Including Individuals with Memory Impairment in the Research Process: The Importance of Scales and Response Categories Used…

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ABSTRACT: several ethical considerations emerge when conducting research with memory-impaired individuals, including the individuals’ ability to comprehend and accurately respond to survey questions. However, little empirical research exists on how to format surveys to decrease cognitive demands, thereby allowing researchers to more accurately survey this population. The current study presents data from structured interviews with 125 community-residing, memory-impaired older adults about their illness experience. The interview contained 14 scales varying in subjectivity, directionality, and response choice content. While objectivity did not affect participants’ ability to use the full range of responses, participants with greater cognitive impairment tended to use simpler, dichotomous response categories, especially when questions had bidirectional response choices. Results suggest that memory-impaired individuals can participate in survey research, that such surveys should contain unidirectional frequency/amount items when possible, and that not all memory-impaired individuals will have difficulty completing surveys.

KEY WORDS: memory impairment, interviews, surveys, response options, dementia, illness experience

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Conducting research on individuals with memory impairment and dementia involves careful consideration of ethical issues unique to this population. Because the ability to gather, understand, and integrate information becomes progressively impaired through the course of the illness, researchers and clinicians question the ability of memory-impaired individuals to fully comprehend questions and answer appropriately. However, as recent research has shown, individuals in the early stages of dementia can maintain decision-making abilities as well as the ability to provide appropriate answers on a variety of topics (Brechling & Schneider, 1993; Whiltatch, Feinberg, & Tucke, 2005). A particularly important decision in the research process is the ability to provide informed consent to participate. Unfortunately, governmental rules for informed consent in the United States have yet to address ethical issues surrounding research on populations with impaired decision-making ability (Department of Health and Human Services, 2009). For these reasons, institutional review boards and researchers are left to weigh the risks and benefits of memory-impaired individuals consenting to and participating in research (Weiner, 2005).

Often due to difficult ethical decisions involved in conducting research with memory-impaired individuals, researchers resort to obtaining proxy information from the caregiver of the individual with memory impairment. Researchers should consider several potentially unethical consequences when deciding to disregard the perspective and illness experience of the individual with memory impairment. For example, as our understanding of dementia becomes increasingly biomedical, neurological, and pharmacological, there is a tendency of researchers to objectify dementia patients by overlooking the legitimate contributions these individuals could provide to the research process (Cotrell & Schulz, 1993; Downs, 1997). In addition, until recently, research on dementia paid little attention to the illness’s impact on the individual with memory impairment, instead focusing on the negative effects of the illness on caregivers (Deimling & Bass, 1986; Pearlin et al., 1990; Schulz, Visintainer, & Williamson, 1990). These consequences only encourage depersonalization of the individual with memory impairment, when so many researchers have worked hard to challenge those previously accepted negative viewpoints of dementia and encourage the fostering of personhood in memory-impaired individuals (e.g., Kitwood, 1990, 1993a, 1993b).
Gerontological researchers have now identified that older adults with memory impairment can participate in surveys and provide consistent and accurate responses to survey questions (Clark, Tucke, & Whitlatch, 2008; Whitlatch et al., 2005). However, little is known about how to format surveys to facilitate participation by individuals with memory impairment. Collecting such information is necessary to understand the illness experience of memory-impaired elderly while also highlighting potential areas of the illness amenable to interventions.

Answering survey questions requires the coordination of several different cognitive processes (e.g., attention, perception, short-term memory, long-term memory, working memory) and can require large amounts of cognitive resources (Schwarz & Knäuper, 2000). Initially, the individual must comprehend the question being asked. This involves both recognizing the literal meaning of the words as well as interpreting the intended meaning of the interviewer. For example, the Memory Difficulty measure in the current study included the question, “Recently, how difficult was recognizing people that you know?” In order for the participants to fully understand the question, they had to use semantic memory and language perception to comprehend the meaning of the words and syntax of the question. In addition, cognitive resources are required to discern further meaning from the question. For example, do the words “recognizing people” refer to remembering names of people or faces alone? Does the question refer to recognizing people I know personally or famous people? The cognitive load of comprehending the question may be lessened if the interviewer is available and willing to clarify intended meaning as needed (as compared to answering a self-report measure). Next, once the question is understood, a judgment or estimation must be formulated by drawing on knowledge in memory. For example, in the above question participants used cognitive resources to formulate a response using their own long-term memories of the difficulty they recently have had recognizing people. Finally, after forming a response to the question, an individual may need to edit this response based on available response choices. For the recognition question, the response choices were “not difficult,” “a little difficult,” “a fair amount difficult,” and “very difficult.” If, for example, a participant recalled not recognizing a friend’s voice on the phone until 5 minutes into the conversation, the participant would have to use working memory and short-term memory to translate this recollection into the best response option. Is taking 5 minutes to recognize a friend’s voice considered a little, a fair amount, or very difficult? Although most people answer survey questions relatively quickly and accurately, the task is actually cognitively complex. The following details how this complexity creates barriers to the performance of older adults with memory impairment and dementia on research surveys.

Memory-impaired older adults face various barriers to participating in survey research. For example, as discussed above, memory impairment can impact one’s comprehension of the literal meaning of a question due to the decreased accessibility of contextual information in memory. Because semantic memory for ideas, meanings, and concepts remains relatively intact until late stages of memory loss and dementia, most older persons can discern the literal meaning of questions until memory loss becomes advanced (Schwarz & Knäuper, 2000; Tulving & Craik, 2000). However, when the survey requires participants to draw on contextual information, like the content of preceding questions and other formal features of questionnaires, memory impairment will most likely impose a barrier. Lack of previous survey information in memory also may hinder the participant’s ability to answer other survey questions appropriately. By not tapping the parts of memory that are still intact in older adults with dementia (i.e., semantic long-term memory, emotion-based memory), surveys may fail to obtain accurate responses. This barrier is evident in research that has shown that older adults without a diagnosis of memory impairment are more likely than younger adults to provide the last response option heard to a survey question that is asked over the telephone. When participants completed self-administered survey items on paper as opposed to telephone or face-to-face interviews, older persons with memory loss performed more like younger persons; this difference was a consequence of the decreased load on short-term memory when responding to written questions (Schwarz et al., 1991).

Memory-impaired older adult participants also may encounter difficulty using the formal features of survey questions and relating the questions to the response alternatives. Among others, formal features of surveys include the common practice of assigning numbers to responses in rating scales (e.g., 0 = hardly ever or never; 1 = sometimes; 2 = often). Research has shown that younger adults are more likely to change their responses on rating scales depending on the numeric values associated with the ratings (e.g., the number of numeric values provided as response options). Older adults, however, provide the same ratings regardless of the numeric values assigned to response alternatives (Schwarz & Hippler, 1995). Given this trend in older adults, memory loss and dementia may increase the number of incorrect answers given by older adults. In addition, research has shown that older adults, when compared to younger adults, are...
more likely to choose the “I don’t know” response when it is available as a response option (e.g., Colsher & Wallace, 1989; Gergen & Back, 1966).

Memory impairment also can impact the way older adults format and edit their responses to survey questions (Schwarz & Knäuper, 2000). After the participant has interpreted the survey question, he or she must generate an appropriate response from existing knowledge in memory. Older adults with memory impairments can find this portion of the task challenging as the amount of information available in memory may be substantially reduced, leading to misrepresentations in behavior estimation. Older adults tend to report more frequent behaviors more accurately since they are more easily accessible. The type of response alternative becomes more important when the participant is reporting on less frequent behaviors (Menon, Raghubir, & Schwarz, 1995).

After forming a response, the memory-impaired older participant may reflect and decide to edit a response prior to sharing it with the surveyor. This may be done for social desirability or to improve self-presentation. Older adults have reported significantly higher rates on social desirability scales such as the Social Desirability Scale-17 (SDS-17) and the Marlowe-Crowne Scale (Stöber, 2001). Anchor points of response alternatives play a crucial role in this stage as well. The participant may edit a response based on the anchor points of the response alternative to represent a more “normal” or average appearance. For example, if the survey respondent is answering a question regarding how much television is watched and formulates a response of 6 hours per day, this answer may be edited if the extreme anchor points of the response options are “no watching” and “over 5 hours per day.” The respondent may not want to appear lazy or abnormal so may report only watching 2 hours per day to seem more socially acceptable. With respect to responses regarding attitudes, short-term memory deficits can play a role as well. Judgments used to answer attitude-related questions rely highly on the information most accessible in memory at the time (Schwarz & Knäuper, 2000). Question order effects affect older participants with memory deficits less than others, as preceding questions/answers are less likely to influence the current question because of their decreased accessibility in short-term memory (Knäuper, 1999).

Increased inclusion of memory-impaired elderly participants in survey research has resulted in the development of strategies to increase the validity of their responses. Those strategies include simplifying questions and response categories to accommodate those with cognitive limitations. Researchers have constructed several questionnaires specifically for use with individuals with memory impairment, for example, the Cornell Scale for Depression in Dementia (Alexopoulos et al., 1988). Other questionnaires have been used in memory-impaired populations without changes to the original format of the questions and response options (Benjamin & Rose Institute, 1992; Cleveland Alzheimer’s Managed Care Demonstration, 1998; Judge, Menne, & Whitlatch, 2010). Despite the potential benefits of increasing the validity of their responses, a gap in the literature exists in understanding which strategies are effective and which characteristics of memory-impaired elderly relate to the ability to respond accurately to survey questions.

Although a large amount of research has compared older and younger adults to demonstrate the effects of normal cognitive aging (e.g., Salthouse, 1996), little research has addressed ways to format surveys for memory-impaired older adults that will facilitate participation in survey research in this population. The current study examined three characteristics of survey questions in an effort to discern the characteristics of survey scales that decrease cognitive demands on memory-impaired older participants: question type (subjective or objective); response choice (unidirectional or bidirectional); and response category (full-range or dichotomous).

Methods

Participants

Participants were 125 memory-impaired older adults who were part of a larger randomized controlled trial funded by the National Institute on Aging and the Alzheimer’s Association. See Judge, Yarry, and Orsulic-Jeras (2010) for a complete description of the recruitment methods for this project. Participants were included in the study if they had memory impairment, lived in the community, had a family caregiver, and met a cutoff score of 12 or above on the Mini-Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975). Participant demographics are shown in Table 1. A large majority (95.4%) of participants had received a diagnosis for their memory problems. Sixty-three percent were diagnosed with Alzheimer’s disease, 32.3% with dementia, 7.2% with mild cognitive impairment, and 6.2% with vascular dementia. (Total exceeds 100% due to multiple diagnoses in some participants.)

Procedure

Data reported come from the first of two in-person interviews conducted approximately 15 weeks apart. For each participant, written informed consent for
study participation was obtained prior to the T1 interview and verbal consent was obtained prior to the T2 interview. For participants with legal guardians, written informed consent was obtained by their guardian and the participants were asked to give their verbal assent before each interview. Experienced interviewers trained in techniques aimed at enhancing the ability of older persons with memory loss to provide responses conducted the interviews. Interviewers handed response cards containing the response choices in large font sizes on high-contrast backgrounds to participants at appropriate points during the interview to assist them with their selection of answers to questions. Each time a new response scale was presented to participants, interviewers asked the questions with the expectation that participants would use the full range of responses listed on the response cards. Only after multiple attempts to prompt participants to use the full range of responses did interviewers proceed with recording dichotomized responses. First the interviewers asked a question, for example, “Recently, how difficult was writing checks, paying bills, or balancing a checkbook?” or “Recently, how difficult was preparing a meal?” Next the interviewers prompted participants with a card containing the full range of responses, for example, “not difficult, a little difficult, a fair amount difficult, or very difficult.” If, after several prompts, participants were unable to provide a response, interviewers presented the simplified, dichotomous response choices (“no/yes”) on another card. Additionally, if needed, questions were restated to reflect the dichotomous choices, i.e., “Recently, have you had difficulty in writing checks, paying bills, or balancing a checkbook?”

**Measures**

Participants completed two measures of cognitive ability. The Mini-Mental Status Examination (MMSE) (Folstein, Folstein, & McHugh, 1975) was used to assess overall cognitive status. The MMSE ranges in score from 0–30, with lower scores indicating greater cognitive impairment. The National Adult Reading Test (NART) (Nelson, 1982) was used to assess vocabulary ability and as an index of premorbid intelligence, as it is less sensitive to cognitive impairment than the MMSE (Lezak, 1995). Specifically, the NART was used to assess whether individuals would be able to participate in the in-person interviews and in the intervention component of the larger randomized controlled study. The NART (short version) consists of 25 phonologically irregular words that participants read aloud (e.g., ache, debt, psalm). Participants who scored two or more standard deviations below the mean were not included in the study. Participants were administered an in-person interview about their illness experience across 14 different areas: depression (Radloff, 1977); anxiety (Zung, 1971); activities (Benjamin Rose Institute, 1992; Cleveland Alzheimer’s Managed Care Demonstration, 1998); self-efficacy behavior (Pearlin et al., 1990; modified); health strain (Bass, Noelker, & Rechlin, 1996); relationship strain and role captivity (Bass, Tausig, & Noelker, 1989; Zarit, Reever, & Bach-Peterson, 1980); self-esteem (Rosenberg, 1965); embarrassment about memory problems (Bass, Tausig, & Noelker, 1989; Clark et al., 2004); self-care efficacy (Pearlin et al., 1990; modified); self-efficacy learning (Pearlin et al., 1990; modified); difficulties in completing personal and instrumental activities of daily living (Benjamin Rose Institute, 1992; Cleveland Alzheimer’s Managed Care Demonstration, 1998; Katz et al., 1963; Lawton & Brody, 1969); difficulties with memory (Benjamin Rose Institute, 1992; Cleveland Alzheimer’s Managed Care Demonstration, 1998); decision-making involvement (Conroy & Yuskaukas, 1996); and quality of life (Logsdon et al., 2002).

**Coding**

**OBJECTIVE VERSUS SUBJECTIVE**

Guided by the Stress Process Model for Individuals With Dementia (SPM for IWDs; Judge et al., 2010), we categorized scales as either objective or subjective. According to this model, memory impairment and dementia involve primary stressors that can be either objective or subjective.
characteristics of the illness experience. Objective stressors include cognitive status, functional status, and behavior problems, whereas subjective stressors include an individual’s role captivity, perceived distress, or perceived dependency. In this respect, objective stressors are a more direct consequence of memory impairment and subjective stressors are more indirect. The scales in the current study varied in the extent to which they represented objective and subjective aspects of the illness. The coding of each scale is listed as Objective (O) or Subjective (S) in Table 2. We hypothesized that for memory-impaired individuals, answering objective information may require more cognitive resources (i.e., short-term memory, working memory) compared to subjective information that reflects one’s perception and emotional reactions to objective stressors.

UNIDIRECTIONAL VERSUS BIDIRECTIONAL
We grouped questions included in each scale into two types of responses: unidirectional and bidirectional. Unidirectional response categories required participants to think of their answers along a one-dimensional continuum that conceptually varied from “none” to “a lot.” Specific types of unidirectional response categories included responses that assessed frequency and/or amount (e.g., “not at all, just a little, a fair amount, or a great deal”). Bidirectional response categories required participants to choose between two distinct concepts or choices that assessed endorsement level, using a bipolar continuum (i.e., “strongly disagree, disagree, agree, or strongly agree”).

FULL-RANGE VERSUS DICHTOMOUS
In order to document the ability of participants to use either the full-range or dichotomous response categories, interviewers noted which response categories participants used at the conclusion of each scale included in the interview by completing an interviewer note that read, “If the participant was unable to use all four response categories and used only YES and NO, please check here.” The utilization of full-range versus dichotomous response categories was documented for each of the 14 scales listed in Table 2.

Results

OBJECTIVE VERSUS SUBJECTIVE
We used correlation coefficients to examine whether the type of question (objective versus subjective) impacted participants’ ability to use the full-range versus the dichotomous response categories. Contrary to our hypothesis, non-significant results emerged for each measure, indicating that the ability of participants to use the full range of responses was unrelated to whether the scale item assessed objective or subjective information.

| TABLE 2. Coding of Scales and Percentage of Participants Who Used Dichotomous Response Categories (n=125). |
|-----------------|---------------------------|
| Unidirectional Response Categories (Frequency/amount) | % |
| Depression (S)  | 30.6 |
| Anxiety (S)     | 35.5 |
| Activities (S)  | 24.2 |
| Self-efficacy behavior (S) | 33.9 |
| Self-care efficacy (S) | 30.9 |
| Self-efficacy learning (S) | 32.5 |
| ADL and IADL difficulties (O) | 24.4 |
| Memory difficulties (O) | 27.6 |
| Decision-making involvement (S) | 34.1 |
| Quality of life (S) | 11.4 |

Bidirectional Response Categories (Endorsement level) %

Health strain (S) 48.4
Relationship strain and role captivity (S) 50.8
Self-esteem (S) 50.0
Embarrassment about memory problems (S) 50.0

S = Subjective, O = Objective, ADL = Activities of Daily Living, IADL = Instrumental Activities of Daily Living

UNIDIRECTIONAL VERSUS BIDIRECTIONAL
Overall, when answering frequency/amount questions with unidirectional response categories, between 11.4 and 35.5% of participants resorted to using dichotomous responses. On the other hand, when answering agreement questions with bidirectional response categories, almost half (between 48.4 and 50.8%) of participants used the dichotomous responses. Table 2 displays the percentage of participants who used the dichotomous response categories for each of the 14 scales.
FULL-RANGE VERSUS DICHTOMOUS
We created variables indicating whether participants used the full-range (0) or dichotomous (1) responses for each scale and summed them to create a score from 0 to 14. Higher scores indicated more frequent use of dichotomous response choices. The mean number of scales for which dichotomous responses were used was 4.79 (SD = 5.14). A total of 50 participants (40%) scored 0, indicating that they were able to use the full range of responses for every item in every scale. Five participants scored 14, indicating that they used the dichotomous responses for every item in every scale (see Figure 1). Thus, almost half of the participants used either the dichotomous response categories or the full-range for all items of all the scales included in the interview, but the majority of participants (56%) used a combination of the full-range and dichotomous response options throughout the entire interview.

Relationship between Participant MMSE Score and Use of Dichotomous Responses
Participants’ scores on the MMSE ranged from 12 to 30, with a mean score of 23.23 (see Table 1). We conducted bivariate correlations to analyze the relationship between MMSE score (i.e., level of cognitive functioning) and the use of dichotomous response options on each scale. Results indicated that, for each of the 14 scales, the use of dichotomous response options was significantly and negatively correlated with MMSE score (correlation coefficients ranged from $r = -0.30$ to $-0.54$; $p \leq 0.01$). These results illustrate that the use of dichotomous responses increased as MMSE score declined, demonstrating that cognitive impairment is an important factor in participants’ abilities to use a full range of responses versus dichotomous response categories, regardless of the response structure.

Regression Analyses
A series of regression analyses were performed to examine the relationship between key participant and survey characteristics. First, we conducted three logistic regression analyses to examine the relationship between the characteristics identified in Table 1 (demographics and mental status) and a dichotomous variable representing whether or not a participant used any dichotomous response categories for (1) all 14 scales throughout the entire interview, (2) scales with unidirectional response categories assessing frequency/amount only, and (3) scales with bidirectional response categories assessing endorsement level only. We entered all independent variables into the model in one step for all three equations; the regression coefficients and odds ratios are displayed in Table 3. These results showed that lower MMSE scores (lower levels of functioning) predicted more use of dichotomous response categories for all scales combined, and separately for unidirectional and bidirectional. Lower NART scores (lower levels of functioning) also emerged as a significant predictor of use of dichotomous response categories, but only for scales with unidirectional response categories.

Second, we entered the same independent variables into three new multiple regression analyses with the number of dichotomous response categories entered as a continuous dependent variable, again separately for all scales, unidirectional scales only, and bidirectional scales only with all independent variables entered in one block. The regression coefficients for these equations are listed in Table 4. Results of these analyses showed that lower MMSE scores again emerged as significant predictors of use of dichotomous response categories regardless of whether scales were unidirectional or bidirectional. Results also indicated that lower NART scores predicted use of dichotomous response categories on more scales; this relationship was only significant for scales with unidirectional response categories, and when scales were all grouped together, not for scales with bidirectional response categories.

Third, we conducted the same three multiple regression analyses described above, this time excluding participants who never used dichotomous response categories. This was done in an effort to examine only the memory-impaired participants who encountered difficulty using the full-range response choices. The regression coefficients for these equations are listed in
Table 5. The results of these analyses showed that among participants who used dichotomous responses for at least one scale, both lower MMSE scores and lower NART scores were predictive of use of dichotomous responses for a greater number of scales overall and for more unidirectional scales. None of the measured participant characteristics were related to the use of dichotomous response categories for bidirectional scales.

Discussion

Due to the increased interest in including memory-impaired elderly participants in research surveys, various strategies have been used in interview protocols in an effort to decrease the cognitive demands involved in answering survey questions. Examples of such strategies include the use of response cards, simplified questions, and short breaks to decrease the likelihood of fatigue. However, researchers have yet to extensively investigate whether certain features of survey questions and response options present more difficulty than other features for memory-impaired individuals. Moreover, it is unclear how response patterns in this population relate to other features of memory impairment, such as individuals’ cognitive ability. The current study addressed these gaps in the literature by examining survey data from memory-impaired participants across 14 scales. Collecting this type of information is vital to understanding the illness experience of memory-impaired individuals and for developing effective intervention programs.

In the current study, an examination of the frequency of the use of dichotomous responses across the 14 scales revealed no pattern based on the scales’ order within the entire survey instrument. This provides further support for research by Knäuper (1999) that found decreased question order effects in individuals with memory impairment. Furthermore, examination of each scale’s specific position (e.g., first, second, last) revealed no systematic effect on participants’ ability to use the full range of responses. Examining the percentage of types of response categories used indicated that participants used both the dichotomous and full-range responses throughout the entire interview. That is, participants’ use of the dichotomous responses did not increase toward any particular
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section of the interview (e.g., toward the end); thus, fatigue did not appear to influence use of dichotomous responses throughout the duration of the interview.

Results from the current study also suggest that memory-impaired individuals are able to answer a variety of types of questions, regardless of whether the questions assess objective or subjective aspects of their illness. Participants in the current study provided responses that are essential to understanding memory impairment, including depression, self-efficacy learning, quality of life, and health strain. This provides support for the notion that individuals with mild to moderate memory impairment can be included in research through the use of surveys.

Data from the current study also suggest that the types of response categories (unidirectional or bidirectional) make a difference in whether participants were able to use the full-range or dichotomous responses. Specifically, scales with bidirectional response categories were more difficult for participants to complete using the full range of responses than were scales with unidirectional response categories. Response categories that required participants to conceptualize choices based on two distinct categories (e.g., “agree” versus “disagree”) may have been more cognitively demanding than response categories that required participants to conceptualize choices on a single continuous category (e.g., ranging from “none” to “a lot”). These results suggest that, whenever possible, surveys intended to evaluate individuals with mild to moderate symptoms of memory impairment should contain unidirectional response options, thereby decreasing the cognitive load associated with responding. This consideration could be implemented both when constructing a new survey instrument and when selecting or modifying a survey that has already been constructed. Doing so may increase the likelihood of including more memory-impaired elderly participants in research studies.

Finally, the current results suggest a negative relationship between the level of cognitive impairment (as measured by MMSE score) and the ability to use the full range of response categories as opposed to the simplified, dichotomous response options. As cognitive impairment increased, ability to answer questions with the full range of response options decreased. Thus, interviewers should not assume that an individual with memory impairment will have difficulty answering survey questions. Rather, understanding the impact of key cognitive processes (e.g., short-term memory and decision-making processes) and how this necessitates the inclusion of dichotomous response choices is imperative when working with memory-impaired individuals.

Best Practices

The current study provided important information that can be used as guidelines for including memory-impaired individuals in the research process. Specifically, findings suggest that unidirectional response categories should be used when interviewing or working with memory-impaired individuals. Moreover, for some individuals experiencing more extensive cognitive impairment, dichotomous response categories also should be implemented as an alternative to the full range of responses. Lastly, these results indicate that memory-impaired individuals were able to successfully answer a wide range of objective and subjective questions. Thus, this special population can and should be included in survey research.

Research Agenda

Further research is needed to examine the impact of cognitive processes in conducting interviews with memory-impaired individuals. One method for establishing this is for interviewers to document response-type choices used by memory-impaired elderly. Additional research is needed to examine the impact of other components of survey questions and response

### Table 5

Regression Coefficients for the Relationship of Participant Characteristics with the Number of Dichotomous Response Categories Used Excluding Participants Who Only Used Full-range Response Categories (n=75).

<table>
<thead>
<tr>
<th>Participant Characteristics</th>
<th>All Scales</th>
<th>Scales with Unidirectional Response Categories</th>
<th>Scales with Bidirectional Response Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>β</td>
<td>B</td>
</tr>
<tr>
<td>Age</td>
<td>.038</td>
<td>.082</td>
<td>.027</td>
</tr>
<tr>
<td>Female</td>
<td>.882</td>
<td>.099</td>
<td>.492</td>
</tr>
<tr>
<td>Caucasian</td>
<td>2.141</td>
<td>.185</td>
<td>1.972</td>
</tr>
<tr>
<td>Education</td>
<td>.793</td>
<td>.092</td>
<td>1.285</td>
</tr>
<tr>
<td>MMSE</td>
<td>-.377</td>
<td>-.364*</td>
<td>-.301</td>
</tr>
<tr>
<td>NART</td>
<td>-.260</td>
<td>-.374*</td>
<td>-.252</td>
</tr>
<tr>
<td>Total R²</td>
<td>.34*</td>
<td>.38*</td>
<td>.13</td>
</tr>
</tbody>
</table>

DV=Number of scales for which dichotomous response categories were used.

* p ≤ .01.
categories, such as the number of response options, nominal or ordinal responses, and whether individuals with more severe symptoms of memory impairment also are able to participate.

As more research is conducted with memory-impaired individuals, researchers and clinicians will need to discuss further the ethical implications. For example, what are the “best practices” for obtaining written (or verbal) informed consent and/or assent from memory-impaired individuals? Additionally, how should information from memory-impaired individuals be used by researchers and clinicians within their respective research and practice settings?

Educational Implications

Clinicians may use the results of the current study to adapt the language they use with elderly clients. Those working with memory-impaired older adults could improve communication with these individuals by removing bidirectional language when discussing symptoms and care plans. Using more unidirectional language may be less cognitively demanding for individuals with memory impairment. In this way, it is important to understand how survey construction relates to cognitive processing in memory-impaired elders and how this information can extend to other situations in which information must be gathered from the memory-impaired individual.

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Authors’ Biographical Sketches

Maura Krestar is a doctoral student in Adult Development and Aging whose substantive focus comes from a background in psychological statistics and research methodology in addition to experience working with memory-impaired older adults in clinical settings. Ms. Krestar did the majority of the organizing, writing, and editing of the current paper.

Wendy Looman was the statistical analyst for this project and conducted all of the relevant analyses for the current paper. Her substantive focus for this paper comes from over 25 years in conducting applied gerontological research studies with memory-impaired older adults and their informal caregivers.

Sara Powers is a doctoral student in Adult Development and Aging whose focus for the current paper stems from her work in caregiving for memory-impaired elders. Her contributions to the current paper include editing, writing portions of the literature review, and gathering resources for the current paper.

Nicole Dawson is a doctoral student in Adult Development and Aging whose focus for the current paper stems from her work in memory-impaired older adults. Her contributions to the current paper include editing, writing portions of the literature review, and gathering resources for the current paper.

Katherine Judge is an Applied Cognitive Aging Psychologist with over 15 years of experience in developing, implementing, and evaluating psychosocial interventions for individuals with memory impairments and their family caregivers. Her substantive focus for this paper stems from her work in cognitive rehabilitation and examining methods for including memory-impaired individuals in the research and intervention process. Dr. Judge was the Principal Investigator for the grants that supported this work.

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