

People with moderate/severe/profound aphasia have difficulty using AAC systems to meet their complex communication needs because of three reasons: (1) They have difficulty assigning meaning to pictures, words, or symbols (representing information); (2) they have challenges combining words and symbols into responses (formulating messages); and (3) they can not consistently locate information in their AAC systems (navigation) (Dietz, McKelvey, & Beukelman, Weissling, & Hux, 2006). Information placed in AAC systems for people with moderate/severe/profound aphasia must be easily comprehended, efficiently and effectively support communication interactions/exchanges, and be easily and quickly located.

Interpreting, organizing, and accessing information is a difficult task for people with moderate/severe/profound aphasia due to their disordered language systems. Therefore, symbolization of information in AAC systems is a critical factor and must be commensurate with an individual's residual language abilities. However, in contrast to the severity of their language challenges, people with moderate/severe/profound aphasia have relatively preserved memory, visual spatial, and intellectual abilities (McNeil, 1983). These skills allow people with moderate/severe/profound aphasia to recognize, process, and recall pictures of familiar people and events with ease (Fox, Sohlberg, & Freid-Oken, 2001; Fox, & Fried-Oken, 1996; Garrett & Lasker, 2005).

Because of the combination of impaired language but intact visual processing, memory, and intellect, practitioners may find that representing information through, personally relevant highly contextualized visual photographs is more beneficial than representing information through other types of symbols. A highly contextualized photograph depicts and represents a situation, place, or experience in a manner such that all elements and semantic associations are integrally tied together in a natural environment to represent a holistic context. By contrast, a portrait or non-contextualized symbolic picture contains limited, usually decontextualized, information in the form of an individual picture, a single line drawing, or a symbol that denotes a topic, action, person, activity, or relationship without the provision of contextual information. The person with aphasia is therefore required to generate any additional information concerning the person, object, or action independently.

A contextualized photograph can be either personally relevant or non-personally relevant. A personally relevant highly contextualized photograph contains a clear activity involving highly familiar people, animals, and/or objects in a familiar background that sets the scene for the pictured activity. A non-personally relevant highly contextualized picture contains the same type of information as a personally relevant highly contextualized picture; however, the people and background are not familiar to the person viewing the picture.

When people with aphasia need to generate information spontaneously without contextual support, their communicative intents often are unclear. This may lead to frustration and communication breakdowns, which may result in the premature end of communicative interactions. A major goal of AAC intervention specialists working with people with aphasia is to minimize the frequency of communication breakdowns.

One recent technological development in the quest to support the communication interactions of people with moderate/severe/profound aphasia is the use of Visual Scenes Displays. Visual Scenes Displays are a new type of interface designed to use contextually rich photographs along with other symbols and navigation aids to represent

meaning, promote effective and efficient message formulation and support navigation within low-tech or high-tech AAC systems (Beukelman, Hux, McKelvey, Dietz & Weissling, 2005; Dietz, McKelvey, Beukelman, Weissling & Hux, 2005; McKelvey, Dietz, Hux, Weissling & Beukelman, 2005; McKelvey, Dietz, Hux, Weissling & Beukelman, 2007). Such a display provides people with moderate/severe/profound aphasia with the visual-contextual support they need to facilitate navigation through an AAC system and, thus, increases the likelihood of their successful communication of messages or intents. Information is represented through personally relevant highly contextualized photographs (e.g., picture of a daughter's wedding or a grandchild's soccer game). Such a scene establishes a context for a conversational interaction and provides the person with moderate/severe/ profound aphasia and their communication partner(s) with information to support multiple communication exchanges.

Research questions;

- (1) Given a choice of personally-relevant contextualized pictures, non-contextualized symbols, and non-personally relevant contextualized pictures that represent different socially-relevant events and given the examiner's verbal and written presentation of a socially-relevant event, which picture type do persons with severe chronic aphasia choose with the greatest accuracy?
- (2) When a person with severe chronic aphasia correctly identifies a picture as representative of a socially relevant event, what is the impact of the type of picture on speed of response?

Methods

Preparation of participants to select stimulus pictures. The researcher presented the participant and a member of his/her family (i.e., informant) with a written definition of contextualized pictures and personal relevance to assist with collection of photographs. The researcher instructed each participant to collect 30 personally relevant contextualized photographs from his/her private collection. Finally, the researcher administered the Aphasia Quotient section of the *Western Aphasia Battery* to the participant with aphasia. The *Western Aphasia Battery* (Kertesz, 1982) is a standardized instrument that allows determination of an aphasia severity level.

Preparation of stimulus sets. The researcher selected 16 (15 for experimental task, one for trail) of the 30 pictures provided by each participant. Three target words were assigned to each of the 16 pictures. The first target word reflected a episodic socially relevant concept depicted in the picture, with a socially relevant concept defined as any interaction between a group of people, animals, or objects that is logically connected to a shared interest or goal. For example, "baptism" was potential episodic target word. The second target word was a verb (pouring) and the third, a noun (Minster) which related to the action taking place in the picture. A panel of three judges (i.e., individuals without disabilities) used a 3-point Likert scale (1=not representative; 3=representative) to rate how representative a stimulus picture was of its associated target words. The judges also rated the pictures for similarity in content. Stimulus pictures had to receive a rating of two or higher to be used in the study

Procedures

Data collection. Each participant completed two tasks during the individual data collection sessions, which were video recorded. Later analysis of the video recordings allowed the researcher to measure response times for all experimental trials.

During, the first experimental task the researcher presented the participant with three picture types: (1) a personally relevant contextualized picture from that

participant's stimulus set, (2) a corresponding non-contextualized symbolic picture, and (3) a corresponding non-personally relevant contextualized picture. The researcher stated to the participant that all the three pictures were representative of the given target word. The researcher instructed the participant to choose the picture they preferred to use when talking about the target word. The researcher provided oral instructions and used augmented strategies to ensure the participant understood the task. The stimulus pictures were mounted vertically in a plastic organizer with three slots. The order of stimulus presentation (top, middle, bottom) was random. Next, the researcher said the target word, simultaneously placed the written word in front of the participant and touched each picture in the plastic organizer to indicate the participant was to select the stimulus picture he/she preferred to match the target word. The participant's response was recorded and the task was repeated with all 45 target words and matching picture stimuli.

For the second task, the researcher instructed the participant that during this task only one of the pictures presented would match the target word. The presentation of the stimuli in task 2 used the same format outlined in task 1. The participant performed three trials before performing the experimental task. The researcher placed three pictures (1 personally relevant contextualized picture, 1 non-contextualized symbolic picture, and 1 non-personally relevant contextualized picture) in front of the participant. Only one of the stimulus pictures matched the target word presented to the participant. For example, if the target word was "wedding," the pictures presented in random order might be a personally relevant contextualized picture of the participant's grandchild's birthday party, a non-contextualized symbolic picture of a graduation hat, and a non-personally relevant contextualized picture of an unknown person's wedding ceremony. The participant responded by pointing or touching the stimulus item. The researcher recorded each response as correct or incorrect.

Design

The study used a repeated measure design. A repeated measures design was used to measure 45 experimental trials of 8 participants with 2 independent variables with three levels each and two dependant variables.

Independent variables. The independent variables were the three stimulus pictures: personally relevant contextualized pictures, non-contextualized symbolic pictures, and non-personally relevant contextualized pictures) and the three word categories (noun, verb, episodic).

Dependent variables. The dependent variables were: (a) preference of visual representation of information type (i.e., personally relevant contextualized pictures, non-contextualized symbolic pictures, non-personally relevant contextualized pictures); (b) accuracy of identification of pictures associated with target words across the three picture stimulus types; and (c) speed of response for accurate responses.

Data Analysis

Data is collected for seven out of the eight subjects and is expected to complete in one week. Data analysis will begin within the month, using SPSS and the Friedman test (the non-parametric alternative of a repeated measures ANOVA). Follow-up pairwise comparisons will be conducted as needed.

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