

Introduction

- Fragile X syndrome (FXS) is the leading inherited cause of intellectual disability.
- FXS is caused by excessive repeats of a trinucleotide (CGG) sequence in the fragile X mental retardation 1 (FMR1) gene on the X chromosome.
- FXS affects approximately 1 in 4,000 males and 1 in 8,000 females.
- Few interventions that aim to improve the grammatical language skills of children with FXS have been designed and tested.

Study Purpose

- This study aimed to evaluate the potential grammatical growth of three children with FXS who received language intervention.
- Results from this study will be used to determine if the analyses are sensitive to detecting grammatical growth.

Method

- The project involved secondary analyses of existing data from three adolescents with FXS.
- The Developmental Sentence Scoring (DSS) system was used for analysis of the language samples.
- The intervention plan coached parents to use books to support their child's language development and production.
 - 5-7 baseline sessions
 - 12 parent-only sessions
 - 12 examiner-present sessions

Outcomes

- Each of the three children's language samples were scored efficiently to the DSS coding system.
- No statistical breakthroughs in language development.

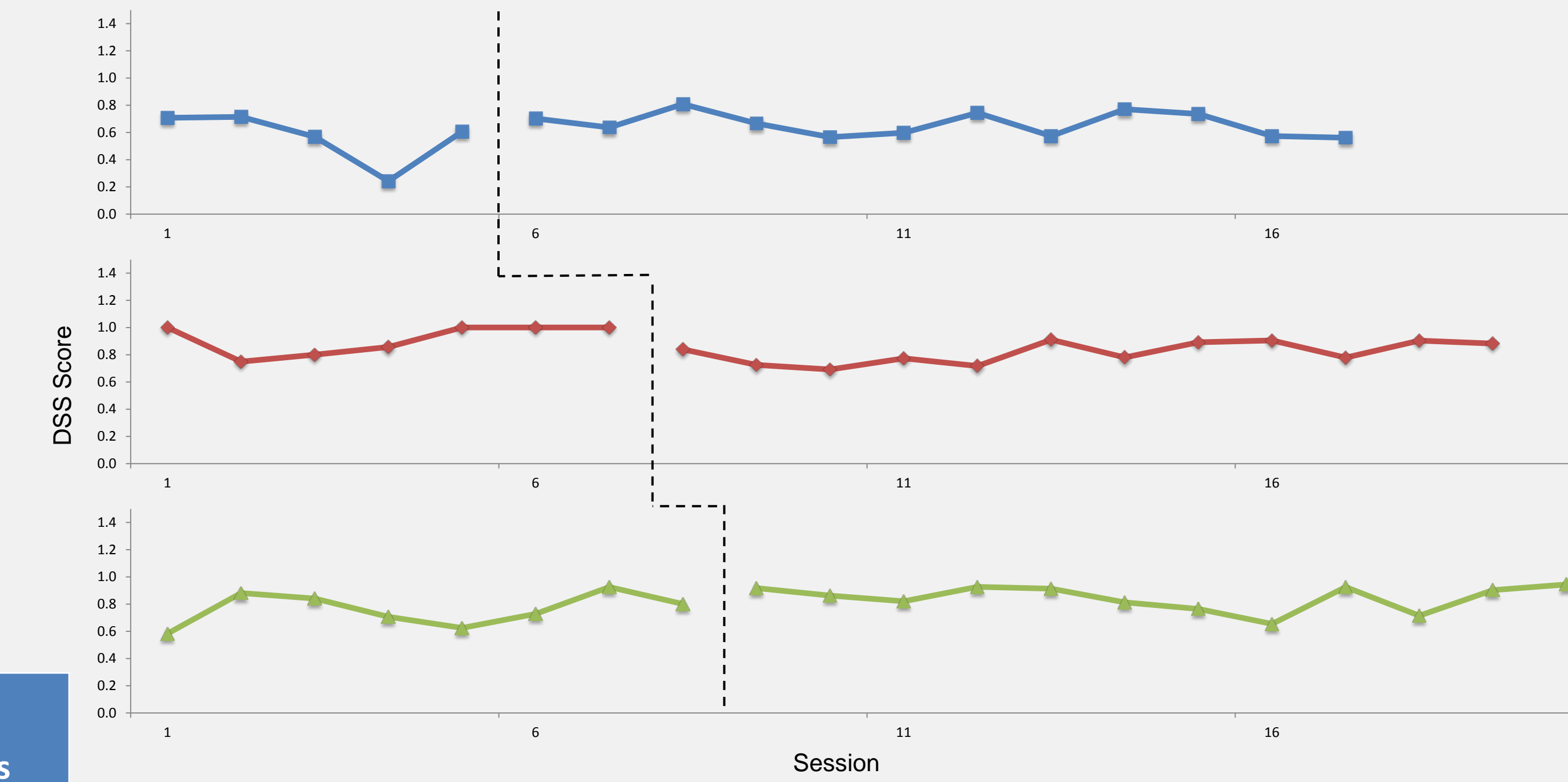
Developmental Scoring System

- The DSS system scores sentences according to their grammatical complexity.
- Eight categories with values of 1-8 assigned to each use of the child's form.
- Scores closer to 1 indicate less grammatical complexity than scores closer to 8.

DSS Chart

SCORE	Indefinite Pronouns or Noun Modifiers	Personal Pronouns	Main Verbs	Secondary Verbs	Negatives	Conjunctions	Interrogative Reversals	Wh-Questions
1	it, this, that	1 st +2 nd Person: I, me, my, mine, you, your(s)	A. uninflected verb: I see you B. copula, is or 's is + verb+ing		it, this, that+copula or auxiliary is+NOT		Reversal of copula: Isn't it red?	
2		3 rd Person: he, him, his, she, her(s)	A. -s and -ed irregular past B. Copula: am, are, was, were C. Auxiliary: am, are, was, were	5 early developing infinitives: wanna, gonna, gotta, lemme, let's				A. who, what+noun B. where, how many, how much, what...do, what...for
3	A. no, some, more, all, lot(s), one (s), two(s) etc., other(s), another B. Some-thing, body, one	A. Plurals: we, us, our(s), they, them, their B. these, those		Non-complimenting infinitives: I stopped to play, I'm afraid to look, It's hard to do that.		and		
4	nothing, nobody, none, no one		A. can, will, may + verb B. Obligatory do + verb C. Emphatic do+ verb	Participle, present or past: I see a boy running, I found the toy broken.	can't, don't		Reversal of auxiliary be: Isn't he coming?	
5		Reflexives: myself, yourself, himself, herself, itself, themselves		A. Early infinitival complements with differing subjects B. Later infinitival complements. C. Obligatory deletions. D. Infinitive with wh-word.	isn't, won't	A. but B. so, and so, so that C. or, if		when, how, how+adj. How big is it?
6		A. Wh-pronouns: that, how many, how much B. Wh-word+ infinitive	A. could, would, should, might + verb B. Obligatory does, did+verb C. Emphatic does, did+verb			because	A. Obligatory do, does, did B. Reversal of modal C. Tag question: It's fun, isn't it?	
7	A. any, anything, anybody, anyone B. every, everything, everybody, everyone C. both, few, many, each, several, most, least, much, next, first, last	(his) own, one, oneself, whichever, whoever, whatever	A. Passive with get, any tense Passive with be, any tense B. must, shall+ verb C. have+verb+en D. have got	Passive infinitival complement: with get and with be	All other negatives: A. Uncontracted negatives B. Pronoun auxiliary/copula contraction. C. Auxiliary negative or copula negative contraction			why, what if, how come, how about+gerund: Why are you crying?
8			A. have been+verb+ing B. modal+have+verb+en C. modal+be+verb+ing D. Other auxiliary combinations	Gerund: Swinging is fun. I like fishing. He started fishing.		A. where, when, how, while+adj+as, as if, like, that, than B. Obligatory deletions C. Elliptical deletions D. Wh-words+inf.	A. Reversal of auxiliary have. B. Reversal with two or three auxiliaries.	whose, which+noun: Whose car is that?

Results



Clinical Implications & Future Research

- Results do not suggest clinical gains based on the DSS measure of grammatical complexity.
- These findings could be due to the treatment not being efficacious or the measure not being appropriate.
- Further studies need to be done to determine if there are measures more sensitive to language growth in this population.

Acknowledgments

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Key References

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