

Grammatical Metalinguistic Learning of Emerging Bilingual Children

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Introduction

- Metalinguistic awareness comprises two components: control of processing and analysis of knowledge (Bialystok & Majumder 1998).
 - Control = ability to attend to the relevant aspects of language
 - Analysis = process of creating organized, explicit mental representations of language
- There is evidence that bilingual children demonstrate advanced abilities on metalinguistic awareness tasks compared to monolingual children (e.g., Ben-Zeev, 1997; Bialystok, 1988; Cummins, 1978).
- Previous investigations of metalinguistic skills of bilingual children have primarily included semantic and grammatical judgment tasks (Bialystok, 1988; Yelland et al., 1993) that largely rely on previously acquired language skills and knowledge.
- The current study examined the metalinguistic skills of emerging bilingual children using artificial grammatical learning tasks that required children to activate different levels of metalinguistic skills to learn and apply new information.

Research Questions

- Do 5-to 7-year-old children who have completed a 1-year immersion Spanish immersion program demonstrate greater grammatical metalinguistic skills than monolingual children who have completed a traditional kindergarten program?
- Do emerging bilingual children and monolingual children perform differently on tasks requiring different levels of metalinguistic skills?
- Does either group of children indicate differences in performance based on instruction?

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Participants

Characteristic	Emerging Bilingual (n=28)	Monolingual (n=21)	p
Age (years)			.95
Mean	6.26	6.26	
SD	0.31	0.35	
Min-Max	5.67-6.83	5.75-7.08	
Nonverbal Intelligence ^a			.19
Mean	105.75	100.05	
SD	12.81	16.92	
Min-Max	86-126	81-143	
English Auditory Comprehension ^{bc} (SS)			.88
Mean	109.19	109.67	
SD	11.39	9.41	
Min-Max	80-126	85-126	
English Expressive Communication ^b (SS)			.80
Mean	108.39	109.14	
SD	10.89	8.90	
Min-Max	89-129	93-129	
Spanish Auditory Comprehension ^d (SS)			
Mean	92.57		
SD	12.09		
Min-Max	74-122		
Spanish Expressive Communication ^d (SS)			
Mean	84.61		
SD	20.78		
Min-Max	50-117		
Female: Male Ratio	20:8	10:11	.14

^aStandard score with mean = 100, SD = 15 based on the Kaufman Brief Intelligence Test Matrices subtest; ^bStandard score with mean = 100, SD = 15 based on the Preschool Language Scales-4; ^cOne child in the Emerging Bilingual group did not complete the Auditory Comprehension subtest; ^dStandard score with mean = 100, SD = 15 based on the Preschool Language Scales-4 Spanish.

Method

- Children taught two novel grammatical markings through a computer space game.
- In a randomized, counter-balanced manner, each child attempted to learn one form with implicit instruction (i.e., modeling only) and one form with explicit instruction (i.e., explicit presentation of the guiding rule + modeling).

		GRAMMATICAL FORM	
		Aspect	Gender
INSTRUCTIONAL METHOD	Implicit	Implicit Aspect	Implicit Gender
	Explicit	Explicit Aspect	Explicit Gender

Novel Forms

- The phoneme (/f/ or /j/) was added to the sentence verb to indicate sentence subject gender or aspect marking.

- Explicit presentations:

Gender: "When it is a boy, you have to add /j/ (/f/) to the end; when it is a girl, you don't add anything to the end."



Jake can eat-sh.



Sara can eat.

Aspect: "When the animal is always doing the action, you have to add /j/ (/f/) to the end; when the animal has been doing the action for a short amount of time, you don't add anything to the end."



See the pig sleep-f.



See the pig sleep.

Experimental Sessions

- Each child completed two teaching sessions to learn each form.
- During the teaching task, the computer presented pictures accompanied by auditory models of the target grammatical form.
- During the generalization probe, the computer asked the children to complete the sentence like the space creature would.

TEACHING SESSION
Teaching Task
8 models + 3 rule presentations, for explicit instruction
8 recasts + 3 rule presentations, for implicit instruction
Generalization Probe
20 items

Results

- For each novel grammatical target, participants were classified as either a:
 - Pattern User (PU)=correct production of target form on 80% of generalization probe items
 - Non-Pattern User=correct production of the target form < 80%

Gender	Emerging Bilingual PU	Emerging Bilingual Non-PU	Monolingual PU	Monolingual Non-PU
Explicit	10	4	8	3
Implicit	4	10	2	8
Aspect	Emerging Bilingual PU	Emerging Bilingual Non-PU	Monolingual PU	Monolingual Non-PU
Explicit	5	9	3	7
Implicit	0	14	1	10

- Question 1

- Gender Form: Across both instructions, **no significant differences** in PU and Non-PU between emerging bilinguals and monolinguals ($p = 1.00$; $\Phi = -.02$).
- Aspect Form: Across both instructions, **no significant differences** in PU and Non-PU between emerging bilinguals and monolinguals ($p = 1.00$; $\Phi = .02$).

- Question 2

- Explicit Instruction: **no significant differences** in PU and Non-PU between emerging bilinguals and monolinguals for gender marking ($p = 1.00$; $\Phi = .01$) or aspect marking ($p = 1.00$; $\Phi = -.06$).
- Implicit Instruction: **no significant differences** in PU and Non-PU between emerging bilinguals and monolinguals for gender marking ($p = 1.00$; $\Phi = -.10$) or aspect marking ($p = 0.44$; $\Phi = .23$).

- Question 3

- Both the emerging bilingual ($p = .04$) and monolingual ($p < .01$) children performed significantly better with explicit instruction than implicit instruction.

Conclusions

- Emerging bilingual children did not demonstrate a language learning advantage over monolingual children during explicit or implicit instruction.
- Participants in both groups were significantly more likely to learn the target grammatical forms via explicit instruction compared to implicit instruction.