Correlation Between Mean Length of Utterances in Preschoolers and Different Maternal Education Backgrounds

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Abstract

Purpose: The purpose of this study was to measure the mean length of utterances in typically developing preschool children and to identify whether maternal education is an influential variable in morphological development. The study also researched the relationship between mean length of utterance (MLU) and number of different words (NDW).
Methods: 13 preschoolers between the ages of 3 and 5 were recruited to participate in the study. To participate in the study, each participant had to be typically-developing in the area of language, nonverbal cognitive abilities and hearing. This was assessed using standardized measures. Then, a 15-minute language sample was taken.
Results: The results of this study showed that there was a medium correlation between MLU and maternal education. There was a slightly weaker relationship between MLU and NDW.

Background

Morpheme calculation is widely used as a technique for speech-language pathologists to assess the development of language in typically-developing children. Previous research has highlighted numerous variables that could affect language production. The variables studied previously have included SES, IQ, and the presence of SLI (Rice, Redmond, & Hoffman, 2006). The results of a study by Walker et al. (1994) showed that language samples of children aged 7 to 36 months varied based on socioeconomic status, along with measured IQ. Similarly, this study will analyze SES as an influential variable, but with older children (36 to 60-months-old).

Research Questions

1. Will preschooler language samples show a correlation between MLU and maternal education?
2. Will there be a correlation between number of different word (NDW) scores and MLUs?

Methods

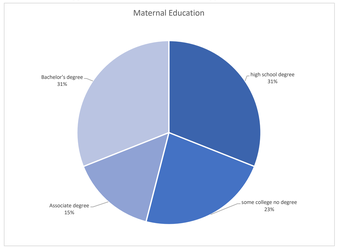
Participants: The study included 13 children (7 boys and 6 girls). The participants ranged in age from 39 months to 68 months with a mean age of 52.7 months. 76.9% of participants were Caucasian and 23.1% were African American.
Inclusionary criteria: Included the Primary Test of Nonverbal Intelligence (Ehrler & McGhee, 2008; PTONI), Oral and Written Language Scales- 2 (Carrow-Woolfolk, 1995; OWLS), and Goldman Fristoe Test of Articulation 3 (Goldman & Fristoe, 2015; GFTA-3). See Table 1 for participant data.

Table 1: Participant Demographics

Standardized Measures	Mean (St Dev)
OWLS Composite	111.9 (6.3)
OWLS LS	113.1 (4.8)
OWLS OE	112.1 (8.0)
PTONI	117.5 (8.7)
GFTA-2	116.2 (3.7)
MLU	4.5 (1.0)
NDW	102.8 (21.3)

Methods

Maternal Education: Maternal education levels were divided into five groups, which are as follows: some high school, no degree; high school degree; and some college, no degree; associate degree or higher. Mothers of 30.8% of participants reported having a high school degree, 23.1% of participants' mothers reported having some college without a degree, 15.4% of participants had a mother who reported having an associate degree, and 30.8% of participants reported having a bachelor's degree.



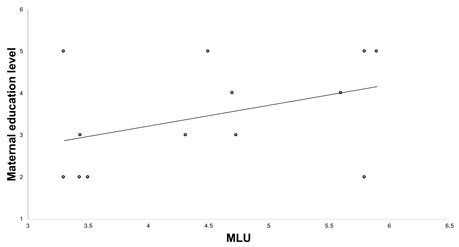
Language sample: A play-based language sample was collected using age-appropriate toys. Each sample was at least 15 minutes in length and contained at least 100 utterances.
Analysis: Sample recordings were transcribed into Microsoft Word and then copied into the SALT software program. The MLU in morphemes and NDW were calculated by the program. Statistical analysis was performed to determine if any differences existed in these areas between children from high/middle SES and low SES.

Results

Question 1: Will preschooler language samples show a correlation between MLU and maternal education?

The correlation between MLU and maternal education by group was r = .442, p=.13, which is not statistically significant. However, this is considered to be a medium positive correlation. The results suggest that as maternal education increased (e.g., mother's with higher levels of education) so did the length of MLU in the participants such that the participants from higher maternal education families had longer MLUs.

Graph 1: Maternal Education Correlation Between MLU



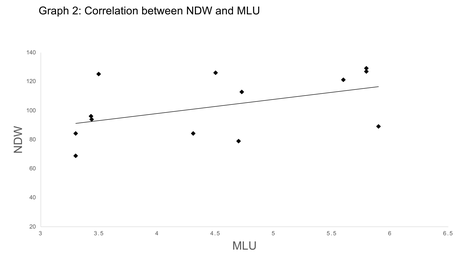
Note: 1= some high school no degree; 2= high school degree; 3= some college no degree; 4= associates; 5= bachelors; 6= professional degree

Results

Question 2: Will there be a correlation between number of different word (NDW) and MLUs?

The mean NDW for the participants was 102.8 with a standard deviation of 21.3. The Pearson correlation between MLU and NDW was r = .474, p= .1, which was not statistically significant. However, this is considered to be a medium positive correlation. The results suggest that there is a relationship between NDW and MLU such that as the participants who had larger NDW had longer MLU. See graph 2.

Graph 2: Correlation between NDW and MLU



Post Hoc Question: Is there a difference between MLU and NDW when children are divided into high maternal education and low maternal education?

The researcher was interested in the impact of varying maternal education on MLU of preschoolers. Therefore, descriptive analysis was conducted to further investigate the relationship between maternal education and MLU by dividing the participants into two groups (i.e., high education and low education). See Table 2. Results indicate that the mean MLU for the higher education group was greater than the lower education group. After conducting a independent t-test, results for the two groups were not statistically significant. This could be contributed, in part, to the small group size.

The correlative results indicate that there is a medium correlation between both MLU and maternal education level and NDW and MLU that did not reach significance. The researcher believes that the correlation would have been stronger if the sample size was larger. However, the medium correlation still reinforces previous research about the relationship between MLU and maternal education, as well as between MLU and NDW.

Table 2: High and Low Ed Groups

Group	Mean (St Dev)
High Ed's MLU	4.9 (1.0)
Low Ed's MLU	4.1 (0.9)
High Ed's NDW	102.2 (26.3)
Low Ed's NDW	103.3 (18.3)

Note: 7 children in Low Ed; 6 children in High Ed

Discussion

Relationship between MLU and NDW

One study conducted by Rice, Redmond, and Hoffman (2006) sought to determine the correlation between MLU and vocabulary as age increased. Their results showed a decreasing correlation between MLU and vocabulary as age increased. The current study's results showed a medium correlation between MLU and NDW (as a measure of vocabulary). This could be contributed to the age range of the participants. The results of the current study are trending to support Rice et al.'s findings of the decreasing relationship between MLU and vocabulary. It could be that a child's actual vocabulary does not affect his or her MLU as much as the language the child is exposed to in his or her family. It could be speculated that individuals from families with higher maternal education experience more complex language on diverse topics compared to children from lower maternal education families. Likewise, children from families with higher maternal education might also have more diverse experiences. For example, going to the beach, flying on a plane, or going to the zoo, are all experiences that could enhance a child's overall ability to engage in conversations about those experiences.

Clinical Implications

- Knowing that children of mothers with a lower education level are at risk for lower language abilities will allow speech language pathologists to develop interventions that are appropriate to each child's needs.
- Speech language pathologists should consider obtaining parental education information when collecting initial background information from new clients.
- This knowledge could aid speech language pathologists as they determine how to educate parents.

Limitations

- The small sample size makes it difficult for the results to be statistically significant.
- Given the age of participants, it is possible that some of them may have fatigued during the assessment process and did not perform to the best of their ability.
- Parents who were present for the assessment process may have created a distraction for their children and this may have impacted the results.

References

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