Proceedings of The National Conference
On Undergraduate Research (NCUR) 2015
Eastern Washington University, Cheney, WA
April 16-18 2015

Content-Form Trade-offs in the spontaneous stories told by children with Autism Spectrum Disorder (ASD): Implications for Assessment and Instruction

Samantha DeLucchi
Communication Disorders and Deaf Education
Utah State University
1450 Old Main Hill
Logan, UT 84322

Faculty Advisor: Dr. Sandra Gillam

Abstract

Children with ASD often experience marked difficulty achieving proficiency in narration, and often require explicit instruction to learn this important discourse skill. The present study was designed to extend the work of Colozzo et al., 2011 by examining the relationship between content and form in the narratives of school-age children with ASD as they participated in a narrative intervention program to improve their knowledge of story structure and ultimately, to improve their ability to create coherent, organized narratives. Children received two, individual, 50-minute intervention sessions weekly for a period of about 7 - 11 weeks. Intervention time varied between participants due to their varied levels of knowledge of narratives. Each child was given time to complete the entire program in his or her own timing. Children were asked to make up their own stories once weekly. These stories were scored for narrative proficiency and for grammatical accuracy. Findings revealed that prior to beginning narrative treatment, all of the children's grammatical accuracy was high while their narrative proficiency scores were low. In the first weeks of treatment, all children experienced a significant decrease in grammatical accuracy (<70%), however their narrative scores were observed to increase. Narrative proficiency scores continued to increase and become stable for all children. Interestingly, grammatical accuracy returned to normal (90% or greater) during the last weeks of intervention as children's narrative proficiency became stable. The findings from this study support the presence of a content-form tradeoff; as children learn difficult linguistic skills, other skills that are ordinarily stable may fluctuate until the new skill is mastered. The absence of grammatical errors may not be taken as an indication that the student is proficient in constructing a coherent, organized narrative. Further implications are discussed.

Keywords: Autism Spectrum Disorder (ASD), Narrative, Grammaticality

1. Introduction

Children with ASD often experience marked difficulty achieving proficiency in narration, and often require explicit instruction to learn this important discourse skill (Asberg, 2010). The overarching goal of this project was to test whether a program designed to teach narrative language skills was effective for increasing the use of grammatical utterances stated for children with high functioning autism (ASD).

2. Methodology

A multiple baseline across participants study was conducted with 5 children with ASD (ages 8-12). Intervention was provided for two 50-minute individual sessions per week for a total of 21-33 sessions, depending on the student.

Children's spontaneous stories, collected weekly, were analyzed for the use of grammatical utterances before, during and after intervention.

3. Data

Five children (two girls, three boys) aged eight to twelve with ASD were recruited. Two of the participants were lower functioning, meaning that their language and narrative skills were significantly below expectations. Three of the participants had sufficient narrative language and language skills as measured using a standardized test however, their narratives were significantly disorganized, unclear and incoherent. Language skills from the CELF-4 were 1.5 SD above or below the mean. IQ from UNIT subtests was 1.5 SD above or below the mean. The participants had no known co-morbidities. Data was collected and reviewed to determine the amount of grammatical utterances per participant.

4. Measures

Participants spontaneously generated stories elicited from single scenes. The Monitoring Indicator of Scholarly Language (MISL) was used to measure narrative proficiency. The highest possible score for MISL is 39. Each utterance spoken by the child is designated as grammatical or ungrammatical and is indicated as a percentage. To calculate the percent grammatical score, the total number of grammatical utterances plus the number of ungrammatical utterances were divided by the total number of utterances and multiplied by 100.

5. Intervention

Children received two, individual, 50-minute intervention sessions weekly for a period of about 12 weeks. Stories were elicited from single scene picture prompts once per week after instructional sessions. Stories were scored for narrative proficiency and for grammatical accuracy.

Supporting Knowledge in Language and Literacy (SKILL) is the manualized narrative intervention program that was used. It is divided into three different phases. The scoring is specific and moves at the rate of the individual and their speed of learning. The program uses icons and graphic organizers to identify story grammar elements. It teaches narrative comprehension, mental states, and causal relations of narratives. Phase I teaches the story structure (elements). Phase II teaches how to make stories more complex (teaching linguistic structures). Phase III teaches the individual to be independent: editing, stabilization of story structure and linguistic knowledge.

6. Conclusion

Participant 001. As can be seen in Figure 1, Participant 001 began therapy with high grammaticality. As the participant entered Phase II of intervention she was required to understand and create more elaborate narratives (as shown through MISL) and her grammaticality decreased dramatically. As she entered Phase III her narratives continued to improve and her grammaticality returned to baseline. Evidence of a form-content trade-off was seen in Phase II.

Participant 002. In Figure 2, participant 002 started intervention with very little narrative knowledge as indicated by a low MISL score at baseline. His grammaticality remained fairly stable throughout instruction, however there was a slight decrease at Phase II, which was associated with a steep increase in MISL scores, providing evidence of a form-content trade-off. His scores remained stable during Phase III.

Participant 003. In Figure 3, participant 003 demonstrates clear evidence of form-content trade-offs. She had adequate grammaticality at baseline and low MISL scores. At Phase 1, she experienced a slight dip in grammaticality with no real change in MISL scores. At Phase II, her grammaticality remained lower than baseline, but her MISL scores increased significantly. Her MISL scores remained high at Phase III and her grammaticality returned to the level observed at baseline.

Participant 004**.** In Figure 4, participant 004's grammaticality is high at baseline and his MISL score is low. There is no change to grammaticality at Phase I and a significant increase in MISL scores. There is a dip in grammaticality at Phase II with an associated increase in MISL scores, evidence of a content-form trade-off. Grammaticality increased to baseline at Phase III and MISL scores remained stable and high.

Participant 005**.** Figure 5 shows that participant 005 began intervention with high grammaticality and very low MISL scores. As the participant begins intervention, his ability to tell narratives slightly increased, while his grammaticality decreased. His performance was highly variable and he demonstrated noncompliant behavior; often refused to tell stories.

Many participants experienced a content-form tradeoff where grammatical performance was high at the start of intervention and declined during intervention. Intervention included acquiring improved narrative skills. Overall, most participants were able to maintain new narrative skills at the conclusion of intervention. Grammaticality rates rose to the same level as at the beginning of intervention for most participants and, in some cases, exceeded baseline levels, even though no direct grammar-based intervention was provided.

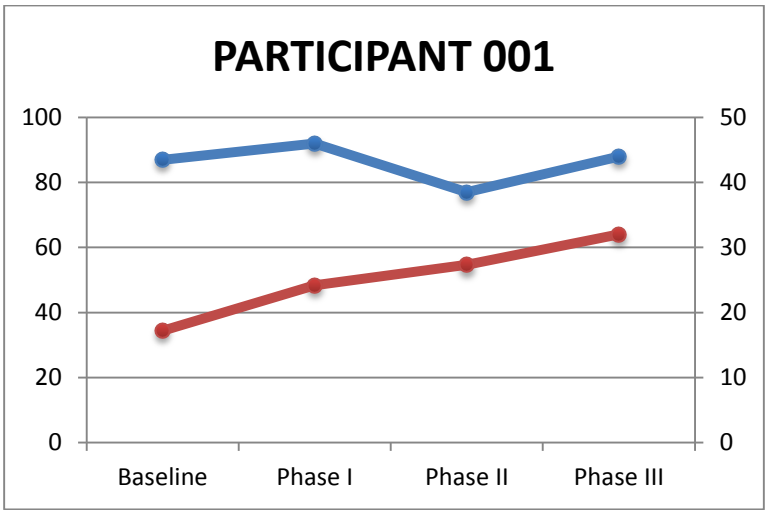

Figure 1 Note: blue = % grammatical utterances, red = MISL narrative proficiency score

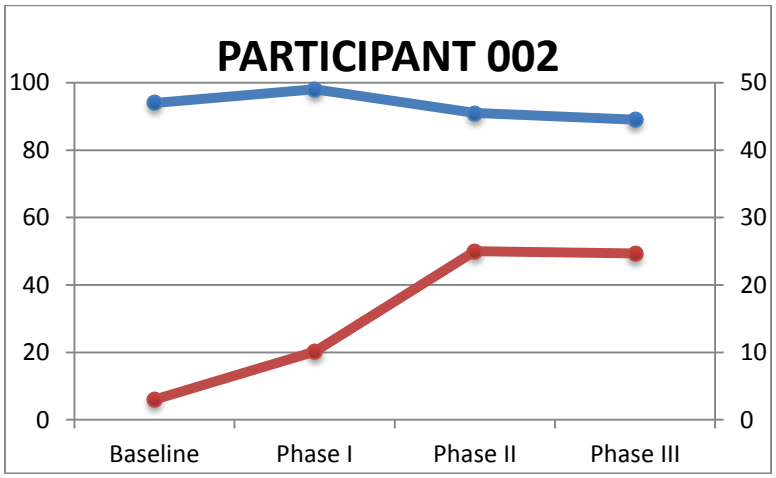

Figure 2 Note: blue = % grammatical utterances, red = MISL narrative proficiency score

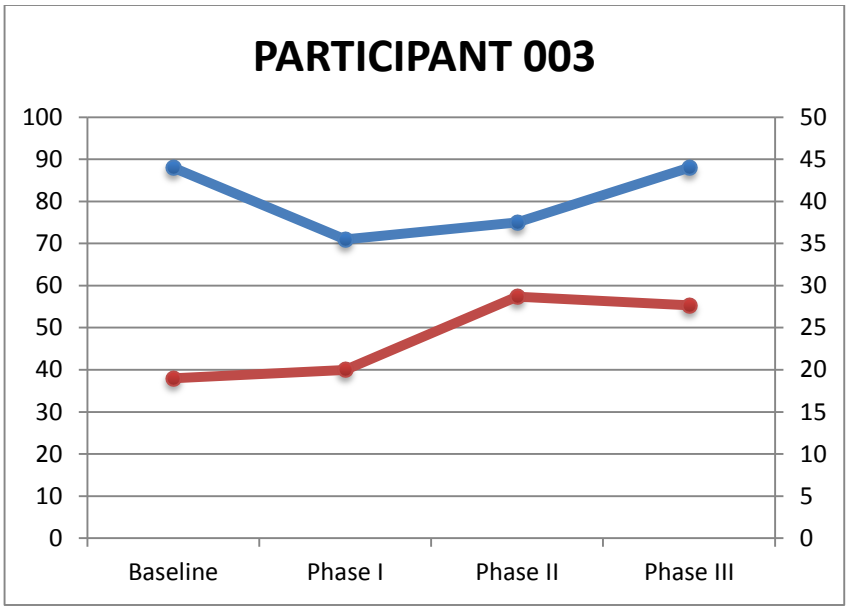

Figure 3 Note: blue = % grammatical utterances, red = MISL narrative proficiency score

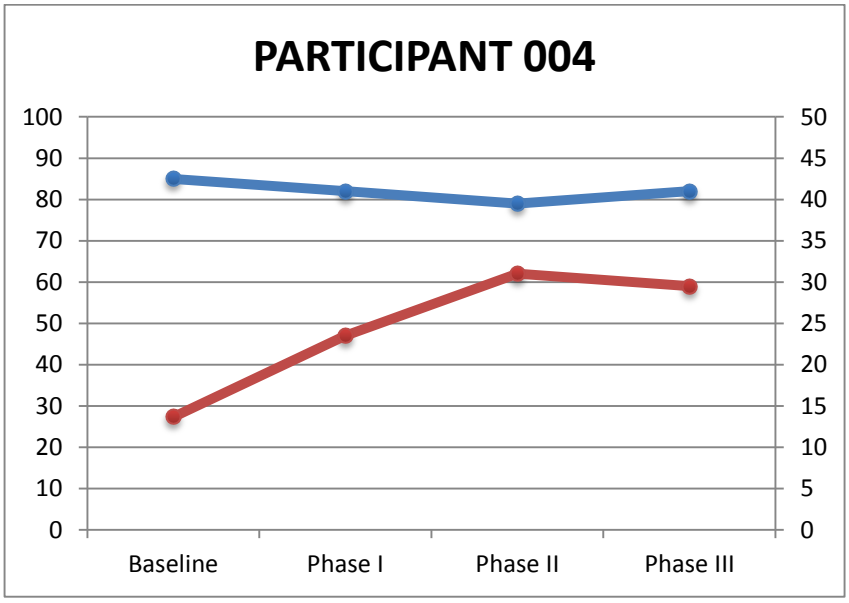

Figure 4 Note: blue = % grammatical utterances, red = MISL narrative proficiency score

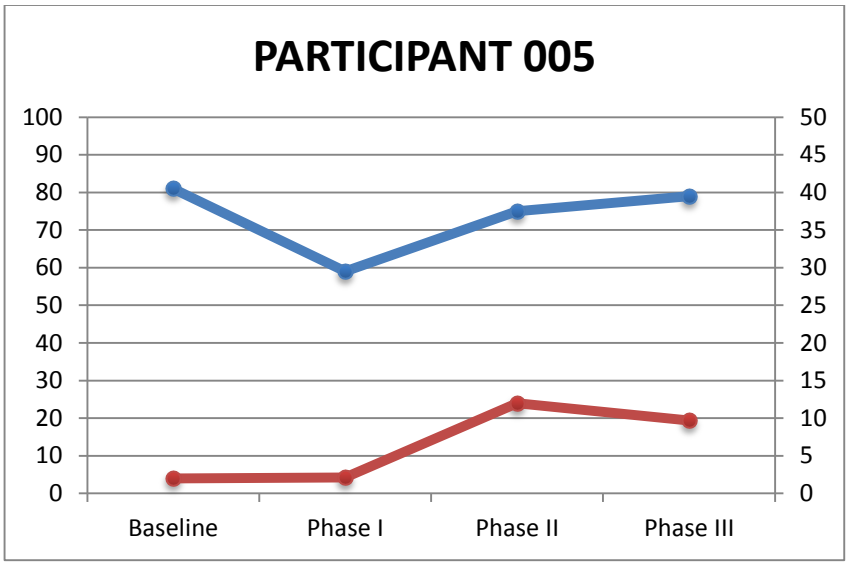

Figure 5 Note: blue = % grammatical utterances, red = MISL narrative proficiency score

7. Implications

It is possible for stories to be very poorly organized and constructed while containing few, if any, grammatical errors. This is particularly relevant for a sub-group of children with language impairments and/or with Autism Spectrum Disorders (ASD). Research with "optimal outcome children with a history of autism," which is defined as a subset of people who make such significant improvements that they no longer meet diagnostic for an ASD (Suh et al., 2014), suggests that their narrative skills are often impaired in terms of story organization and coherence, but their grammatical skills are similar to those of their typically developing peers. It may not be uncommon for children with ASD to experience difficulty in maintaining adequate grammar while learning to produce complex discourse. Grammaticality should normalize after narrative skills become more stable.

8. Acknowledgements

I wish to express my thanks and appreciation to Dr. Sandra Gillam for allowing me to work with and learn from her. I am grateful for her willingness to share her knowledge with her students and for guiding us through the research process. I also wish to thank our graduate research assistant Brigid Crotty, my co-authors Telesha Fricke and Kamilla Okey and our fellow researchers from the USU Child Language Research Lab.

9. Cite References

1. Asberg, J. (2010). Patterns of language and discourse comprehension skills in school-aged children with autism spectrum disorders. *Scandinavian Journal of Psychology, 51*, 534-539.

2. Bracken, B. A., & McCallum, R. S. (1998). *The Universal Nonverbal Intelligence Test*. Itasca, IL: Riverside Publishing.

3. Gillam, S., Hartzheim, D., Studenka, B., Simonsmeier, V., & Gillam, R. (2015). Narrative intervention for children with Autism Spectrum Disorder (ASD). *Journal of Speech, Language, and Hearing Research*, 1-14.

4. Semel, E. M., Wiig, E. H., & Secord, W. (2003). *CELF-4, Clinical Evaluation of Language Fundamentals*. Psychological Corporation.

5. Suh, J., Eigsti, I., Naigles, L., Barton, M., Kelley, El., & Fein, D. (2014). Narrative performance of optimal outcome children and adolescents with a history of an Autism Spectrum Disorder (ASD). Journal of Autism and Developmental Disorders, 44, 1681-1694.