Metalinguistic Awareness Skills of 3- to 7-year-old Typically Developing Children

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Introduction

- Metalinguistic skills, which includes the ability to think about and reflect on language, is related to language development such that children with strong metalinguistic abilities tend to be children with strong language skills (Bialystok, 1988).
- Evidence suggests that children who are poor language learners, such as children with specific language impairment, have weak metalinguistic skills (Fujiki, Brinton, & Dunton, 1987; Kamhi, Lee, & Nelson, 1985; Redmond & Rice, 2001).
- Relatively little is known regarding the course of metalinguistic development for children who are typically developing monolingual speakers.
- Increased knowledge of metalinguistic development is important to better understand the co-development of cognitive and language skills and to improve how language is taught to children with language-learning weaknesses.

Research Questions

1. **Do the metalinguistic awareness skills of 3- through 7-year-old children with typical development vary by age?**
2. **What is the relationship between metalinguistic awareness, cognitive abilities, and language abilities of typically developing children and do these relationships differ based on chronological age?**

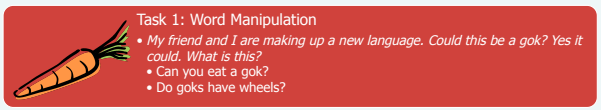
Method

- At the 2014 Minnesota State Fair, we recruited typically-developing children aged 3- through 7-years and their parents to complete our assessment battery.
- Parents completed a questionnaire regarding their child's development and demographic information and the Behavior Rating Inventory of Executive Functioning (BRIEF: Gioia, Isquith, Guy, & Kenworthy, 2000).
- Children completed the Matrices subtest of the Kaufman Brief Intelligence Test, Second Edition (KBIT-2; Kaufman & Kaufman, 2004), the Recalling Sentences subtest of the Clinical Evaluation of Language Fundamental, and a metalinguistic awareness probe.
- The metalinguistic probe comprised tasks used by other researchers to evaluate vocabulary and morphology metalinguistic skills.

Participants

	AGE GROUP				
Characteristic	**3** ***n* = 13**	**4** ***n* = 17**	**5** ***n* = 23**	**6** ***n* = 32**	**7** ***n* = 28**
Age (mo)					
Mean	42.00	54.06	65.78	77.16	89.46
SD	3.79	3.05	3.81	3.59	3.41
Gender					
Male:Female	4:9	7:10	13:10	13:19	18:10
Race					
White:Other	12:1	16:1	22:1	28:4	26:2
Income					
< $50k	1	0	0	2	1
$50-$100k	5	12	16	16	10
>$100k	7	4	6	12	17
CELF-4 Recalling Sentences[b] (SS; mean = 10, SD = 3)					
Mean	11.54	12.88	12.74	11.56	11.82
SD	2.33	2.91	2.32	2.15	2.31
Min-Max	9-16	9-19	9-18	8-16	7-16
Nonverbal IQ[a] (raw)					
Mean	10.15	13.12	17.09	20.94	24.00
SD	2.76	4.36	3.99	5.25	5.50
Min-Max	4-14	2-20	11-25	14-34	13-35
BRIEF-4 Inhibit[b] (raw)					
Mean	21.37	21.59	15.32	15.45	15.04
SD	5.08	4.49	3.48	4.02	3.31
Min-Max	16-30	16-31	10-24	10-23	10-21
BRIEF-4 Working Memory[b] (raw)					
Mean	22.92	21.35	14.74	14.26	14.82
SD	6.09	4.33	4.01	3.46	3.33
Min-Max	17-34	17-32	10-22	10-22	10-23

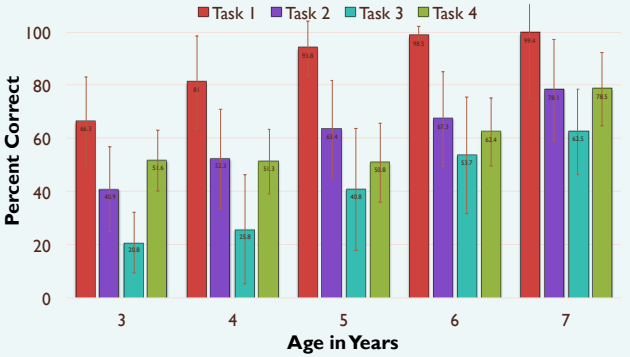
Tasks



Results

- Based on ANOVA statistical tests:

Task 1	Task 2	Task 3	Task 4
• Age 3 < Age 4; $p < .01$ • Age 4 < Age 5; $p < .01$ • Ages 3 & 4 < Ages 6 & 7; $ps < .01$	• Age 3 < Ages 4, 5, 6, & 7; $ps < .02$ • Ages 4, 5, & 6 < Age 7; $ps < .02$	• Ages 3 & 4 < Age 5; $ps < .01$ • Age 5 < Age 6; $p = .01$ • Ages 3, 4, & 5 < Age 7; $p < .01$	• Ages 3, 4, & 5 < Age 6; $ps < .01$ • Age 6 < Age 7; $p < .01$



Correlations between metalinguistic task performance and cognitive, language , and behavior skills (controlling for age)

	Task 1	Task 2	Task 3	Task 4
Nonverbal IQ	.06 $p = .52$	-.06 $p = .55$	.26* $p = .01$	.02 $p = .81$
Recalling Sentences	.07 $p = .51$	.29* $p < .01$	.33* $p < .01$	.25* $p = .01$
Brief-P Working Memory	-.06 $p = .55$	-.09 $p = .40$	-.02 $p = .84$	-.01 $p = .93$
Brief-P Inhibit	.11 $p = .29$	.06 $p = .53$	.09 $p = .37$	-.01 $p = .93$

Conclusions

- Children improved ability to think about language with age.
- Recalling sentences and nonverbal IQ potentially impacted the children's metalinguistic awareness abilities, with stronger performance on recalling sentences and nonverbal IQ assessments being associated with stronger metalinguistic abilities.
- Working memory and inhibition did not significantly influence the children's metalinguistic awareness performance.

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