A Complexity Approach to Treatment of Tense and Agreement Deficits in Children with SLI

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INTRODUCTION

- Children with SLI have difficulty with forms marking tense and agreement[1, 2]
- Tense/agreement deficits seem to be resistant to previous treatment approaches [3]
- Complexity Account of Treatment Efficacy (CATE[4]) - training complex structures leads to better generalization to less complex structures
  - CATE has been successfully adopted in the treatment of phonological disorders[5] and aphasia[6, 7]
- Purpose: To investigate whether a CATE approach to treatment of tense/agreement deficits in SLI would be effective.

RESEARCH QUESTIONS

1. Is it possible to elicit questions containing auxiliary BE from a child who does not spontaneously produce either auxiliaries or questions?

2. If elicitation of questions is possible, is there an increase in the child's use of auxiliary BE?

PARTICIPANT

- Male, English monolingual, age 3;11, received treatment at a university clinic for ~1 year
- General language level: Within normal limits
  - Preschool Language Scale (PLS-5[8]):
    - Auditory Comprehension = 106, Expressive Communication = 96, Total Language =101
  - MLUm = 3.94
- Tense/agreement: Specific deficit
  - Test of Early Grammatical Impairment (TEGI[9]): No attempts at auxiliary or copula questions
  - Language Sample: Low productivity of all tense morphemes, No evidence of auxiliary inversion, No attempts at auxiliary and copula questions
  - Sentence Imitation: 4/20 auxiliary BE in statements
- Pretest:
  - TEGI
  - Language Sample during free-play
  - Sentence Imitation Task
- Posttest:
  - TEGI
  - Language Sample during free-play
  - Sentence Imitation Task (10 additional sentences)
- Maintenance (17 days after last treatment session):
  - Sentence Imitation Task (20 additional sentences)

TREATMENT

- Drilled task embedded in play activity with manipulatives
- 5 separate story vignettes
- 30 target structures - auxiliary BE in questions
  - 15 singular, 15 plural
- Correct attempts = auxiliary BE used in obligatory question context

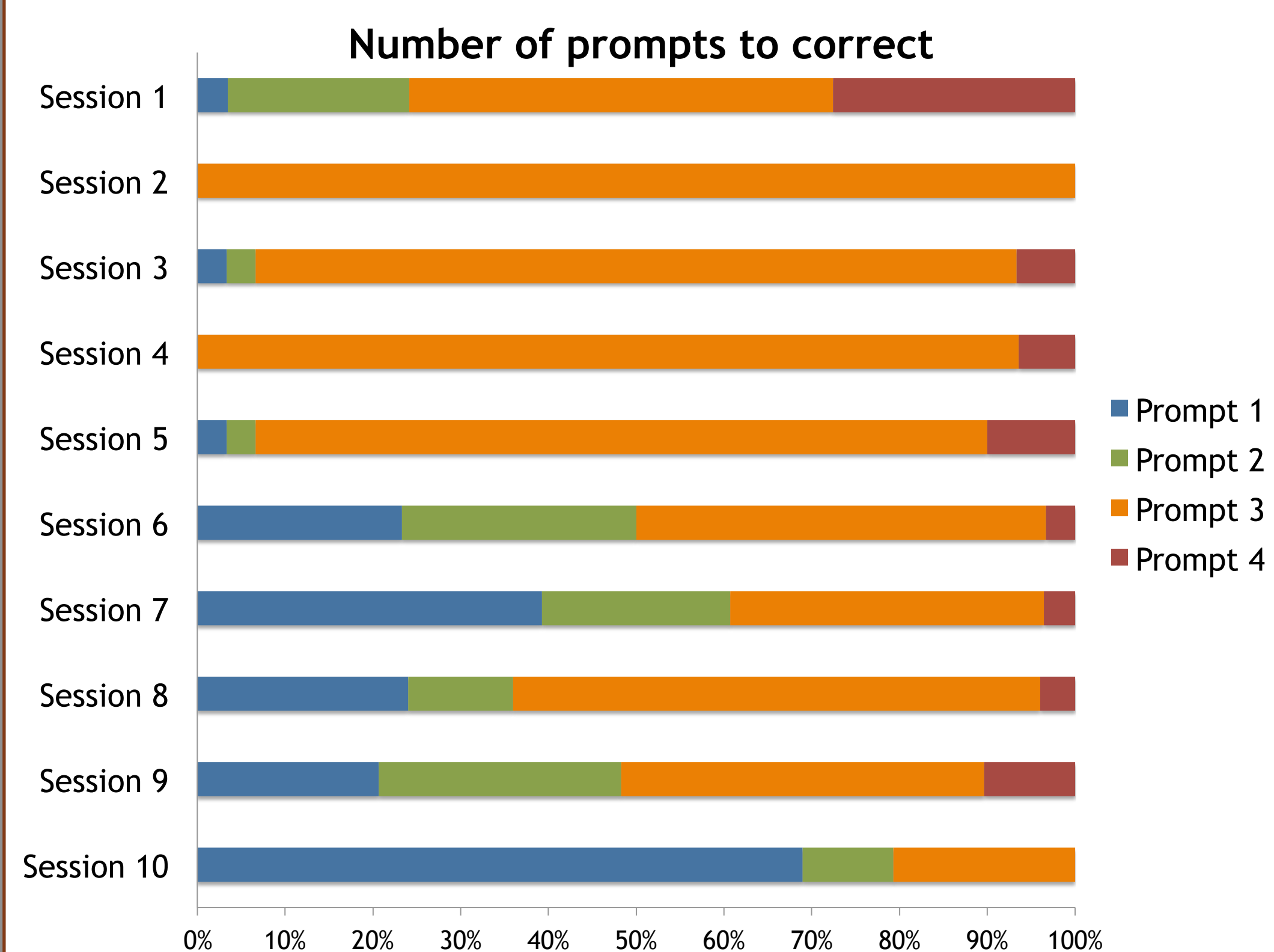| Prompts	Singular *Is the monkey jumping?*	Plural *Are the dogs eating?*
1 Request	I wonder if the monkey is jumping. Ask if the puppet if the monkey is jumping.	I wonder if the dogs are eating. Ask the puppet if the dogs are eating.
2 Repetition	Ask if the monkey is jumping.	Ask if the dogs are eating.
3 Model	I'll ask the puppet. Is the monkey jumping? Now you do it.	I'll ask the puppet. Are the dogs eating? Now you do it.
4 Imitation	Say, is the monkey jumping?	Say, are the dogs eating?

LANGUAGE ASSESSMENT PERFORMANCE

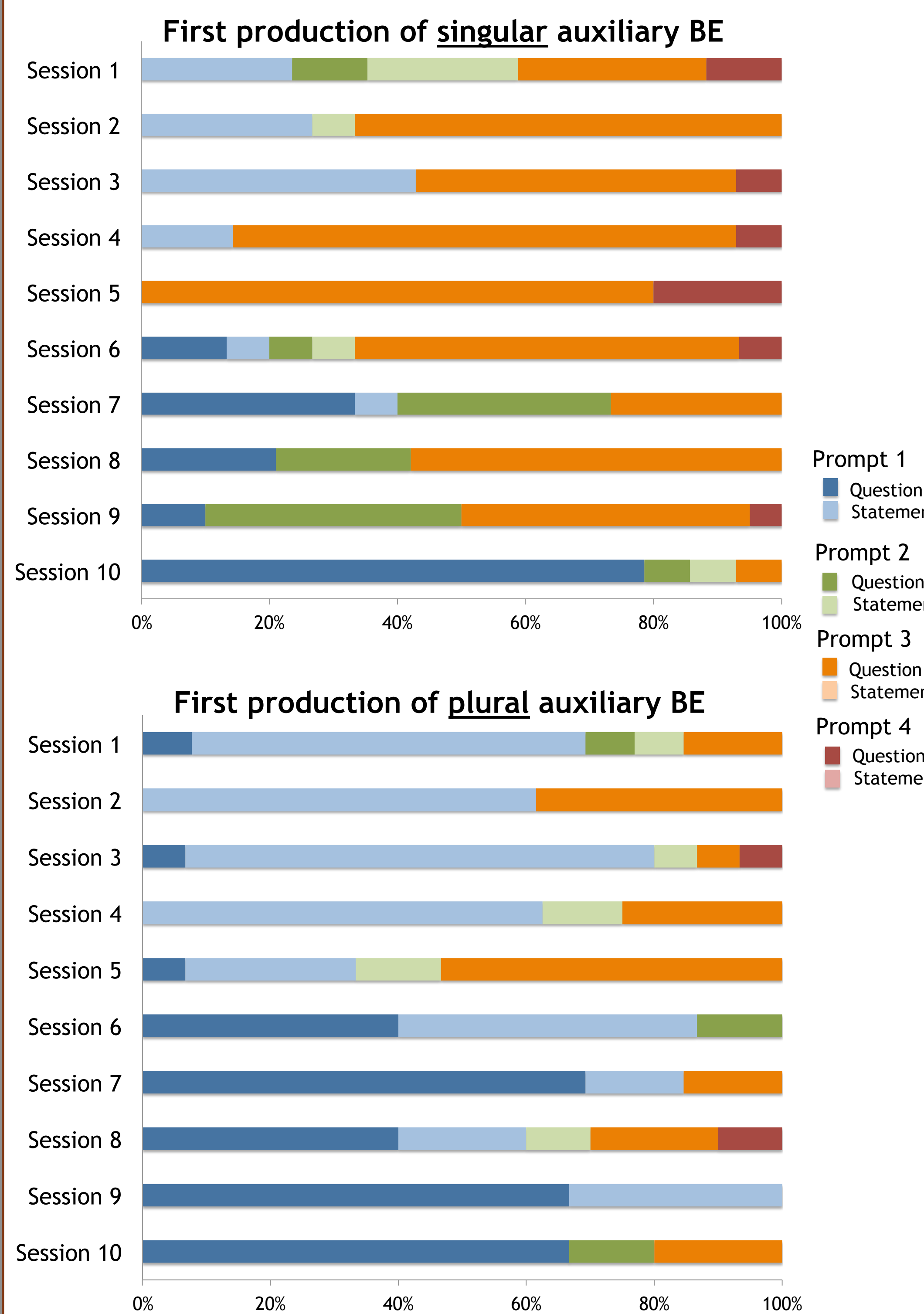|	TEGI				
	Pretest		**Posttest**		
	Obligatory Contexts	% Correct	Obligatory Contexts	% Correct	Criterion
Third person singular		22		20	51
Past Tense		6		0	60
Be/Do BE		29		55	81
COPULA BE					
Plural question	0		0		
Plural statement	6	50	1	0	
Sing. question	0		6	100	
Sing. Statement	2	33	3	0	
AUX BE					
Plural question	0		2	50	
Plural statement	5	40	2	0	
Sing. question	0		4	100	
Sing. statement	7	0	2	0	
Be/Do DO	1	0	10	10	31
Elicited Grammar Composite		14		21	42
Language Sample[a]					
AUX BE	3	33	4	100	
COPULA BE	14	79	48	58	
3s	31	65	13	77	
DO	14	29	2	50	

[a] Language sample #C&I utterances: Pretest = 134; Posttest = 108

TREATMENT OUTCOMES

RQ1: Is it possible to elicit questions containing auxiliary BE from a child who does not spontaneously produce either auxiliaries or questions?

Number of prompts to correct

Legend: Prompt 1, Prompt 2, Prompt 3, Prompt 4 (Sessions 1–10)

RQ2: If elicitation of questions is possible, is there an increase in the child's use of auxiliary BE?

First production of singular auxiliary BE

Legend: Prompt 1 (Question, Statement), Prompt 2 (Question, Statement), Prompt 3 (Question, Statement), Prompt 4 (Question, Statement)

First production of plural auxiliary BE

DISCUSSION

- In a child with general language within normal limits and specific tense/agreement deficits, we observed gains in attempts and accuracy of BE in statements and questions.
- RQ1: Is it possible to elicit questions containing auxiliary BE from a child who does not spontaneously produce either auxiliaries or questions?
  - From session 1 to 10 accuracy of auxiliary BE in questions increased from approximately 3% to 65%.
- RQ2: If elicitation of questions is possible, is there an increase in the child's use of auxiliary BE?
  - TEGI – increased attempts for copula and auxiliary BE structures
  - Language sample – increased attempts and accuracy of copula and auxiliary BE
  - Sentence imitation – increase in imitation of auxiliary BE in statements
- Findings are consistent with CATE:
  - Questions → Statements
  - Auxiliary BE → Copula BE

Conclusion

- The results of this study support the feasibility of a complexity approach and its efficacy in treatment of auxiliary BE, and warrant future studies using CATE to target grammatical deficits.

Open Questions

- How many treatment sessions are necessary for long-term maintenance?
- Would these results extend to a child with lower general language abilities?

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