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Gender Differences in Language Samples of Augmentative and Alternative Communication (AAC) Users

J. Todd and K. Hill
University of Pittsburgh

Abstract

Language samples from 10 adults using an Augmentative and Alternative Communication (AAC) system were analyzed for gender differences. Participants (5 female; 5 male) were matched on device, experience, age, and education. Each participant was asked to describe the “cookie theft” picture from the Boston Diagnostic Aphasia Examination (BDAE; Goodglass & Kaplan, 1983). The language samples were analyzed in terms of lexical richness through calculating the total number of words and the total number of different words used along with performance measures including the frequency of different language representation methods; average communication rate; mean length of utterances (MLU-m). Preliminary results indicate the presence of gender differences in favor of males for lexical richness, and performance. However, both genders used language representation methods with similar frequencies. Clinical implications suggest that intervention strategies may need to be accommodated for gender to ensure that females using AAC receive the same opportunities and optimize communication.

Introduction/Background

Research on speakers using natural speech addresses stereotypic differences in the communication styles of men and women (Mulac, Incontro, & James, 1985). Specific studies have investigated the gender differences in lexical richness and mean length of utterances in conversational speech samples (Singh, 2001). No empirical data based on gender have been reported comparing the language performance of individuals using AAC. Due to the lack of research, this pilot study investigated a possible gender difference in language samples of male and female adults using high technology AAC systems.

Mean Length of Utterance (MLU) is one way that language level is often assessed. Although studies are limited looking at gender differences in the MLUs of language samples, a meta-analysis conducted by Hyde and Linn (1988) found that males’ total talking time exceeds females’ total talking time. Singh (2001) also found that males tended to use longer phrases and

females tended to use shorter sentences. These two studies provide support that males tend to have longer MLUs.

Lexical richness is a measure used to analyze the semantic diversity, as well as the total verbal output, of the vocabulary used by a speaker in a language sample. The lexical richness of a sample can be computed first by calculating the total number of words and the total number of different words used in 50 utterances by the speaker. The total number of words is then divided into the total number of different words used in the sample (Paul, 2001). Studies addressing gender differences in lexical richness are limited (Singh, 2001). However, Singh (2001) found males' conversational samples were lexically richer than females' language samples in conversational speech.

The development of tools to measure AAC performance provides the opportunity to analyze and report the human-interface experience using AAC. Performance can be reported on measures that influence the perceptions of competence using an AAC system such as communication rate and influence the effectiveness of using an AAC system such as frequency of use of how language is represented and generated during spontaneous communication.

Purpose

The research questions in this pilot study are:

1. Do differences exist in the semantic diversity of males and females using AAC?
2. Do differences exist in the mean length of utterance of males and females using AAC?
3. Do differences exist in the performance proficiency of males and females using AAC?

Methods

Participants. Ten (N=10) individuals who rely on AAC were randomly selected from a pool of twenty. The five (5) male and five (5) female participants diagnosed with cerebral palsy were matched as close as possible to age, disability, background, AAC system, access method, and experience using the AAC system. The experience of pairs ranged from 3 weeks to 9 years.

Procedure/Instrumentation. Each participant was asked to describe the "cookie theft" picture from the Boston Diagnostic Aphasia Examination in accordance with the administration directions for the task given in the test manual (BDAE; Goodglass & Kaplan, 1983) using their AAC system. Traditional and datalogging techniques were used to collect the sample data using U-LAM (Universal Language Activity Monitor) software to generate a logfile of device events and a video recorder.

Data Analysis. The data was analyzed using PeRT 1.0 (Performance Report Tool; Hill & Romich, 2003). Descriptive statistics including the total number of words used, the total number of different root words used, the frequency of vocabulary use, the MLU, and the frequency of LRM used were calculated for each language sample.

Results

Interrater reliability. Interrater reliability was established by having two raters calculate their percentage of agreements and disagreements of 30% of the samples for word-by-word agreement and utterance segmentation. The word-by-word agreement was 100% and the utterance segmentation was 93%. The LAM data and the videotape data for 20% of the samples was analyzed for inter-judge reliability using three (3) judges. For inter-judge reliability, 95% agreement was obtained for the word-by-word agreement and 96% agreement was obtained for the utterance segmentation.

Preliminary results: Early data analysis indicates differences exist in performance between genders. Results regarding semantic diversity show that males used more lexemes than females. For all matched pairs males had a higher number of total words (TNW) and difference word roots (TDW) than females with a mean of 155 TNW for males and 136 TNW for females and a mean of 93 TDW for males and 76 TDW for females.

Results regarding length of utterances for males were longer. Males out performed females in all but one matched pair with an averaged mean length of utterance in morphemes (MLU-m) of 12.6. The average MLU-m for females was 11.4. However, one female significantly out performed other females with a 21.7 MLU-m. The range for males was less varied.

Results regarding performance proficiency did not show notable differences. The mean average communication rate for males was 9.7 words per minutes (range 9.14 – 10.19) and for females 9.0 words per minute (range 5.4 – 21). The one female with an average communication rate of 20 words per minute significantly out performed all participants in the study. The frequency of use of language representation methods was identified. Overall, the pairs used similar frequency of language representation method use. Pairs with less experience using their AAC system used more spelling and word prediction. The trend showing a higher frequency of use for semantic compaction increasing with experience was observed. However, with more experienced males tended to use semantic compaction over 90% of the time (range 93% - 96%) and females tended to use semantic compaction 80% of the time. Only one female reached a frequency of 90% use of semantic compaction. The female with the highest frequency of use of semantic compaction also achieved the fastest average communication rate in this study.

Conclusions/Clinical Impressions

Preliminary results indicate possible gender differences in the language samples of males and females using AAC systems. These preliminary results indicate that males out perform and achieve better outcomes related to lexical richness, lexical diversity, and system performance. Although some of these gender patterns may be consistent with those observed in speakers using natural speech, performance differences related to system training and use may be related to clinical intervention. This data suggests that females using AAC may required intervention strategies designed specifically to build communication competence in domains related to strategic and operational skills rather than social skills.

References

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