An Evaluation of Grammatical Language Interventions for Children with Autism Spectrum Disorders

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Introduction

- Researchers have identified a subgroup of children with ASD who have co-occurring language impairment (Kjelgaard & Tager-Flusberg, 2001). The language profile of this subgroup has similarities to the profile of children with Specific Language Impairment (SLI).
- Studies have shown that some children with ASD have impaired implicit learning abilities, which proves detrimental to grammar learning (Klinger, Klinger, & Pohlig, 2007). Researchers suggest that children with ASD may use explicit learning to compensate for this.
- Previous work (Finestack & Fey, 2010) has shown that an explicit approach to grammar intervention may benefit children with SLI. It is unclear if this holds true for children with ASD.

Research Questions

1. Does an explicit instructional approach to grammar intervention improve language-impaired children with ASD's ability to learn, novel grammatical morphemes?
2. Does varying complexity of the targeted novel form impact the effectiveness of intervention?

Participants

Characteristic	*n*=14
Age (years)	
Mean	6.4
Min-Max	4.3-9.6
Female:Male Ratio	2:12
Expressive Language: SPELT-3[a] (SS)	
Mean	74.93
SD	14.06
Min-Max	52-93
Nonverbal IQ[b] (SS)	
Mean	97.0
SD	20.48
Min-Max	71-135
Receptive Language: TACL[c] (SS)	
Mean	89.21
SD	19.94
Min-Max	55-128

[a]Scaled score with Mean = 100, *SD* = 15 based on the Structured Photographic Expressive Language Test – 3rd Edition. [b]Standard score with Mean = 100, *SD* = 15 based on the Leiter International Performance Scale-Revised. [c]Standard Score with Mean = 100, *SD* = 15 based on the Test of Auditory Comprehension of Language.

Method

- Randomized 2x2 counter-balanced group assignment:

		GRAMMATICAL FORM	
		Pronoun	Gender
INSTRUCTIONAL METHOD	Implicit	Implicit Pronoun	*Implicit Gender*
	Explicit	*Explicit Pronoun*	Explicit Gender

- Examiners asked the children to try to learn two novel grammatical markings using a game that included two creatures from outer space that use English words, but talk a little differently.
- A phoneme (/f/ or /ʃ/) was added to the sentence verb to indicate sentence subject gender or person.
- One form taught using implicit instruction with models only. One form taught using explicit instruction which embedded the presentation of the pattern guiding the novel form among models.
- Explicit presentations:

Gender: "If it' s a boy you have to add /f/ or to the end; if it' s a girl, you don' t add anything to the end."

Jake can eat-f.

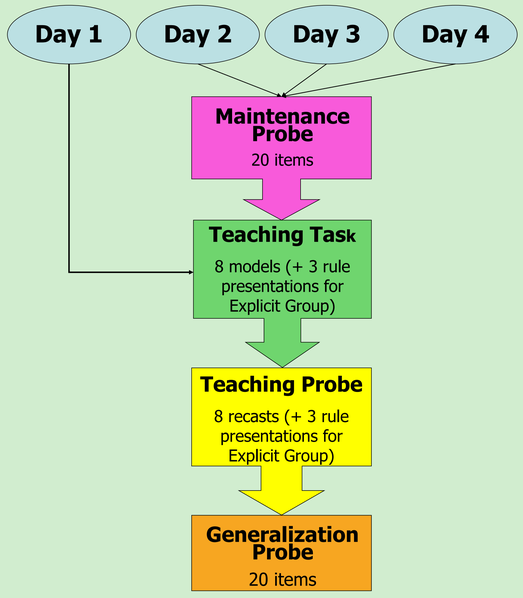
Sara can eat.

Pronoun: "When the creature talks about itself, or if you talk about yourself, you have to add /ʃ/ to the end; when you or the creature talks about someone else, you don't add anything to the end.

Now I cook-sh.

Now you cook.

- Each child completed up to four, 20 min sessions for each grammatical form.



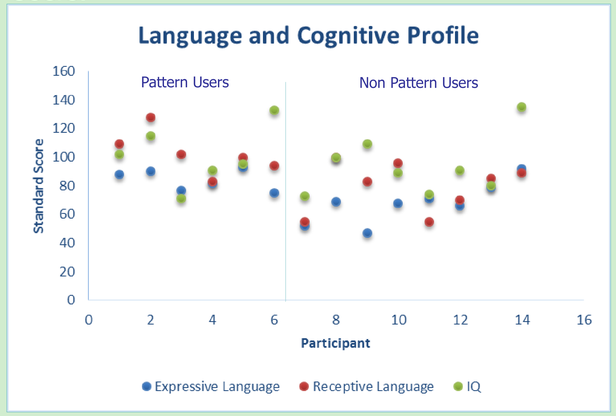
- During the Teaching Task, the computer auditorily presented the model sentences containing the novel marking with a picture depicting the sentence.
- For each probe, the computer prompted the children to complete the sentence like the space creature would: "Now I ___.", "Jake can ___."

Results

- For each novel grammatical target, participants were classified as either a:
  - ➢ Pattern User = accurate, contingent use of novel form in 80% of opportunities on the Maintenance Probe
  - ➢ Non-Pattern User = inconsistent or noncontingent use of novel form on the Maintenance Probe

Instructional Effect	Implicit PU	Implicit Non-PU
Explicit PU	1	5
Explicit Non-PU	0	8
Marker Specific Effect	**Explicit PU**	**Explicit Non-PU**
Gender	3	3
Pronoun	3	5

- McNemar's & Fisher's Statistical Tests:
  - ➢ Combined: $p = .06$
  - ➢ Pronoun vs. Gender: $p = 1.00$; $\Phi = 0.12$
- Pattern Users did not have significantly stronger language or cognitive skills than Non Users.



Conclusions

- Results trend towards an advantage for explicit instruction, which is equally effective for grammatical markers of varying complexity.
- Higher language or IQ skills did not differentiate children who became Pattern Users over those who did not.
- Data collection and recruitment is ongoing to further evaluate an explicit approach to language instruction.

Study supported by R03 DC 11365-3 from the National Institutes of Health, UMN Leadership Education in Neurodevelopmental Disabilities (LEND) Program, and UMN Undergraduate Research Opportunities Program
Many thanks to the children and families who participated in this study.