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Qualitative Differences in Aphasia Interactions with Visual Scenes AAC Displays

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Abstract

This second study from a two-part investigation assessed how three participants with severe aphasia and their conversational partners perceived three different speech generating device (SGD) displays (visual scene, traditional grid, and no display) following conversations about a personally relevant stories. Stories were programmed onto an SGD and symbolized with photographic scenes or line drawing symbols. Following each 10-minute conversation, participants' perceptions of communicative success, independence, naturalness, ease of communicating, usefulness and personal preference for a display type were derived from open-ended interviews and completion of 7-point rating scales. Emergent themes, correspondence with quantitative data, and clinical implications will be discussed.

Introduction

Although there is preliminary evidence suggesting augmentative and alternative communication (AAC) techniques for persons with severe aphasia are effective (Bellaire, Georges, & Thompson, 1991; Purdy, Duffy, & Coelho, 1994; Koul, Corwin, & Hayes, 2005), there has been minimal analysis of their impact on conversations. An important element of an AAC intervention is the way in which conversational messages are represented symbolically. Previously studied methods of representation have included written word choices (Garrett & Beukelman, 1995), individual iconic symbols (Beck & Fritz, 1998), line drawing symbols, photo albums and remnant books (Ho, Weissling, Garrett, Lloyd, 2005). An emerging means of representing complex messages or stories on speech generating devices (SGDs) is Visual Scenes technology (Beukelman, Hux, Weissling, Dietz & McKelvey, 2005). In this portion of a 2-part study (Seale, Garrett, & Figley, in progress), people with aphasia (PWAs) and their peer communication partners (PCPs) rated and discussed their communicative success, independence, naturalness, ease of conversation, and device usefulness when PWAs used an SGD to tell stories and converse in three conditions: no display, visual scene displays, and traditional grid displays.

Methods

Participants. One person with severe aphasia (PWA) and a familiar peer communication partner (PCP) constituted a single dyad, or unit of experimental measurement; 3 experimental dyads participated in this study. Three persons with moderate-to-severe nonfluent aphasia met study criteria: ages 30-85; at least 1 year post-onset of a single, focal left hemisphere CVA; had an aphasia quotient of ≤ 25 on the Western Aphasia Battery (Kertesz, 1982); spoke English as a primary language; $\geq 12^{\text{th}}$ grade education; showed no dramatic fluctuations in alertness due to medical conditions; had functional hearing and vision, and no evidence of dementia or chronic substance abuse. Partners had interacted with someone who had aphasia on a consistent basis for at least one year, were within 15 years of the person with aphasia's age, and had normal intellectual, literacy, and sensory skills.

Design. A single-subject comparative condition design is repeated across the 3 dyads to measure within-subject and across-subject differences in dependent variables when PWAs tell a story within a conversational context across across *four conditions* (no display, visual scene display, traditional grid display and preferred display/no display). The first three conditions are replicated twice per dyad and are counterbalanced within and across all dyads to control for possible order effects.

Independent Variables. Each of the 4 study conditions represents a display option on a Dynavox Series 5 SGD:

Condition A (NO SGD DISPLAY): The PWA converses with the PCP, but the SGD is turned off (*No Display*). To maintain similarity between conditions, however, the SGD is placed on the table in the visual field of the participant with aphasia and the PCP.

Condition B (SGD--Visual Scene Display): The participant with aphasia participates in a specific small talk conversation with the PCP using a customized SGD presenting a *Visual Scene Display*.

Condition C (SGD--Traditional Grid Display): The participant with aphasia participates in a specific small talk conversation with the PCP using a customized SGD presenting a *Traditional Grid Display* (TGD).

Condition D (PREFERRED DISPLAY on an SGD/ NO SGD): each PWA chooses to use his/her preferred SGD display for participating in specific small talk conversation. They also have the choice of re-telling the story without an SGD.

Experimental Tasks. The PWA is encouraged to converse with the PCP about a personally relevant story using natural modalities (speech, gestures, writing), as well as pre-programmed messages on the SGD (Conditions B and C). The PCP is encouraged to interact with the PWA and to ask questions as they would naturally occur in the conversation. Stories are selected via interview prior to the study; personal photos and/or line drawing symbols representing the story elements are then programmed onto the SGD.

Dependent Variables/Data Collection. Four types of perceptual data are obtained: 1) both participants complete a 7-point Likert scale after each conversation and rate communicative *success, independence, naturalness, ease* of communicating, and *usefulness* of the display type; 2) participants list their *personal preference* for a display type (no display, VSD, or TGD) in a

final session; 3) predominant themes are derived from qualitative analyses of open-ended interviews conducted after each experimental session and in a final session; and 4) in a final session, each dyad will watch 2 minute excerpts from each preceding session and complete a forced-choice ranking of the conversations by assigning a number from 1 to 6 (1 = best; 6 = worst).

Analysis. Raw data from rating scales for the dependent variables: *ease of conversing*, *communicative independence*, *naturalness*, and *usefulness* will be compared descriptively within each experimental dyad across the conditions. Mean ratings, standard deviations, and ranges will be computed for the 2 sessions per condition within and across dyads. These data will then be graphed separately for each dependent variable to determine if visible differences exist between conditions. Data from the forced-choice ranking of best to worst by both PCPs and primary participants for each specific small talk session will also be analyzed by finding a mean number rank for each Condition for each group. Analysis of the interview data will follow general qualitative methodology guidelines outlined by Boyatzis (1998). Salient quotes will be grouped into emergent themes. Qualitative data will then be summarized descriptively and compared within and between dyads.

Results. Qualitative data is almost complete for all three dyads. In dyad 1, the person with aphasia rated VSD higher than the other two conditions for the dependent variables of ease and success of communication. He rated VSD slightly higher than or equal to the other two conditions for independence; he selected the VSD as his preferred display but rated No Display (speech/gestures only) highest for naturalness. In contrast, the PCP for Dyad 1 rated TGD higher than VSD or NO Display for ease, success, and independence. She rated VSD equal to TGD and higher than NO Display for naturalness. In dyad #2, the participant with aphasia frequently gestured, used partially intelligible speech, and maintained and elaborated on the topic even without access to an AAC display. He and his partner similarly rated each of the four variables at the high end of rating scale (range = 5.5-7) across the three conditions. However, the participant with aphasia did choose VSD as his preferred communication condition. In addition, for comparative judgments obtained after the study concluded, he ranked VSD highest on 2/2 possible judgments. He also ranked a conversation with VSD as “best” overall conversation. In contrast, his partner ranked NO display (speech/gestures only) highest on 2/2 possible judgments, and VSD highest for 1 of 2 possible judgments. He chose a conversation with NO display as “best” overall conversation, stating that speech was optimal even though VSD might have validity in some communication situations. Final ratings for dyad 3 will be collected within 2 weeks.

This poster will also discuss the presence or absence of performance patterns across subjects and conditions, correlate perceptual with quantitative data from a related study (Seale, Garrett, Figley proposal), and will describe the clinical implications of this research.