



# A Comparison of the Conversational and Narrative Grammatical Abilities of Verbally Expressive Adolescents with Fragile X Syndrome

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## Introduction

- Individuals with fragile X syndrome (FXS) experience significant weaknesses in the development of grammatical language (see Abbeduto, Brady, & Kover, 2007; McDuffie & Abbeduto, 2009; Rice, Warren, & Betz, 2005).
- There is no consensus regarding the language profile of FXS due to inconsistent findings in research, which may be because of differences in language sampling contexts across studies.
- Conversational language samples tend to yield a higher rate of utterances than narrative contexts, though narrative contexts elicit a greater mean length of utterance.
- The Index of Productive Syntax (IPSyn; Scarborough, 1990) and Developmental Sentence Score (DSS; Lee, 1974) are two measures which can be used to analyze grammatical language based on language samples that will help us to better understand the language profiles of individuals with FXS.

**Study Aim** – to compare conversational and narrative language abilities of children with FXS in the context of the Autism Diagnostic Observation Schedule (ADOS) and a traditional conversation sample using IPSyn and DSS analyses.

## Participants

- 20 males with FXS between the ages of 9 and 16 years. Additional characteristics are outlined below.

| Participant Characteristics   |        |        |       |       |
|-------------------------------|--------|--------|-------|-------|
|                               | Mean   | SD     | Min   | Max   |
| Chronological Age (years)     | 12.23  | 2.21   | 9.0   | 15.83 |
| Years of SLP Intervention     | 8.80   | 2.89   | 4.0   | 13.0  |
| Leiter Nonverbal IQ Composite | 48.05  | 8.46   | 36.0  | 65.0  |
| ADOS Severity                 | 6.35   | 1.98   | 2.0   | 10.0  |
| Conversation Sample           |        |        |       |       |
| Total Utterances              | 164.70 | 28.26  | 108.0 | 215.0 |
| MLU Morphemes                 | 4.11   | 1.18   | 2.16  | 6.61  |
| ADOS Full                     |        |        |       |       |
| Total Utterances              | 441.00 | 268.17 | 21    | 901   |
| MLU Morphemes                 | 370.15 | 223.92 | 14    | 784   |
| ADOS Conversation Sample      |        |        |       |       |
| Total Utterances              | 517.40 | 164.34 | 288.0 | 805.0 |
| MLU Morphemes                 | 3.55   | 0.85   | 2.01  | 5.08  |
| ADOS Narrative Sample         |        |        |       |       |
| Total Utterances              | 123.55 | 71.33  | 53.0  | 339.0 |
| MLU Morphemes                 | 3.83   | 1.04   | 2.57  | 6.54  |
| Household Income              |        |        |       |       |
|                               | n      |        |       |       |
| < \$25,000                    | 2      |        |       |       |
| \$25,000 - \$75,000           | 4      |        |       |       |
| \$75,000 - \$100,000          | 4      |        |       |       |
| \$100,000 - \$150,000         | 7      |        |       |       |

## Method

- Language samples were collected as part of a larger study focused on FXS (Sterling, 2018).
- Participants completed the ADOS (Lord, Risi, Lambrecht, et al., 2000), Module 2 or Module 3.

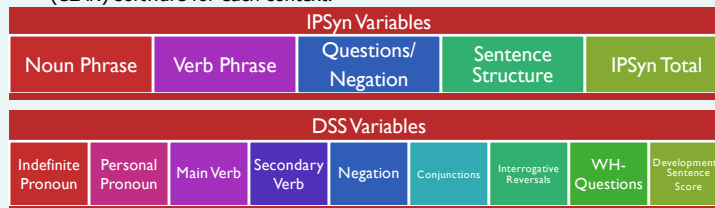
## Method cont.

- Participants also completed traditional interview-style conversational language samples.
- All samples were transcribed. The ADOS samples were then segmented by context: Conversational Tasks or Narrative Tasks.

| ADOS-Conversation                           |                                                     | ADOS-Narrative                                   |                                            |
|---------------------------------------------|-----------------------------------------------------|--------------------------------------------------|--------------------------------------------|
| • Birthday Party <sup>2</sup>               | • Emotions <sup>3</sup>                             | • Response to Joint Attention <sup>2</sup>       | • Cartoons <sup>3</sup>                    |
| • Break <sup>3</sup>                        | • Free Play <sup>2</sup>                            | • Response to Name <sup>2</sup>                  | • Creating a Story <sup>3</sup>            |
| • Bubble Play <sup>2</sup>                  | • Friends, Relationships, and Marriage <sup>3</sup> | • Social Difficulties and Annoyance <sup>3</sup> | • Demonstration Task <sup>2,3</sup>        |
| • Conversation <sup>2,3</sup>               | • Joint-Interactive Play <sup>2,3</sup>             | • Loneliness <sup>3</sup>                        | • Telling a Story from a Book <sup>3</sup> |
| • Reporting a Nonroutine Event <sup>3</sup> | • Loneliness <sup>3</sup>                           | • Snack <sup>2</sup>                             |                                            |
| • Construction Task <sup>2,3</sup>          | • Make-Believe Play <sup>2,3</sup>                  |                                                  |                                            |
| • Description of a Picture <sup>2,3</sup>   |                                                     |                                                  |                                            |

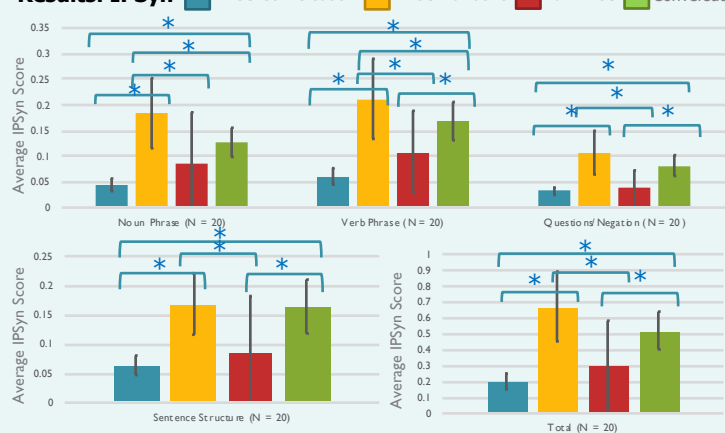
Note. Superscripts denote ADOS Module.

- IPSyn and DSS variables were derived using Computerized Language Analysis (CLAN) software for each context.



- Due to differences in number of utterances between contexts, we compared average scores of all variables.

## Results: IPSyn



\* Indicates significant difference between contexts

- IPSyn results indicate an overall trend of significantly higher ADOS-Narrative scores than both conversational contexts, with the exception of Sentence Structure.

## Results: DSS



\* Indicates significant difference between contexts

- DSS scores for Personal Pronoun and Developmental Sentence Score indicate that the traditional conversation context scores are significantly greater than scores in the ADOS-Narrative context.
- The ADOS-Narrative context yielded the lowest Conjunction Score.

## Conclusions

- IPSyn and DSS score trends differed between conversational and narrative contexts, with IPSyn measures derived from the ADOS-Narrative context yielding the most complex language of the three contexts. These findings support previous research in the field.
- DSS measures displayed opposing results, suggesting that traditional conversational contexts elicit more complex language.
- Further study should also compare measures derived from traditional narrative contexts to allow researchers to better understand how context affects the language output of individuals with FXS.

This study was supported by R03 DC011616. The authors have no financial or nonfinancial relationships to disclose.