

Evaluation and Analysis of Quality of Life Picture Test Materials for Persons with Dementia

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by

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Abstract

Persons with dementia experience communication difficulties amongst their many symptoms that pose challenges to their daily lives. A great concern surrounding persons with dementia is their quality of life (QoL) (Bourgeois, 2008). Recent research has focused on developing more ways to facilitate accurate expression of their opinions, and subsequently construct methods to improve the quality of life of persons with dementia. This study evaluated materials for a QoL measurement test to be used with persons with dementia. The main purpose of this project was to determine to what extent photographic pictures versus line drawings improved the ability of persons with dementia to respond reliably to questions about their QoL. Ten nursing home residents with moderate to severe dementia were shown a set of visual stimuli comprised of six photographs and six line drawings of emotions and asked to identify and discuss the emotions pictured. The results suggested that subjects were better able to identify emotions in photographs than in line drawings, but there was no significant difference between photographs and line drawings in the number of words used to describe emotions or the number of relevant responses subjects gave when they were told what the target emotion is. Subjects used more words to describe incorrectly identified emotions than correctly identified emotions, suggesting that when they could retrieve the emotion label they were able to describe the emotion easily. In contrast, when they could not retrieve the emotion label, they used more words to try to retrieve information from memory.

Introduction

The disorder, dementia, can be characterized by the development of multiple cognitive deficits (First, 2000), including difficulties with memory, problem solving, and communication. The communication difficulties of persons with dementia create challenges to their daily lives. These individuals struggle to remember words, ideas, and events; this interferes with their ability to communicate their thoughts and opinions to their friends, family, or clinicians. A related concern about persons with dementia is how these memory and communication problems impact their quality of life (QoL) (Bourgeois, 2008). If persons cannot reliably express their opinions and desires, it is likely that they will not obtain what they want; this could be viewed as a poor quality of life. Similarly, if they are not consistent from day to day in the expression of their opinions, they might confuse their caregivers about what it is that they want. It is important for clinicians to know how to help persons with dementia to express their opinions reliably and consistently, and in doing so improve their quality of life.

Most research on quality of life in dementia involves asking persons to rate various quality of life indicators using a rating scale. For example, the *Dementia Quality of Life Scale* (Brod, 1988), asks persons to rate “how much they enjoy [listening to music]” on a scale from 5 (A lot) to 1 (Not at all). Depending on their degree of dementia severity, many persons with dementia have difficulty responding using a rating scale. They may not understand the instructions, or they may not remember the rating values, requiring the clinician to repeat the choices frequently. These problems result in questions about the reliability and validity of using rating scales to assess quality of life in persons with dementia. Many researchers have simply decided to not ask persons with dementia these types of questions; instead they ask someone to speak for them, most often a family member.

There are problems with having family members speak for the person with dementia. Bourgeois, Dijkstra, and Hickey (2005) found that nursing home caregivers responded differently from the residents with dementia when asked about their level of depression. They viewed the residents as being more depressed than the residents themselves reported.

Researchers have been developing ways to facilitate the accurate expression of opinions, thoughts, and desires of persons with dementia. Some researchers have designed quality of life measures that ask only “yes or no” questions (ref). Bourgeois et al. (2005) used conversations with a memory book to help nursing assistants to better understand the feelings and opinions of persons with dementia. Memory books contain pictures and sentences about important aspects of the person’s life (Bourgeois, 2007). These visual stimuli have the potential to improve the person’s understanding of the questions about their quality of life (QoL) and also their responses. However, little research has been conducted to determine what form of visual stimuli, specifically picture stimuli, is optimal: line drawings or photographs. Also, little research seems to exist on the topic of the relative effectiveness of photographs versus line drawings for eliciting conversation. Prior studies indicate that recognition memory for common pictures is relatively high, even with rapid presentation rates and low processing levels (Bower & Karlin, 1974). In this study, 12 university students were asked to rate black and white photographs on how likeable they perceived them to be. Bower and Karlin found that these students were more likely to remember photographs they perceived to be likeable.

Research on the relative effects on memory of pictures and words has provided evidence for the picture superiority effect; that is, people are more likely to remember pictures than words (Paivio, et. al 1968). Sansgiry and Cady (1997) studied 103 older adults health literacy by showing them several medication labels that were designed as picture only, text only, picture with

congruent text, and picture with non-congruent text. The pictures used in this study were line drawings. The results of this study found that older adults had higher levels of perceived confusion and struggled to process information from a picture only label. These few studies were conducted with college students and older adults, however, and it is not clear how persons with dementia would respond to similar stimuli.

This study will evaluate visual stimuli for potential use in a QoL measure for persons with dementia. The overall purpose of this study is to determine the extent to which photographic pictures versus line drawings will improve the ability of persons with dementia to respond reliably to questions about their QoL. The research questions are:

1. Will subjects with dementia be more successful correctly identifying the emotions in photographs or line drawings?

- 2.

Will the type of picture impact the subjects' ability to give a reliable response to a question about the emotion shown in the image (e.g. "what makes you feel [insert target emotion])?

3. Will the type of picture impact the average number of words a subject uses to describe the depicted emotion?

It is hypothesized that the persons with dementia will respond to both types of pictures with good reliability. Familiarity of the picture may be an important variable in stimulating memory; therefore, it is predicted that the photographs will elicit more accurate and consistent responses than will line drawings. This is hypothesized because photographs show actual objects, people, and actions, which could be easier for the person to recognize. The images expressed in line drawings reflect the style of the artist, can be more abstract, and could result in various interpretations. It is

expected that line drawings will increase the opportunity for confusion about what the image is portraying.

The importance of this study is that the results can have a great impact on the choice of therapy materials for a clinician to use with dementia patients. It will also have the potential to provide family and nursing staff with better methods for determining QoL in persons with moderate to severe dementia (Bourgeois, 2008). This project will provide necessary information about the best types of visual stimuli to use in the development of a Dementia Quality of Life measure in Dr. Bourgeois' funded research study about improving the quality of life of individuals with dementia. Knowledge about which picture type, line drawings or photographs, is more effective is essential to obtaining the most accurate information when interviewing the subjects (Bourgeois, 2008).

Methods

Subjects. The sample group for this study included ten subjects (persons diagnosed with moderate to severe dementia) recruited by Dr. Bourgeois from Columbus area nursing homes for participation in a larger research study of quality of life in nursing home residents (Bourgeois, 2009). Consent to participate in this research study was obtained from family members or guardians of each person with dementia. Prior to selection a qualified speech language pathologist administered a 10-minute battery of functional vision, hearing, and communication screening measures to insure that the subjects had functional abilities sufficient for participating in the subsequent interview procedures. The *Mini-Mental State Examination* (Folstein, Folstein, McHugh, 1975) was administered to determine the level of cognitive functioning. Upon enrollment, the residents were administered the *Dementia Quality of Life Instrument* (Brod, 1988)

which was audiotaped for scoring and analysis for the larger study. Table 1 lists the Subject characteristics.

As shown in Table 1, the subjects ranged in age from 50 years old to 94 years old, with the mean age being 80.45 years (sd= 12.69). The subjects ranged in *Mini-Mental State* score from 8 (severe dementia) to 26 (mild dementia), with the mean score being 16.8 (sd= 5.33). Eight of the subjects were Caucasian, with one subject being African-American, and one subject being Hispanic. Nine subjects were female and one subject was male. All subjects had adequate levels of vision and hearing, and all had normal communicative abilities.

Table 1. Subject Characteristics

Subject ID	Age	Gender	Race	MMSE	Vision	Hearing	Comm. Abilities
1	80 y 11 m	Female	White- NH	8	1	0	6
2	94 y 3 m	Female	African-American	13	1	0	6
3	94 y 2 m	Female	White -NH	20	1	3	6
4	76 y 6 m	Male	White- NH	19	1	0	6
5	87 y 3 m	Female	White- NH	15	1	2	6
6	78 y 2 m	Female	White-NH	26	0	0	6
7	86 y 1 m	Female	White- NH	23	1	2	6
8	50 y 3 m	Female	White- NH	14	0	0	6
9	74 y 11 m	Female	White- NH	17	1	0	6
10	81 y 0 m	Female	Hispanic	13	1	0	6

Vision: 0 – Adequate, 1- Impaired, 2- Moderately impaired, 3- Highly impaired, 4- Severely impaired
 Hearing: 0 – Hears adequately, 2- Minimal difficulty, 3- Hears in special situations only
 Communication: 1 – No verbal or vocal response to interviewer, 2 – Unintelligible verbal responses, 3- Single word responses, 4- Phrases, multiword only, 5 – Single sentences only, 6 – Elaborated conversation
 MMSE: Less than 10 – Severe dementia, 10-19 – Moderate dementia, 20-26 – Mild dementia, 27 and above - Normal

Materials. The materials included a selection of 12 images representing emotions. For example, emotions such as happy, sad, and angry were represented by a single picture of a face expressing that emotion. One set of pictures (6 images) consisted of photographs, and the other set (6 images) consisted of line drawings. Each set of visual stimuli portrayed the emotions: sad, angry, frustrated, happy, anxious, and embarrassed. The photographs were all of the same individual and were taken specifically for this study by the author. The line drawings were obtained from Creative Therapies Inc. (2009). They were all produced by the same artist, drawn in the same style, and were all black and white. Each photograph was printed as a 2.5 x 2.5 inch image and pasted onto a 4 x 6 inch card, and each line drawing was photocopied and pasted onto a 4 x 6 inch card. Appendix A contains examples of the stimuli.

Setting and Equipment. This study was conducted in a quiet room at each nursing home. The examiner sat facing the participant at a table with two chairs. The sessions were recorded with an Olympus Digital Voice Recorder DS-40, for later transcription, coding, and analysis. The audio recording equipment was situated next to the testing materials in between the examiner and subject.

Procedures. The experiment was conducted in a single session. Each participating subject was shown photographic images and line drawings in random order, but two images of the same emotion were kept non-consecutive. As each stimulus card was presented, the examiner said,

“What feeling or emotion do you see in this picture?” and waited 5 to 10 seconds for the participant to respond. If the participant responded verbally, the examiner behaved in a positive, encouraging fashion, nodding and smiling, and using encouraging phrases, such as ‘that’s

interesting,” “yes, I see what you mean,” etc. If the subject responded correctly the examiner moved on to the next question, but if the subject responded incorrectly the examiner told them the correct response before moving on to the next question. If the participant did not respond in 5 seconds, the examiner prompted, “What feeling do you see in this picture?” while pointing to the picture. If still no response was elicited, the examiner told the subject the target emotion, and moved on to the second question.

The second question asked by the examiner was, “What makes you feel [insert target emotion].” If the participant responded verbally, the examiner again, reacted in a positive, encouraging manner, and proceeded to the next image. If the subject did not respond the examiner prompted them by either repeating the question, or asking, “does anything make you feel [insert target emotion]?” If the subject still did not give a response the examiner moved on to the next image.

Each session was recorded for later transcription, scoring, and analysis.

Data Reduction and Coding. After each session, the recordings were reviewed and transcribed orthographically, and scored using a study data sheet. Each utterance from the participant was labeled with the image code of the picture being discussed. The transcripts were coded for the 3 dependent variables: identification of stimuli, relevance of response to the question “What makes you feel [target emotion]?”, and number of words used to identify or describe the emotion depicted in the image. These codes and descriptions can be found in Appendix B.

Reliability. A second research assistant was trained to score the participants’ responses using the data sheet. Twenty percent of the data was coded for reliability. Scoring reliability was calculated by comparing the examiner and research assistant’s data sheets and determining the agreement/disagreement for each picture stimulus card, and then tabulating the overall percent agreement for the session. Inter-rater reliability was 87.5%, ranging from 83% to 92%.

Design. This is a 2-group comparison design study, with two types of visual stimuli (photographs vs. line drawings). Overall group means for each type of stimulus were compared to answer the question about which type of visual stimulus is most effective for eliciting information (personal opinions) from the participants.

Analysis. All coded transcripts were summarized by dependent variable and entered into an Excel spreadsheet. Descriptive statistics, such as mean and standard deviation, were calculated for each variable. After calculating descriptive statistics, the group means were analyzed statistically for significance using a paired sample two-tailed t-test, with SPSS Statistics 17.0.

Results

As shown in Figure 1, the mean number of photographs correctly identified was 2.1 (sd = 1.45) out of 6 photographs, and the mean number of line drawings correctly identified was 1.4 (sd =