

Introduction

Careful description of participant characteristics – and control for these – is essential in aphasia research, having a direct impact on appropriateness of experimental design, analysis and interpretation of results, readers' interpretation of reports, generalization of conclusions, comparisons across studies, replicability, and meta-analyses (American Psychological Association, 2001; Cholewa, 2000; Dworkin, Abkarian, & Johns, 1988; Hammill, Bryant, Brown, & Marten 1989; Silverman, 1998; Skenes & McCauley, 1985). Participant description and control are especially critical in aphasiology because associated etiologies commonly lead to great variation in type and severity of language deficits across individuals and multiple concomitant problems that may confound behavioral results within individuals (Brookshire, 1983; Hallowell, 2004; Roberts, Code & McNeil, 2003; Obler, Goral, & Albert, 1995; Robey, 1999; Wertz, 1991).

Brookshire (1983), in his oft-cited article on participant description in aphasia research, examined a set of articles published in or submitted to four journals published over a 10-year period. He verified whether each included reference to each of 18 characteristics. Finding several areas of weakness, Brookshire advocated greater attention to participant description. Obler, Goral, and Albert (1995) analyzed participant selection criteria in articles published in *Brain and Language*, 15 from 1974 through 1976 and 15 from 1992 and 1993. The earlier set included larger participant samples. The later set included more inclusion and exclusion criteria and more descriptive detail.

Roberts, Code and McNeil, in their “audit of current practice” of participant description (2003) examined 100 articles from 2001 and 2002. Journal selection was based on a PsychInfo search. They used standards in the 2001 Publication Manual of the American Psychological Association (APA) as a basis characteristics studied. Only seven of 43 characteristics were included in patient descriptions within 65% or more studies. Eleven variables were reported in 5% or fewer. They reported that most articles “fell far short of the recommended standards” and concluded that, “progress in the field is hindered when studies do not adequately describe the aphasic participants” (p. 912).

The current study builds upon the previous studies described above, which involved small samples of articles and manuscripts generated over brief periods of time. Significant limitations of prior studies are addressed through: inclusion of a wide array of journals over a substantial period of time; analysis of *all* qualifying articles rather than a small sample; tracking of a large array of descriptive variables; analysis of participant characteristics reported in light of actual tasks involved in each study; and restriction to only peer-reviewed published papers. Primary aims were to: evaluate the state of practice in participant description in aphasia research in light of assessment and experimental tasks required of participants; and examine changes in participant description practices over time.

Method

Data were collected from every qualifying article in each of 32 journals over an 18-year period (1990 through 2008). Inclusion criteria were that each article consist of a peer-reviewed empirical report relevant to aphasia or other acquired neurogenic language impairment subsequent to stroke, traumatic brain injury or neoplasm in adults, and include original empirical data. Articles were excluded if they did not address language functions. Case studies with no control or manipulation of specific independent variables were excluded. Selection of the characteristics to be examined was determined through an extensive literature review. Specific participant description characteristics tracked are listed in Table 2.

Assessment and experimental tasks within each study were evaluated in terms of whether they involved visual material, color vision, reading, listening, speaking, pointing, gesturing, writing, and drawing. Also noted was whether authors described or controlled for each characteristic, and whether they used such aspects to determine participant inclusion/exclusion. A highly conservative approach was used: 1) any mention at all of a characteristic, even if not carefully controlled, was considered to indicate that characteristic was addressed; and 2) mention of a characteristic was counted if it was included in any aspect of the study (inclusion/exclusion criteria, screening, experimental control, participant description, statistical analysis, or interpretation of results).

Data were collected by a team of five graduate students after training by the author (to be detailed in this presentation). Scorers were provided a glossary to ensure mutual understanding of terms, a list of decision criteria, and examples of coding scenarios. Reliability and reproducibility statistics were calculated for each characteristic.

Results

In total, 1611 articles published over the 18-year period qualified for inclusion. Most (87.7%) addressed aphasia secondary to stroke; 10.17% addressed language disorders associated with traumatic brain injury; 12.64% addressed language disorders associated with right brain injury.

Ninety-five percent confidence intervals were calculated for each characteristic across articles. Reliability was tested through repeated data extraction for a random sample of 200 articles by an independent scorer. Initial inter-scorer agreement ranged from 88 to 100%. Scorers achieved 100% agreement upon reviewing each discrepancy together and reconciling coding.

Description of etiology was mentioned in 64.69% of articles, time post-onset in 87.20%, and site of lesion in 66.16%. All (100%) included participants' age; 85% mentioned gender and 58.01% handedness. Race or ethnicity was mentioned in 6.68% and native speaker, bilingual and/or multilingual status in 34.85%. Few mentioned any aspect of socioeconomic status (2.62%), living environment (11.93%) or social support (5.57%). Geographic region was mentioned in 11.55%. Recruitment source was given for 22.08%.

Overall communication impairment severity was mentioned in 41.17%, while 49.76% included severity by modality. Conversational ability was described in 8.82%. Motor speech was assessed only for studies that included speech tasks. Presence or absence of dysarthria was noted in 10.81%. Fewer addressed specific aspects such as intelligibility (4.12%), naturalness of speech (2.95%), or physiological measures (.54%). In those studies that involved speaking, the presence or absence of apraxia of speech was mentioned in 16.36%. Of those in which pointing was required, presence or absence of limb apraxia was noted in .07%. Motor control of the body was mentioned in terms of paralysis or paresis in 26.41%.; 7.63% included mention of alertness or attention, while 15.44% included mention of memory, 16.48% cognition, and 14.71% intelligence/IQ.

Of those studies including auditory tasks (94.75%), 4.98% included any mention of hearing. Pure-tone results or criteria were reported in 14%; full pure-tone evaluations were reported in 1.26%. Three percent included any mention of speech discrimination. Other aspects of hearing were reported in less than .4% of articles.

Among the 94.6% of articles involving presentation of visual materials, 4.7% included any mention of visual functioning. Of the 48.9 % articles involving visual material in color, 5% included color vision.

History of psychological or psychiatric problems was reported in 14.31%. History of learning disability and previous communication disorders was reported less frequently (4.13% and 5.57, respectively). Educational history was reported in 56.81%. Any aspect at all of participants' personality and mood was reported in 3.3%.

Conclusions

It is critical that investigators carefully screen for, describe and control for characteristics that may influence performance within a given study. Most of the participant characteristics studied – characteristics that have been deemed by numerous authors to be vital to the validity and reliability of aphasia research - were reported infrequently in articles published over the 18-year period. Variability in the frequency (across all articles) of authors addressing each characteristic is low.

Formative feedback concerning appropriate participant control and description is critical in the peer review process for publication and funding. It is important that education in research in neurogenic communication disorders include enhanced foci on participant description. Guidance in the development of strategic screening protocols and continuing education opportunities regarding specific means of participant screening are sorely needed.

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Table 1. Journals included in the study

- *American Journal of Speech-Language Pathology*
- *Annals of Neurology*
- *Aphasiology*
- *Archives of Neurology*
- *Archives of Physical Medicine and Rehabilitation*
- *Brain and Cognition*
- *Brain and Language*
- *British Journal of Disorders of Communication*
- *Clinical Aphasiology*
- *Cognitive Neuropsychology*
- *Cortex*
- *Disability and Rehabilitation*
- *European Journal of Rehabilitation Research*
- *International Journal of Rehabilitation Research*
- *Journal of Cognitive Neuroscience*
- *Journal of Communication Disorders*
- *Journal of Head Trauma and Rehabilitation*
- *Journal of International Neuropsychological Society*
- *Journal of Medical Speech Language Pathology*
- *Journal of Neurolinguistics*
- *Journal of Rehabilitation Research and Development*
- *Journal of Speech and Hearing Research and Journal of Speech, Language, and Hearing Research*
- *Language and Cognitive Processes*
- *Neurology*
- *Neuropsychologia*
- *Neuropsychological Rehabilitation*
- *Neuroradiology*
- *Neuroreport*
- *Journal of Psycholinguistic Research*
- *Perceptual and Motor Skills*
- *Psychological Review*
- *Psychophysiology*

Table 2. Participant description/control characteristics tracked

- Severity of overall communication impairment
- Severity by modality
 - Auditory Comprehension
 - Oral expression
 - Reading
 - Writing
 - Gesturing
 - Conversational ability
- Motor functioning
 - Dysarthria
 - Apraxia of speech
 - Limb apraxia
 - Paralysis/Paresis
 - Alertness or attention
- Psychological/Psychiatric status
- Memory
- Intelligence/IQ/mental status
- Premorbid intelligence/IQ/ communication disorder
- Premorbid learning disability
- Educational History
- Vision
 - History of illness affecting vision
 - History of visual problems
 - Wearing of glasses or contact lenses
 - Visual discomfort
 - Observation of symmetry, lesions, eye swelling, & drainage
 - Central visual acuity: near
 - Central visual acuity: far
 - Visual field cuts/deficit
 - Visual attention deficits
 - Central visual fields
 - Peripheral visual fields
 - Consensual constriction
 - Near constriction of pupils
 - Pupil size
 - Strabismus testing
 - Pupillary constriction
 - Oculomotor apraxia
 - Nystagmus
 - Latent nystagmus
 - Color vision
- Hearing
 - History of hearing problems
 - Use of hearing aids
 - Pure tone screening

Table 2, continued

- Pure tone full evaluation
- Speech discrimination testing
- Auditory brainstem response testing
- Auditory processing
- Evoked response testing (e.g., MMN, N400, P300, P600)
- Central auditory testing
- Tympanometry
- Age
- Health/medical status
 - Medications
 - Seizures
 - Smoking
 - Drinking
 - Obesity
 - Diabetes
 - Hypertension
 - “Signs of aging”
- Gender
- Handedness
- Ethnic and/or racial group
- Native speaker, bilingual and/or multilingual status
- For articles on aphasia, description of type of aphasia
 - Posterior/Anterior
 - Cortical/Subcortical
 - Fluent/Nonfluent
 - Classical
- For articles on aphasia, definition of aphasia
- Etiology/cause
 - Site of lesion
 - Means of determining site of lesion/imaging information
 - Number of strokes and/or lesions and/or Number of brain injury incidents
- Time post-onset
- Previous treatment for speech and language
 - Duration and frequency
 - Time of treatment
 - Previous treatment goals
 - Previous treatment methods
- Personality and mood factors
- Socioeconomic status
- Occupation
- Living environment
- Social support
- Geographic region
- Source of recruitment
- Number of participants
- Payment of participants