concepts may have occurred based on prior knowledge of a student having had difficulty with such concepts. The investigators were also aware that it was difficult to control for variables related to the possibility of diffusion among the groups, the effect of the NBLI intervention on the alternative treatment group, the participants’ maturation, and prior exposure to NBLI intervention.

Clinical Implications and Future Research

The present study focused on aspects of NBLI that have not been studied before. As such, the findings serve as a basis for a first phase or pretrial study for language intervention effectiveness (Fey & Finestack, 2010). Although the current study exhibits characteristics that might be expected from a feasibility or early efficacy study (as described by Fey & Finestack’s framework), the crucial distinguishing characteristic of this investigation that classifies it as pretrial is the lack of availability of prior research related to this or similar intervention approaches with students with ASD. Based on the current findings, ongoing research should proceed in the direction of the next phase of language intervention development and research. Investigators will be in the position to form hypotheses based on the relationship of NBLI intervention on the perspective-taking abilities of students with ASD as well as the use of this approach to teach emotion recognition.

Future research endeavors need to expand on the current study. Variability in behaviors among students with ASD should be considered in future studies when collecting pre- and postintervention data. It may be necessary to consider repeated measures collected over several sessions or days to ensure a representative sample of each participant’s true abilities. A different design that incorporates either a waitlist control group or alternative nonnarrative language-based approach should be considered to better evaluate the effectiveness of the PTI described in this study.

As previously discussed, the influence of the PTI to facilitate emotion recognition and cause and effect warrants further investigation. Clinical investigators may want to incorporate the use of formal measures to examine emotion recognition pre- and postintervention.

Furthermore, based on the performance of the students in this study, it is reasonable to consider the implementation of a PTI in a classroom setting as an effective means to directly teach perspective taking and emotion recognition to students with ASD.

Declaration of Conflicting Interests

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Appendix: Story Lesson Plans

<table>
<thead>
<tr>
<th>LESSON</th>
<th>Perspective Taking Intervention (PTI)</th>
<th>Narrative-based Language Intervention (NBLI)</th>
</tr>
</thead>
</table>
| Lesson 1 | **Story & SGM Introduction:** SLP introduces the story  
1. SLP reads the selected story  
2. SLP models retelling the story using the SGM  
3. Students retell the story using their own SGM | **Story & Advanced Story Map Introduction:** SLP introduces the story  
1. SLP reads the story  
2. Students are introduced to the advanced story map (Gardill & Jitendra, 1999) and begin completing it with SLP’s guidance. |
| Lesson 2 | **Character #1 Emotion Map:**  
1. Identify the main character in the story  
2. Identify the main character’s problem in the story  
3. As the SLP walks the students through the story they identify the different emotions the character experiences throughout the story and the influencing event or cause of the character’s emotion—As a group complete character map.  
4. Last 5 minutes of session students pick one of the emotions and draw a picture of the character experiencing that emotion. | **Story Review:** SLP re-reads the story  
1. SLP re-reads the story  
2. Students complete advanced story map (Gardill & Jitendra, 1999) with SLP’s guidance. |
| Lesson 3 | **Character #2 Emotion Map:**  
5. Identify the secondary character in the story  
6. Identify the secondary character’s problem in the story  
7. As the SLP walks the students through the story they identify the different emotions the character experiences throughout the story and the influencing event or cause of the character’s emotion—As a group complete character map.  
1. Last 5 minutes of session students pick one of the emotions and draw a picture of the character experiencing that emotion. | **Beginning-Middle-End:**  
1. SLP re-reads the story  
2. Students complete Beginning-Middle-End worksheet  
3. Students “brainstorm” transitional words  
4. Students select and use transitional wording in their story re-tells. |
| Lesson 4 | **Character #1’s Perspective:**  
1. Prior to SLP re-reading the story the students are instructed to focus on the main character.  
2. Students analyze the story from character’s perspective utilizing the SGM Perspective Taking Map. Using the SGM students practice retelling the story to each other from the perspective of the target character. | **Vocabulary:**  
1. SLP re-reads the story  
2. Students complete a venn diagram comparing and contrasting terms/objects related to the story.  
3. Students participate in a discussion expanding on a theme or concept. |
| Lesson 5 | **Character #2’s Perspective:**  
1. Prior to SLP re-reading the story the students are instructed to focus on the secondary character.  
2. Students analyze the story from character’s perspective utilizing the SGM Perspective Taking Map. Using the SGM students practice retelling the story to each other from the perspective of the target character. | **Sequencing & Transitional Wording:**  
1. Students are given a list of statements or descriptions related to the story and asked to place them in the appropriate story sequence (cut & paste). In their retelling of the story students are encouraged to use a variety of transitional words. |
| Lesson 6 | **Oral Presentations:** Students retell the story from the perspectives of the different characters (using SGM as a visual guide)  
• Practice retelling to each other  
• Retell to the entire group  
• Celebration/Reward | **Oral Presentations:** Students retell the story  
• Practice retelling to each other  
• Retell to the entire group  
• Celebration/Reward |
References


Montgomery, J. K., & Kahn, N. L. (2003). You are going to be an English verb classes and alternations


Montgomery, J. K., & Kahn, N. L. (2003). You are going to be an English verb classes and alternations.


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