

Review of Research Methods in Communication Disorders

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Research involves collecting and analyzing data in order to further our understanding of the phenomenon under investigation. In the field of communication disorders, as in many of the social sciences, research is a vital component of ensuring that professionals have the knowledge they need to provide

ABSTRACT: Purpose: This article describes the various research methods that are implemented in the field of communication disorders. Research within this field is an expansive and continuously evolving phenomenon and is influenced by a variety of theoretical views from many disciplines, including anthropology, sociology, psychology, medicine, statistics, and philosophy. This review aims to summarize the many research methodologies that are available and the strategies of inquiry that can be used when deciding how to go about investigating one's topic of interest.

Method: Qualitative, quantitative, and mixed-methods approaches to data are described, and the various designs and strategies of inquiry that are most commonly used in the field of communication disorders are outlined. References to particular publications are provided to allow the reader easy access to examples of research in the field that implements the discussed methodologies and strategies in an effective, efficient way.

Conclusion: Review of the numerous methods of researching phenomena in our field of communication disorders informs readers of the options available in carrying out their research projects and enables one to make an informed decision regarding which methods and strategies are most suitable for one's particular research project.

KEY WORDS: research methods, qualitative, quantitative, speech-language pathology

the best services possible for their clients. The American Speech-Language-Hearing Association (ASHA) emphasizes that clinicians should have a depth of knowledge of evidence-based practice that informs their decision making (ASHA, 2005). Continued research is therefore very important—not only to gain a better understanding of particular phenomena, but also to allow our field of study to grow in a positive manner, encouraging the professionals involved to provide the best service possible. In order for research to be comprehensive and complete in a particular field, it is pertinent that a variety of research methods are employed. The aim of this paper is to review many of the common types of research methods that are used in the field of communication disorders. The various strategies of inquiry that may be used in this field of research can be grouped under qualitative, quantitative, or mixed-methods research (Irwin, Pannbacker, & Lass, 2008).

QUALITATIVE RESEARCH

Qualitative research involves a set of systematic and interpretative practices that are designed to seek answers to questions that stress how social actions and social experiences are created and sustained. The data collection procedure that is chosen and the strategy of inquiry that is used depends on the social phenomena under investigation (Damico, Simmons-Mackie, Oelschlaeger, Elman, & Armstrong, 1999). Similarly, the strategies of inquiry that are used in qualitative research have a dramatic influence on the procedures employed (Creswell, 2009).

There are a variety of advantages and disadvantages to qualitative research. Regarding advantages, qualitative research is designed to study phenomena in natural settings, thereby explaining naturally occurring phenomena (Damico,

Simmons-Mackie, et al., 1999). Additionally, qualitative research sustains a preference for unstructured designs; uses the researcher as the key instrument of data collection; and involves the collection of descriptive data, which is imperative for research occurring in uncontrolled settings. Qualitative research also involves a focused rather than broad description, and the researcher's interest is on the process of accomplishing social action rather than on viewing the product of social action as the outcome. Furthermore, qualitative research is designed to focus on the participants' perspectives in order to achieve a deeper understanding of the data. In sum, qualitative research is an authentic method of analyzing data from real social situations, incorporating the variables that occur in the context of interest rather than attempting to control for these variables (Simmons-Mackie & Damico, 2003).

Nevertheless, qualitative research is not without weaknesses: It is labor intensive for the researcher, it involves experience-based learning, and it operates from a different set of methodological assumptions than quantitative research (Damico et al., 1999). As a result of this, and because the researcher is the key instrument of data collection, researcher bias may often influence the results obtained. Moreover, qualitative research is not suited to the comparison of large amounts of numerical data, and so the sample size is typically much smaller than that of quantitative research, which makes it more difficult to generalize results (Creswell, 2009).

Ethnography

Ethnography, the first qualitative strategy of inquiry examined here, is the investigation of a human situation (Agar, 1986) and the study of the rich complex matrix of social life and culture (Simmons-Mackie & Damico, 1999). Ethnographic methods rely substantially on participant observation (Atkinson & Hammersley, 1994) and are frequently employed in anthropological studies. Although a true ethnography in the anthropological sense involves long-term cultural immersion, the strategy of inquiry can easily be adapted, and ethnographic methods can be very effective in the field of communication disorders (Simmons-Mackie & Damico, 1999). Ethnography is the social research style that emphasizes encountering unfamiliar worlds and making sense of them (Agar, 1986).

An ethnographic research design is emergent and unfolds as the data are collected; hence, the process is flexible and cyclical in that data are analyzed regularly and recurrently. An open-ended approach is taken, and the researcher must try to remain nonjudgmental by immersing him- or herself in the data, allowing for a rich description and understanding to interpret and explain the world from the point of view of those under investigation (Simmons-Mackie & Damico, 1999). Damico and Augustine (1995) used ethnographic methods in their study of the social considerations of labeling students with attention deficit hyperactivity disorder. In this ethnographic study, 33 participants including parents, teachers, and health care professionals dealing with attention deficit hyperactivity disorder were selected for ethnographic interviewing. More than 5 months of open-ended interviews

were collected, along with participant observation, which was analyzed in a cyclical process in order to identify the social and cultural variables influencing the labeling process (Damico & Augustine, 1995).

Phenomenology

Another qualitative strategy of inquiry is phenomenology. The aim of this strategy is to explore how participants make sense of their personal and social worlds (Smith & Osborn, 2003). The data collection method for phenomenological analysis usually consists of a semistructured interview. The questions asked are usually broad, there are no predetermined hypotheses, and the participants are usually a homogeneous group of people who share an experience of a particular phenomenon. Analysis of the data collected in the interview involves the identification of themes (Smith & Osborn, 2003).

Phenomenological analysis is particularly useful in health psychology to investigate how individuals feel about their disorder or perhaps how they feel it affected their career (Smith, 1996). An example of a phenomenological study in the field of communication disorders is a study by Michallet, Têtreault, and LeDorze (2003), who investigated the consequences of aphasia on the spouses of individuals with aphasia. Using interviews and phenomenological analyses, the authors identified themes that highlighted how the spouses of individuals with aphasia learned to adapt their lifestyle to manage their spouses' difficulties.

Case Studies

Case studies are another strategy of inquiry that is used frequently in the field of communication disorders (Creswell, 2009). A case study, although not always qualitative, is an in-depth investigation of one particular case (Stake, 1994). A case may be an individual with communication impairment, an agency, a health care professional, or any specific functioning complex entity (Stake, 1994). Howard, Perkins, and Sowden (2012) provided an example of a qualitative case study in this field. Their research investigated the case of a child with a developmental language disorder and how her use of gesture supports the preceding literature on gestural communication in this population.

Grounded Theory

Another strategy of inquiry is grounded theory, which is a general methodology for developing theories that are grounded in data (Strauss & Corbin, 1994). The data are systematically gathered and analyzed in such a way that the theory evolves during the research through the continuous interplay between the data collection and analysis. Fourie (2009) used a grounded theory approach to study the therapeutic relationship in speech-language therapy from the perspectives of adults with acquired communication and swallowing disorders. Fourie interviewed 11 adults with these disorders and transcribed each interview for analysis. Coding, or categorizing and grouping the data, is the chief feature of data analysis in grounded theory studies, and

during coding, the aim of the researcher is not to develop theories, but rather to allow theories to emerge from the data (Straus & Corbin, 1994). The method of data collection for grounded theory can vary, but it is important that rich extensive data are gathered on the phenomena being studied (Charmaz, 2003).

Conversation Analysis

Conversation analysis is an ethnomethodological approach that is implemented to analyze different facets of conversational organization (Goodwin & Heritage, 1990). It was developed by Sacks (1989) to investigate the primary data of the social world using naturally occurring conversations. It involves the turn-by-turn analysis of a transcribed conversation. This approach is data driven, and the emphasis is on observable behavior (Perkins, Whitworth, & Lesser, 1998). Conversation analysis permits the analyst to move away from perspective judgments of appropriacy based on *normal* interactions and to focus on the specific interaction under investigation (Perkins et al., 1998). Conversations are organized sequentially; hence, conversation analysis examines the functions of any recurrent process during conversation (Damico, Oelschlaeger, & Simmons-Mackie, 1999). For example, a greeting such as *hello* will naturally elicit a consecutive response from an interlocutor.

Conversation analysis has been increasingly used in aphasia research. One such example is an article by Beeke, Wilkinson, and Maxim (2007) involving the study of a man with agrammatism. These authors analyzed and discussed the individual's patterns of turn construction and found that contrary to his test results demonstrating severe difficulties with verbs and sentence construction, the conversation analysis highlighted commenting, assessing, and reasoning in his utterances (Beeke et al., 2007). Hence, Beeke et al.'s conclusions highlighted the importance of a conversation analytical approach in assessment, which contributes complementary and different information to the sentence-level tests, thereby providing a more complete description of an individual's grammatical strengths and weaknesses.

Focus Groups

Focus groups are a form of group interview in which the source of data is the group discussion, which is moderated by the researcher (Morgan, 1996). The researcher actively chooses the group participants, normally consisting of between six and 10 strangers who share a particular feature or have a common interest (Morgan, 1996). The interview involves a carefully planned discussion that is designed to obtain perceptions of a defined area of interest in a permissive nonthreatening environment (Meyers, 1998).

Focus groups are becoming increasingly popular in health research, and Wilkinson (1998) summarized some of the health-related focus group research. According to Wilkinson, this research results in enhanced disclosure, improved access to participants' own language and concepts, better understanding of the participants' own agendas, the production of more elaborate accounts, and the opportunity to observe how the group works together

to construct meaning and convey group ideas. She stated, "Focus groups are an ideal method for eliciting people's own meanings and understandings of health and illness" (Wilkinson, 1998, p. 341).

Beyond Strategies of Inquiry

There are a great many other strategies of inquiry that are used in qualitative methods, including discourse analysis, narrative studies, content analysis, life histories, field studies, historical research, critical theory, and biographical study (Irwin et al., 2008). It is important to remember that qualitative research is interpretative, and as we can see from the traditions of inquiry outlined, data collection and data sources can take a variety of forms (Creswell, 2009): Observations, interviews, documents, audiovisual materials, surveys, and other resources can all be used to collect data for qualitative research.

Regardless of the type of qualitative method employed, it is important to validate findings by identifying the validity, reliability, and generalizability of the study carried out (Creswell, 2009). Findings should be validated throughout the data collection process as the researcher checks for accuracy. Validity can be ensured through triangulation of the data, member checking, providing a rich description of the findings, clarification of the biases of the researcher, peer debriefing, the presentation of discrepant information, and the use of an external auditor (Creswell, 2009). Similarly, reliability, referring to the consistency of the researcher's approach, involves checking for transcription mistakes, checking for drifts in the definition of codes, coordinating communication among coders, and so on (Creswell, 2009). Finally, qualitative studies usually are not designed to allow systematic generalizations to some wider population, but the theories developed in this research show how a similar process in different situations can lead to different results and stress how the theory may be useful in making sense of similar persons or situations (Maxwell, 1992).

Qualitative research is especially appropriate for investigating social phenomena in the field of communication disorders, specifically when it is difficult to eliminate the confounding variables that are present in everyday social contexts. Because qualitative research allows the researcher to account for such variables, it is becoming more and more popular in the field of social sciences.

QUANTITATIVE RESEARCH

Quantitative research usually refers to studies of experimental design (Creswell, 2009). There are a variety of research designs occurring under this heading, and all are based on three principles: randomization, manipulation, and control (Irwin et al., 2008). The four main goals of quantitative analysis are data reduction, inference, discovery of relationships, and exploration of processes that may have a basis in probability (Johnson, 2009). Quantitative research involves the investigation of phenomena that lend themselves to precise measurement and quantification. It is most often conducted under controlled conditions.

Quantitative research, therefore, stresses numbers, deductive logic, control, and rigorous experimental procedures (Irwin et al., 2008).

Quantitative research has distinct advantages. When conducted carefully, it is credible and economic on time. Statistical analysis programs are available for ease of analysis to make comparisons across and within groups (Irwin et al., 2008). Nevertheless, there are disadvantages to this approach: Quantitative research can be artificial, meaning that the reality of the situation may not be exposed, and the focus is restricted (Irwin et al., 2008). It may also be difficult to control for many of the variables that occur in the study of social phenomena without interfering with the authenticity of the context (Damico, Simmons-Mackie, et al., 1999). Furthermore, the predetermined nature of the experimental procedure means that there is less opportunity for flexibility (Irwin et al., 2008).

Nonexperimental and Preexperimental Designs

Nonexperimental designs are quantitative designs with no control groups, no randomization, and variables that cannot be manipulated (Irwin et al., 2008). Such designs are undertaken when the data consist of a number of independent variables and the sample cannot be randomized, when there are variables that cannot be manipulated for ethical or practical reasons, and when a more realistic understanding can be achieved if the variables are not manipulated. Preexperimental designs are another form of quantitative research. They meet only one of the three criteria needed for true experiments (Irwin et al., 2008). Preexperimental designs, like nonexperimental designs, are limited to describing outcomes because appropriate statistical analyses cannot be performed. Quantitative case studies and surveys are types of nonexperimental and preexperimental designs (Irwin et al., 2008).

Quasi-Experimental Designs

Quasi-experimental designs are commonly used in speech-language research and meet any two of the three criteria: randomization, manipulation, and control (Irwin et al., 2008). In the field of communication disorders, quasi-experimental designs are usually lacking in randomization; however, this design is often necessary when it is more effective to use a convenience sample than a random sample for the study (Creswell, 2009). For example, a researcher in the field of communication disorders may need to limit participation in a particular study to certain people, such as bilingual individuals, individuals with certain disorders or disabilities, individuals in a particular institution (e.g., school, nursing home), literate individuals capable of reading questionnaires, and so on.

When designing research in the social sciences, there is often a trade-off between the feasibility of the research and the adequacy of the sample. However, for researchers conducting quantitative research, it is important to obtain as random a sample as possible (Johnson, 2009). Quasi-experimental research not only refers to research where the samples are not randomized, but also to research that cannot

control the manipulation of variables, or does not use a control group. Such research may involve a setting where it is not possible to control extraneous variables, as is the case in a complex communicative environment. Therefore, particularly when human participants are involved, it can be difficult to meet all three criteria (Irwin et al., 2008).

Quasi-experimental designs in the field of communication disorders are numerous. A study of vowel production by Johnson, Ladefoged, and Lindau (1993) is a good example of a quasi-experimental study. The sample for this research was collected from the Wisconsin University community and so is not random. Similarly, the investigation of the speech perception abilities of children with specific language impairment (SLI) by Burlingame, Sussman, Gillam, and Hay (2005) drew on a sample of children with SLI who satisfied certain test criteria (i.e., a standard score ≤ 82 on the Comprehensive Assessment of Spoken Language [Carroll-Woolfolk, 1999]). Hence, this study, which found that perception difficulties in children with SLI may be related to sound decoding, did not draw on a randomized sample.

True Experimental Designs

True experimental designs are the strongest of the quantitative research designs and are used when samples can be randomized, variables can be manipulated, and it is possible to include a control group (Irwin et al., 2008). True experimental designs are not commonly found in the literature associated with communication disorders due to the fact that the focus is most often on specific populations and the variables in natural environments are difficult to manipulate. Scott and Caird (1983), in their study of Parkinson's disease, selected a random sample of this population and randomly assigned half of the sample to a control group, adhering to the conditions of a true experiment. The authors found that their daily therapy of prosodic exercises for the group under investigation resulted in increased scores on tests of prosodic normality and intelligibility.

Single-Subject Designs

Although quantitative experiments usually focus on group design, they may also take the form of a single-subject design where the focus is on one or a few participants (Irwin et al., 2008). Such designs, which may be either quasi-experimental or experimental, are common in the clinical realm where only one or a few participants are available for investigation of a specific phenomenon. Single-subject designs are different from quantitative case studies in that there is repeated measurement and different design phases involved in the experiment. Rosenbek, Robbins, Fishback, and Levine (1991) demonstrated the use of a single-subject design, replicated across seven participants, in order to examine the effects of thermal stimulation as a treatment technique for dysphagia.

Data Analysis

Quantitative research involves statistical analysis, which is the organization and integration of quantitative data

according to systematic mathematical rules and procedures (Irwin et al., 2008). Statistical analysis is dependent on all aspects of the research process such as study design, number of variables, sampling procedures, and number of participants. Each of these factors should be considered when selecting the appropriate statistical analyses. Quantitative data collection involves the collection of numeric indices describing trends, abilities, attitudes, or opinions, and can be collected through surveys, assessment instruments, scales, reports, and so on (Creswell, 2009).

The form of data analysis to use depends on the nature of the numerical indices. There are four descriptive properties of such data (Johnson, 2009). *Nominal* data refers to named indices, which have no meaningful order on a scale. Examples of nominal indices in the field of communication disorders include the language being studied, the dialect, or the individual's gender. *Ordinal* data refers to data that are not observed on a measurable scale but are transitive, like a voice rating scale, where breathiness or hoarseness may be attributed a value on a scale of *always breathy*, *sometimes breathy*, or *seldom breathy*. *Interval* data is a property that is measured on a scale with an arbitrary zero point. In such scales, the magnitude of differences for adjacent observations are determined. Examples of such scales are measurements of temperature using the Celsius scale or many assessment scales in the field of communication disorders. Finally, *ratio* data refers to data where the magnitude of difference between adjacent values is also consistent. However, unlike interval data, a ratio scale has an absolute zero. Examples in this field include age; mean length of utterance; and acoustic measures such as frequency, duration, and reaction time. More than one of these scales may be used depending on the phenomenon under investigation (Johnson, 2009). The purpose in outlining these differences in data is to point out that certain statistical tests deal with only certain classifications of data.

While on the subject of data, it is necessary to mention that it is often assumed that the data will have a normal distribution (Johnson, 2009). When graphed, data with a normal distribution will be in a bell-shaped curve, as the concentration of scores lies near the mean (Irwin et al., 2008). For example, if one were to take a random sample of adult females, it is most likely that their height will be normally distributed (i.e., although a few may be very tall and some others very short, most will have a height that is somewhere in the middle). For the data that are not normally distributed, the graph may be flat or skewed or have multiple peaks (Irwin et al., 2008).

Statistical Analyses

Unlike qualitative research, where one may wait until after the data collection and analysis in order to form a hypothesis (Straus & Corbin, 1994), quantitative research *begins* with a hypothesis (Creswell, 2009). A hypothesis comes from the research question, through which one asks if there is a difference between groups or between values (Johnson, 2009). The null hypothesis is the assumption that there is no difference or no relationship between variables, and it is the rejection of this null hypothesis that lends support to the hypothesis of the research (Irwin et al., 2008).

When completing statistical analyses, there is a distinction between one-tailed and two-tailed tests. A *one-tailed test* refers to a distribution where the expectation is that most values are at one extreme, such as when there is a strong basis for a directional hypothesis (Irwin et al., 2008). A *two-tailed test*, which is usually preferred, involves both ends of the sampling distribution to use when the distribution cannot be assumed a priori and a directional hypothesis is not supported.

Conducting analyses involves selecting the appropriate statistical test. Tests of *correlation* are comparative tests that examine relationships between two sets of data that have a suspected relationship (Johnson, 2009). *Inferential* tests allow us to make inferences about whether features or behaviors observed in a sample are likely to occur in a larger population (Irwin et al., 2008). Inferential tests may be classified as parametric or nonparametric. *Parametric* tests involve examination of at least one parameter, interval, or ratio data; include a large sample size; and have normal distribution. *Nonparametric* tests are less powerful, generally have a small sample size, and do not involve assumptions about a normal distribution.

T tests are an example of a commonly used parametric test. Johnson (2009) described how *t* tests can be used to compare two independent samples (e.g., whether the voice onset time from a sample collected in 1971 and another in 2001 presents with a significant difference). Similarly, *t* tests can be used to compare paired samples (e.g., comparing the same participants before and after treatment). Burlingame et al. (2005) used *t* tests to compare 15 controls with 15 children who had SLI in the investigation of speech identification along a continuum of phonetic changes. The results of the *t* tests demonstrated significant group differences for the one continuum of phonetic changes (/ba/-/wa/) but not the other (/da/-/ja/).

An analysis of variance (ANOVA) is another parametric test that is used to compare the means of different groups; however, it is different from *t* tests in that it allows more than two groups of data to be compared simultaneously (Johnson, 2009). The ANOVA is often used in the field of communication disorders to compare numerous groups or experimental conditions. Jacks, Mathes, and Marquardt (2010) used an ANOVA to examine the acoustic differences between adults with apraxia of speech and those without as a function of the F1 and F2 frequencies of vowel production. This is an example of how an ANOVA can be used efficiently to compare multiple levels of data.

Such statistical tests have been widely used in the fields of phonetics, psycholinguistics, sociolinguistics, historical linguistics, and syntax (Johnson, 2009). Pitt and Shoaf (2002) discussed reaction time secondary to the effect of phonological overlap between a priming word and a target word in a quantitative psycholinguistic study. The ANOVAs carried out on these data revealed that the target word was phonologically biased because of the priming word chosen. Additionally, Nakhleh, Ringe, and Warnow (2005) used quantitative methods to describe the relationships and history of European languages.

When analyzing quantitative research, there are a variety of computer software programs that can be used to carry

out the statistical analysis, as manual analyses can be extremely time consuming (Johnson, 2009). Johnson (2009) detailed the use of the statistical package R (R Core Team, 2012), and Gaur and Gaur (2006) outlined the use of the SPSS (IBM Corp. 2012) program; but, there are a variety of other data analysis programs available. Creswell (2009) pointed out, however, that there is more to data analysis in quantitative studies than running statistical tests. For example, it is equally important to describe the participants; discuss the methods; provide a descriptive analysis of the data; identify the instruments or scales; identify the statistics and the statistical computer program; and then, most importantly, interpret the results.

When the appropriate questions are asked and variables controlled, quantitative research provides scientists with answers to specific questions. Furthermore, due to the rigorous design of quantitative methods, experiments can be repeated easily for replication of results. Replication is especially important in the research of effective treatment techniques for communication disorders.

MIXED-METHODS RESEARCH

Mixed-methods research makes use of both qualitative and quantitative approaches and uses the strengths of both (Creswell, 2009). A mixed-methods approach, because it combines the strengths of both qualitative and quantitative research, may lead to theoretical insights that would not be possible without combining the methods (Irwin et al., 2008). Similarly, the validity of the research is often increased due to the multiple and complementary types of data used. Nevertheless, it does present with disadvantages: Extensive data collection is necessary, it is time intensive to analyze both text and numeric data, and the researcher must be familiar with both qualitative and quantitative methods (Creswell, 2009). Additionally, cost, epistemology biases, and publication biases may serve as disadvantages (Irwin et al., 2008).

Irwin et al. (2008) provided a list of helpful and successfully implemented mixed-methods studies, or as they call them, multimethod studies, in the field of communication disorders. An example of such a study is that of Binger, Kent-Walsh, Berens, Del Campo, and Rivera (2008), who examined how Latino parents supported the communication of their children who used augmentative and alternative communication devices. These authors used a focus group to investigate this phenomenon from a qualitative perspective and a single-subject design to evaluate the effects of a caregiver instructional program on the multimodal utterance productions of the children. The focus group results indicated that changes to the instructional program may be required for some families, and the experimental component identified that there was a significant increase in multisymbol messages for all children (Benger et al., 2008).

CONCLUSION

It is important to remember that the variety of research designs used in the field of communication disorders requires different methods of data collection and results in unique

types of data sets. The phenomena under scrutiny and the data collected will determine the methodology to employ. It is vital to consult the research, conduct the appropriate approach, and implement the experimental procedures in the manner they were intended. Qualitative, quantitative, and mixed-methods approaches all have their particular advantages and disadvantages, and these must be taken into account in order to conduct solid research.

REFERENCES

- Agar, M. (1986). *Speaking of ethnography*. Newbury Park, CA: Sage.
- American Speech-Language-Hearing Association. (2005). *Evidence-based practice in communication disorders* [Position Statement]. Available from www.asha.org/policy.
- Atkinson, P., & Hammersley, M. (1994). Ethnography and participant observation. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 209–219). Thousand Oaks, CA: Sage.
- Beeke, S., Wilkinson, R., & Maxim, J. (2007). Grammar without sentence structure: A conversation analytic investigation of agrammatism. *Aphasiology*, 21, 256–282.
- Binger, C., Kent-Walsh, J., Berens, J., Del Campo, S., & Rivera, D. (2008). Teaching Latino parents to support the multi-symbol message productions of their children who require AAC. *Augmentative and Alternative Communication*, 24(4), 323–338.
- Burlingame, E., Sussman, H. M., Gillam, R. B., & Hay, J. F. (2005). An investigation of speech perception in children with specific language impairment on a continuum of formant transition duration. *Journal of Speech, Language, and Hearing Research*, 48, 805–816.
- Carroll-Woolfolk, E. (1999). *Comprehensive Assessment of Spoken Language*. Circle Pines, MN: AGS.
- Charmaz, K. (2003). Grounded theory. In J. A. Smith (Ed.), *Qualitative psychology* (pp. 81–110). Thousand Oaks, CA: Sage.
- Creswell, J. (2009). *Research design* (3rd ed.). Thousand Oaks, CA: Sage.
- Damico, J. S., & Augustine, L. E. (1995). Social considerations in the labelling of students as attention deficit hyperactivity disordered. *Seminars in Speech and Language*, 16, 259–274.
- Damico, J. S., Oelschlaeger, M., & Simmons-Mackie, N. N. (1999). Qualitative methods in aphasia research: Conversation analysis. *Aphasiology*, 13, 667–680.
- Damico, J. S., Simmons-Mackie, N. N., Oelschlaeger, M., Elman, R., & Armstrong, E. (1999). Qualitative methods in aphasia research: Basic issues. *Aphasiology*, 13, 651–666.
- Fourie, R. J. (2009). Qualitative study of the therapeutic relationship in speech and language therapy: Perspectives of adults with acquired communication and swallowing disorders. *International Journal of Language and Communication Disorders*, 43, 1–21.
- Gaur, A. S., & Gaur, S. S. (2006). *Statistical methods for practice and research: A guide to data analysis using SPSS*. Thousand Oaks, CA: Sage.
- Goodwin, C., & Heritage, J. (1990). Conversation analysis. *Annual Review of Anthropology*, 19, 283–307.
- Howard, S. J., Perkins, M. R., & Sowden, H. (2012). Idiosyncratic gesture use in atypical language development and its interaction with speech rhythm, word juncture, syntax, pragmatics

- and discourse: A case study. *Clinical Linguistics and Phonetics*, 26(10), 882–907.
- IBM Corporation.** (2012). IBM SPSS Statistics for Windows (Version 21.0) [Computer software]. Armonk, NY: Author.
- Irwin, D., Pannbacker, M., & Lass, N.** (2008). *Clinical research methods in speech-language pathology and audiology*. San Diego, CA: Plural.
- Jacks, A., Mathes, K. A., & Marquardt, T. P.** (2010). Vowel acoustics in adults with apraxia of speech. *Journal of Speech, Language, and Hearing Research*, 53, 61–74.
- Johnson, K.** (2009). *Quantitative methods in linguistics*. Oxford, England: Blackwell.
- Johnson, K., Ladefoged, P., & Lindau, M.** (1993). Individual differences in vowel production. *Journal of the Acoustical Society of America*, 94, 701–714.
- Maxwell, J. A.** (1992). Understanding and validity in qualitative research. *Harvard Educational Review*, 62(3), 279–301.
- Meyers, G.** (1998). Displaying opinions: Topics and disagreement in focus groups. *Language in Society*, 27, 85–111.
- Michallet, B., Tetreault, S., & LeDorze, G.** (2003). The consequences of severe aphasia on the spouses of aphasic people: A description of the adaptation process. *Aphasiology*, 17, 835–859.
- Morgan, D. L.** (1996). Focus groups. *Annual Review of Sociology*, 22, 129–152.
- Nakhleh, L., Ringe, D., & Warnow, T.** (2005). Perfect phylogenetic networks: A new methodology for reconstructing the evolutionary history of natural languages. *Journal of the Linguistic Society of America*, 81(2), 382–420.
- Perkins, L., Whitworth, A., & Lesser, R.** (1998). Conversing in dementia: A conversation analytic approach. *Journal of Neurolinguistics*, 11(1–2), 33–53.
- Pitt, M. A., & Shoaf, L. S.** (2002). Revisiting bias effects in word-initial phonological priming. *Journal of Experimental Psychology: Human Perception and Performance*, 28, 1120–1130.
- R Core Team.** (2012). R: A Language and Environment for Statistical Computing [Computer software]. Vienna, Austria: R Foundation for Statistical Computing.
- Rosenbek, J. C., Robbins, J., Fishback, B., & Levine, R. L.** (1991). Effects of thermal application on dysphagia after stroke. *Journal of Speech, Language, and Hearing Research*, 34, 1257–1268.
- Sacks, H.** (1989). Lectures 1964–1965. *Human Studies*, 12(3–4), 211–394.
- Scott, S., & Caird, F. I.** (1983). Speech therapy for Parkinson's disease. *Journal of Neurology, Neurosurgery & Psychiatry*, 46, 140–144.
- Simmons-Mackie, N. N., & Damico, J. S.** (1999). Qualitative methods in aphasia research: Ethnography. *Aphasiology*, 13, 681–689.
- Simmons-Mackie, N. N., & Damico, J. S.** (2003). Contributions of qualitative research to the knowledge base of normal communication. *American Journal of Speech-Language Pathology*, 12, 144–154.
- Smith, J. A.** (1996). Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and Health*, 11, 261–271.
- Smith, J. A., & Osborn, M.** (2003). Interpretative phenomenological analysis. In J. A. Smith (Ed.), *Qualitative psychology* (pp. 51–80). Thousand Oaks, CA: Sage.
- Stake, R. E.** (1994). Case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 236–248). Thousand Oaks, CA: Sage.
- Strauss, A., & Corbin, J.** (1994). Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 273–285). Thousand Oaks, CA: Sage.
- Wilkinson, S.** (1998). Focus groups in health research: Exploring the meanings of health and illness. *Journal of Health Psychology*, 3, 329–348.
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