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# Development of Metalinguistic Awareness: Evidence from Children's Overt Productions

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# Development of Metalinguistic Awareness: Evidence from Children's Overt Productions

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## Purpose

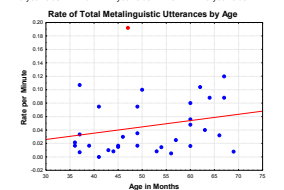
- To examine young children's productions of overt utterances of metalinguistic awareness and determine whether they change with age.

## Background Information

- Metalinguistic awareness: "the ability to reflect upon and manipulate the structural features of spoken language." (Edwards & Kirkpatrick, 1999, p. 313).
- It involves considering language as an entity opposed to using language only to comprehend and produce sentences (Turner & Herriman, 1984).
- The study of metalinguistic awareness is of great importance, because future reading skills are dependent upon the appropriate development of metalinguistic skills (Nagy & Anderson, 1995).
- Metalinguistic awareness skills are believed to progress as a factor of age and the maturity of cognitive skills (Clark, 1978; Chouinard & Clark, 2003; Edwards & Kirkpatrick, 1999) but have rarely been studied in preschoolers because of task complexity.
- It is most efficacious for metalinguistic knowledge to be tested in a naturalistic setting in which the child is also producing and comprehending language (Edwards & Kirkpatrick, 1999).
- Spontaneous utterances that reflect metalinguistic awareness in young children are rare; this study was unique in the number of overt metalinguistic comments and questions that the children produced.

## Participants

- 33 participants were initially included. One outlier excluded: a 3;1 boy who produced an unusually high rate of metalinguistic utterance use.
- 32 children with typical language skills ages 3;0 - 5;7 (12 male, 20 female).
- The participants were divided into 3 groups:
  - 3-year-olds: N = 13
  - 4-year-olds: N = 8
  - 5-year-olds: N = 11



## Methods

- Parents completed an ICD and a demographic questionnaire
- All children completed:
  - Clinical Evaluation of Language Fundamentals: Preschool-2
  - Rice/Wexler Test of Grammatical Impairment
  - Dolaghan's Nonword Repetition Task
  - Primary Test of Nonverbal Intelligence or Test of Nonverbal Intelligence
  - Hearing screening
- Participants learned the meaning of 4 or 6 nonsense verbs in a study of the effects of recast rates on irregular past tense verb learning
- Participants then received either 5, 7, or 10 experimental sessions of 20 to 30 minutes each, all digitally audio recorded
- The experimenter recast child irregular past tense errors at prescribed rates depending on participants' semi-random assignment to input condition
  - e.g., Child: *I daked it.* Experimenter: *You doked it.*
- A rate per minute metric was used to examine the frequency of total metalinguistic comments/questions because the variability in the number, length and target verbs in the experimental sessions
- A proportional measure, following arcsine transformation, was used to examine changes in types of metalinguistic comments and questions.
- Trained masters level graduate students in speech-language pathology transcribed 3 utterances before and after each identified child metalinguistic utterance and coded it according to type of metalinguistic production
- Categorization of metalinguistic types and hypothesized developmental order was based on the early levels of Clark's (1978) rough developmental framework
  - First, all metalinguistic comments/questions were identified in 13 participants' transcripts
  - Next, a post hoc review of these utterances led to a group consensus decision of 6 metalinguistic types
  - Finally, codes were applied to all participants' transcripts
  - Reliability: 20% of the language samples were randomly selected and independently coded
  - There was agreement on 91% (80/88) metalinguistic codes

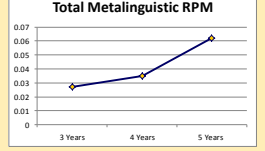
## Types of Metalinguistic Utterances

Type	Definition	Example
Self-Correction/Revision	An utterance that includes a self-correction or revision in either direction	I jare, jare it. I jore, jared it.
Rehearsal	Rehearsal or statements about the verb's meaning or form.	Twank, twank, twank. Twank or whatever
Self-Statement	Statements or questions about the child's own productions.	I laugh when I said dake it on your neck except I said daked it on your neck.
Challenge	Statements, questions, or directives about what the experimenter said or should say	Stop saying kug it!
Clarification	Direct and indirect questions about verb meaning or form.	What does dake mean?

## Question 1

Does the rate of metalinguistic utterances increase with age?

### Results



- The correlation between age in months and total metalinguistic comments/questions rate per minute showed a moderate positive correlation that approached statistical significance,  $r = .33, p = .06$
- A one-way ANOVA showed a main effect for group,  $F = 3.29, p = .05$
- Planned comparisons: A t-test for independent samples by group showed that the 5-year-olds produced a higher rate of metalinguistic comments/questions than 3-year-olds ( $t(22) = 2.51, p = .02$ ).
- All participants produced at least one metalinguistic comment or question except a 3;5 female.

### Metalinguistic Rates per Minute

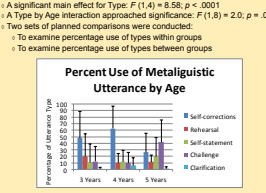
Age	Total Metalinguistic RPM	RPM SD
3 Years	0.027	0.030
4 Years	0.035	0.034
5 Years	0.062	0.036

## Question 2

Does the use of metalinguistic utterance types change with age?

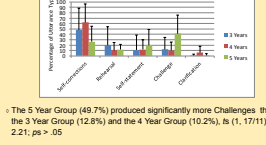
### Results

- A 3 (Age) x 5 (Type) mixed model ANOVA was generated
- A significant main effect for Type:  $F(1,4) = 8.58, p < .0001$
- A Type by Age interaction approached significance:  $F(1,8) = 2.0, p = .052$
- Two sets of planned comparisons were conducted:
  - To examine percentage use of types within groups
  - To examine percentage use of types between groups



- 3 Year Group: Percentage of Self-correction (63.8%) was significantly higher than Clarification (1.0%), and Challenge (12.6%),  $t(1, 12) \geq 2.55, ps < .03$
- 4 Year Group: Percentage of Self-Correction (85.0%) was significantly higher than Clarification (0.0%), Challenge (10.2%), Self-statement (11.9%), and Rehearsal (10.4%),  $t(1, 7) \geq 2.82, ps < .03$
- 5 Year Group: Percentage of Challenge (49.7%) was significantly higher than Clarification (1%) and Rehearsal (11.6%),  $t(1, 10) \geq 2.46, ps < .04$ . Percentages of Rehearsal and Self-correction (25.7%) were significantly higher than Clarification.

### Percent Use of Metalinguistic Utterance by Type



- The 5 Year Group (49.7%) produced significantly more Challenges than the 3 Year Group (12.6%) and the 4 Year Group (10.2%),  $t(1, 17(1)) \geq 2.21, ps < .05$

## Discussion

- This investigation revealed that children produce metalinguistic utterances even in early stages of language acquisition but vary in the rate and types of metalinguistic utterances they produce
- Rate per minute of metalinguistic utterances increased with age
- The proportions of types of metalinguistic utterances shifted with age and generally supported Clark's (1978) suggested pattern of emergence
- The metalinguistic skills of 3 year-olds have been difficult to study because of the low frequency of metalinguistic use in typical conversation and the task difficulty of other methods of measuring metalinguistic skills
- The use of high rates of recasts in conversation to introduce a new morphological form elicited unusually high rates of overt spontaneous metalinguistic utterances, even in 3 year-olds
- Weaknesses of the study include:
  - The 4 Year Group had fewer participants, which could explain why performance appeared inconsistent
  - The small number of participants
  - The study was not specifically designed to examine metalinguistic skills
  - Exposure to rates of recasts and the number of nonword verbs varied across participants

## Future Research

- Include a larger and more demographically diverse sample and divide participants into smaller age increments
- The metalinguistic skills of children with language impairments and with reading delays should be investigated
- The relationship between metalinguistic rate and type and phonological awareness pre-literacy skills should be examined

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