Problems and Prospects in Survey Research

Patricia Moy[1] and Joe Murphy[2]

Abstract

Over the last few decades, survey research has witnessed a number of developments that have affected the quality of data that emerge using this methodology. Using the total survey error (TSE) approach as a point of departure, this article documents chronic challenges to data quality. With the aim of facilitating assessments of data quality, this article then turns to best practices in the disclosure of survey findings based on probability and nonprobability samples. Finally, (p)reviewing the use of technology and social media, it provides an overview of the opportunities and challenges for survey research today.

Keywords

survey research, reliability, validity, social media, data quality

Journalism and mass communication research relies heavily on survey research as a social scientific method. Indeed, the prevalence of survey-based data is reflected in numerous streams of research across the globe: Agenda-setting effects are determined by asking individuals what they perceive to be the most important problem (MIP) in a given area (McCombs & Shaw, 1972; see Brosius & Haas, 2011, for a recent review). Similarly, individuals' reports of their perceptions of social reality provide the basis for research in cultivation (Morgan & Shanahan, 2010) and the spiral of silence (Donsbach, Salmon, & Tsfati, 2013; Noelle-Neumann, 1993). Surveys also have been the mainstay for studies of journalists, whether in the United States (e.g., Weaver, Beam, Brownlee, Voakes, & Wilhoit, 2006) or overseas (e.g., Hanitzsch & Berganza, 2012).

[1]University of Washington, Seattle, USA
[2]RTI International, Chicago, IL, USA

Corresponding Author:
Patricia Moy, Department of Communication, University of Washington, Box 353740, Seattle, WA 98195-3740, USA.
Email: pmoy@uw.edu

Regardless of the conditions under which these published data have been collected—perhaps as a stand-alone survey or as part of an omnibus; perhaps by telephone, mail, or web; and perhaps in conjunction with content analyses or some other research methods—several commonalities emerge. First, contemporary survey data are not uncommon in the pages of the journals of our discipline. According to an analysis undertaken for this article (the key findings of which are reported later), the empirically oriented association-wide journals of the International Communication Association and the Association for Education in Journalism and Mass Communication—*Journal of Communication, Human Communication Research, Communication Theory, Journal of Computer-Mediated Communication*, and *Journalism & Mass Communication Quarterly*—published more than 1,150 articles between 2008 and 2014. Of these articles, 27.7% relied in part or fully on survey data to support their conclusions.

This figure is higher than the 20% Trumbo (2004) reported in his canvassing of eight journals from *Communication Monographs, Communication Research, Critical Studies in Mass Communication, Human Communication Research, Journal of Broadcasting & Electronic Media, Journal of Communication, Journalism & Mass Communication Quarterly*, and *Quarterly Journal of Speech*. However, this 27.7% is similar to the 31% emerging from Cooper, Potter, and Dupagne's (1993) sample of articles from these same journals from 1965 to 1989.

Second, because these articles have undergone peer review, expert referees and the editors presumably have vetted the final product on its theoretical, methodological, and analytical fronts. But more importantly, these reviewers also would have assessed the extent to which the authors have made a compelling case for their study—the investigation presumably contributes to the literature and has significant theoretical and practical implications. As Donsbach (2006) advocated, we should "strive for research that has the potential to serve such general human and democratic values and norms, that is, 'research in the public interest'" (p. 447).

Relevance notwithstanding, academic disciplines demand data that are reliable and valid, and journalism and mass communication is no different. Such fundamental issues are longstanding, and can be traced back to joint efforts in the 1940s by the National Research Council and the Social Science Research Council, the goal of which was to assess "the validity of statements, opinion, and information furnished by respondents" (Turner & Martin, 1984, p. 3). Today, these issues are no less vital as survey data, which facilitate the description of large populations, provide the basis for policy making and planning, as in the case of the U.S. decennial census or election polls.

Despite the sustained use of survey research, the methodology has not remained unchanged, particularly given technological and social developments. Against this backdrop, this article first presents an overview of how survey research is evaluated, and then reviews chronic and contemporary threats to data quality. Given shifts in technology (e.g., the increasing prevalence of smartphones and social media), this article details some best practices in the disclosure of survey findings. In doing so, it identifies challenges and potential opportunities for survey research in journalism and mass communication.

The Total Survey Error (TSE) Framework as Guiding Principle

A guiding principle to evaluate the quality of survey research is the TSE framework. TSE can be summarized as the difference between a survey estimate and the true value of a parameter in the population of interest (Biemer & Lyberg, 2003). Although the survey literature includes several variants of the basic framework (e.g., Groves et al., 2004; Weisberg, 2005), a commonality is that TSE breaks the survey process into steps, such as survey design, collection, and estimation, and links the potential sources of error to those steps. The importance of TSE as a guiding principle cannot be underestimated, as it gives researchers a common "language" with which to assess the quality of survey research. Indeed, TSE has been described as the "central organizing structure of the field of survey methodology" (Groves & Lyberg, 2010, p. 849).

Biemer and Lyberg (2003) provided a concise conceptual overview of TSE that guides researchers through the error dimensions inherent in the survey process. First, *specification error* can result when the wrong survey question is used to measure the concept of interest. Then, *frame error* can occur if a biased or incomplete set of individuals is used to draw the survey sample. Next, *nonresponse error* occurs when selected individuals do not respond to the survey or to certain items in the survey, biasing the estimates. *Measurement error* is introduced when the survey interviewer or respondent does not interpret, administer, or react to the questions in the survey as intended in the design. Finally, *processing error* results when there are problems with the editing, entry, or coding of data; the calculation and application of survey weights; or the process of data tabulation.

All these types of errors can undermine the reliability and validity of the data collected. However, for the journalism and mass communication scholar whose primary goal is to craft a survey, we highlight some common ways in which specification error and measurement error can manifest themselves and ways to preempt or address them. Opting to focus on these particular types of errors does not imply the lack of import of the other types. Indeed, we refer the interested reader to Groves et al. (2004); Rossi, Wright, and Anderson (1983); and de Leeuw, Hox, and Dillman (2008).

Chronic Challenges to Data Quality

Survey research permits the collection of data in a relatively standardized format. However, in face-to-face and telephone interviews, these data are collected from an inherently social situation with an interviewer present in some form. First, the interviewer must make contact with an individual. If and when contact is made, the social nature of this interaction will likely shape how an individual responds—and certainly, whether he or she chooses to participate in the survey at all. Dillman (1978; see also Dillman, Smyth, & Christian, 2014) drew upon social exchange theory (Thibaut & Kelley, 1959) to explain a potential respondent's decision to participate in a survey. Specifically, participation is more likely to occur if one engages in a cost–benefit analysis and perceives the rewards (e.g., answering an interesting questionnaire) to

outweigh the costs (e.g., finding the time to participate or being embarrassed by not understanding a question), and if sufficient trust is established with the interviewer (e.g., via a token of appreciation or legitimate sponsorship of the survey).

Assuming the interviewer has succeeded in contacting and converting the potential respondent to an actual respondent, it is insufficient to assume that all data collected from the respondent are usable. According to Tourangeau, Rips, and Rasinski's (2000) model of the survey response process, respondents generally need to comprehend the question being asked of them, retrieve the relevant information, use that information to make the required judgments, and select and report their answer. Unfortunately, considerable variance can exist in the degree to which respondents comprehend, retrieve, judge, and respond accurately. This section focuses on some common concerns that threaten survey researchers' goal in collecting reliable and valid data.

Social Desirability Bias

In constructing surveys, researchers need to craft items that all respondents will interpret in the same manner, and are willing and able to answer accurately. This is no easy feat given the breadth of topics about which surveys are written. One of the most common sources of measurement error—response bias, in this case—is *social desirability bias*, the tendency to portray oneself as a "good respondent" or someone whose thoughts, attitudes, and behaviors are socially acceptable.

Social desirability bias can arise for items dealing with highly sensitive topics such as drug use, sexual behaviors, and criminal behavior. It also is an issue for attitudinal items that relate to controversial political and social issues such as abortion and race relations. For instance, in the height of the Civil Rights era, African American respondents reported higher levels of hostility toward Whites and greater militancy when the interviewer was African American (as opposed to White; Schuman & Converse, 1971). Social desirability bias also can arise for ostensibly innocuous questions common in journalism and mass communication research, such as the number of days one reads a newspaper. In short, the level of sensitivity of a question can vary by individual, social group, or cohort. In the case of marijuana, one might expect markedly different latitudes of acceptance between Dutch and American respondents, as well as differences between older and younger respondents (Lensvelt-Mulders, 2008), or among those residents in American states where marijuana is legal compared with those in states where it is not.

Despite early studies of social desirability bias during an era when face-to-face interviews were the norm, this phenomenon can emerge even without the presence of a physical being collecting data. In fact, the move toward self-administered modes of data collection, particularly mail and web-based surveys, has likely reduced interviewer effects, but sometimes, the topic or question wording unknowingly signals what is acceptable. An item on frequency of newspaper reading or television news viewing is presumably straightforward; respondents are asked the number of days (or how often) they read a newspaper or watch television news. But those respondents who do not consume news—who would answer "zero days" or "never" under ideal (fully truthful) conditions—still might feel pressure to report a more socially desirable

response. Conversely, an item that asks respondents the frequency with which they watch game shows or reality television shows can nudge viewers to report levels of exposure that are lower than actual levels.

Hence, scholars regularly include prefatory language that makes it acceptable for the respondent to report lower levels of (or no) news consumption or high levels of exposure to lighter fare (e.g., "Different people spend different amounts of time with the news. How often do you . . ."). Including a more permissive frame of reference can greatly reduce social desirability bias. As Prior (2009) recommended, the validity of conclusions drawn about media effects can be improved when researchers encourage comparison with others.

Scholars across a number of disciplines also have begun to employ list experiments, or item-count techniques. In this design, respondents are assigned to a control or treatment group. Those in the former are presented with a list of nonsensitive items (e.g., behaviors, policies) and asked to identify how many they have engaged in or supported. Individuals in the treatment group are given the same list plus the one sensitive item that is of interest. Exemplified in their seminal list experiment involving racial prejudice, Sniderman, Tetlock, and Piazza (1992) randomized participants into either a control group or one of two treatment conditions.

```
Now I'm going to read you (three/four) things that sometimes make
people angry or upset. After I read all (three/four), just tell
me HOW MANY of them upset you. (I don't want to know which ones,
just how many.)

Version 1: (Basic three items)

(1) the federal government increasing the tax on gasoline
(2) professional athletes getting million-dollar-plus salaries
(3) large corporations polluting the environment

Version 2: (Add black family)

(1) the federal government increasing the tax on gasoline
(2) professional athletes getting million-dollar-plus salaries
(3) large corporations polluting the environment
(4) a black family moving next door to you

Version 3: (Add black leaders)

(1) the federal government increasing the tax on gasoline
(2) professional athletes getting million-dollar-plus salaries
(3) large corporations polluting the environment
(4) black leaders asking the government for affirmative action

How many, if any, of these things upset you?
```

Given a large enough sample, the difference between the average responses of the two groups becomes the population proportion that has engaged in the behavior or

supports the policy of interest. Although the list experiment was initially better suited for scholars who did not need more than differences in mean responses, analytical techniques have evolved to allow researchers to discern who in the treatment condition is more likely to select the sensitive item (Blair & Imai, 2012; A. N. Glynn, 2013).

Questionnaire Construction

Questionnaire construction is deceptively simple. After all, soliciting information in some fashion is part and parcel of everyday life. Unfortunately, the ease with which questions are asked and answered in daily routines belies the difficulty of asking standardized survey questions that produce reliable and valid data. Hence the need to *pilot-test* survey items, if not the entire questionnaire. In fact, survey researchers regularly employ a host of methods to gauge the viability of survey items. These include cognitive interviewing (Willis, 2005), rigorous expert review and focus groups, and usability testing, to name but a few (see U.S. Bureau of the Census, 2003, for an overview).

Researchers need to ensure clarity of meaning, avoid possible misinterpretations, and determine whether the items elicit sufficient variance in responses. Such assurances are particularly necessary when deploying new survey items or adapting items for study in a new context. For instance, in operationalizing the public in her spiral of silence theory, Noelle-Neumann (1974) offered respondents a hypothetical train test, in which respondents were asked their likelihood of expressing their opinion among fellow travelers during a train journey. This train-test measure, deployed in Germany, could not be used in its original formulation everywhere as train travel in Germany is particularly commonplace. Consequently, early U.S.-based research on the spiral of silence operationalized public as "a social gathering of people you know" (C. J. Glynn & McLeod, 1984, p. 734). Today, with sea changes afforded by technology, opinion expression is measured in terms of willingness to speak out in online chat rooms (Ho & McLeod, 2008), comment on social media (Gearhart & Zhang, 2014), and provide online reviews (Askay, 2015).

Surveys are not one-size-fits-all. Researchers therefore need to identify what specific types of questions best serve their needs and ultimately how to ask those questions. To begin, has the topic of interest been sufficiently studied to warrant the use of *closed-ended questions*? These items, which provide the respondent a set of standardized answers from which to choose, are significantly easier to answer than *open-ended items*. Their responses also facilitate comparisons and typically are easier to analyze. However, the use of closed-ended questions makes the very important assumption that the responses offered to the respondent will span the universe of possible answers.

Open-ended questions, on the contrary, allow respondents to answer in their own words and, therefore, are viewed as being more valid. The MIP question, often the outcome variable in agenda-setting studies, is routinely asked in professional surveys: The Gallup Poll regularly includes an MIP item on its national surveys. Also, as a multicountry undertaking, the Eurobarometer asks its respondents what two most important issues face their country, their community, the European Union, and

themselves at the moment. Academic surveys such as the American National Election Studies (ANES) include not only the MIP, but also open-ended items asking respondents what they like and dislike about specific candidates and parties. However, the range of potential answers to open-ended questions is vast, as great interviewer variability exists in handling these questions (Sheatsley, 1983). Consequently, their coding may be burdensome, with the MIP question in the 2004 ANES utilizing 154 categories (Lupia, 2008). Also, as with any content analysis, coding of open-ended responses requires training and assessment of intercoder reliability (Lacy, Watson, Riffe, & Lovejoy, 2015).

Survey researchers who rely on closed-ended questions often use *ratings scales* (e.g., Likert-type scales, semantic differential items, or feeling thermometers). Ratings scales are particularly useful as they can facilitate the solicitation of responses and reduce the time the survey takes overall. This is especially true when matrix questions are used, or when several questions utilize the same answer categories and are asked sequentially. However, increasing the ease of responding can also increase response set, the tendency for individuals to answer a series of questions in the same way (all "yes" or all "disagree"; Sudman & Bradburn, 1982). In the case of attitudinal items, the statements can be regularly alternated such that responses on one end of the rating scale do not all reflect greater support of that statement. This regular alternating of statement direction (while keeping the scale constant) introduces the potential for greater cognitive effort on the part of the respondent, which ultimately can enhance data quality.

Many principles of question wording speak to the need for what Lupia (2016) characterized as *clarity of purpose* and *universality of meaning*. The typical television-exposure item ("How often did you watch television during the last week?") is riddled with variance in interpretation. Some individuals may define "watching television" as actively viewing, whereas others may interpret it more loosely (i.e., as having the television set on, more aligned with data captured by Nielsen). The temporal parameter included in the item also raises questions as to whether a respondent provides an answer based on weekdays only, the full week prior to the day the data were collected, or evenings only (Belson, 1981). Exacerbating matters today is the streaming of televised content, such that television sets are no longer needed—and questions about frequency of watching evening news in the traditional (real-time) sense can be problematic.

Clarity in surveys can be easily threatened by, for example, *double-barreled* items that really ask two questions in one. The item "To what extent do you support British and American immigration policies?" in fact requires the respondent to tap into his or her attitudes about policies in two different countries, and should these attitudes diverge, responses likely would not allow him or her to register support for one country's policies and opposition to the other's.

Similarly, questions that include *double negatives* are problematic. Termed an "extreme example" (Weisberg, Krosnick, & Bowen, 1996) and "a modern cautionary tale" (Ladd, 1994), the oft-cited 1992 Holocaust survey conducted by the Roper Organization on behalf of the American Jewish Committee emblematizes the problems raised by double negatives. Framed as a yes-no question, the key item asked,

"Does it seem possible to you, or does it seem impossible to you that the Nazi extermination of the Jews never happened?" That 22% of adults expressed belief in this possibility led to a public outcry over the prevalence of anti-Semitism. It also led the Gallup Organization to test the effects of question wording. In this second study, half of all respondents were posed the question asked by Roper, whereas the other half were asked, "Do you doubt that the Holocaust actually happened, or not?" The percentages were markedly different across the two groups—33% for the former and 9% for the latter.

Leading questions also threaten the reliability and validity of survey data. Because so much of survey research in journalism and mass communication research is grounded in public affairs issues, researchers are often challenged by presenting the issue neutrally and in a way that does not nudge the respondent to answer in a particular way. For instance, in trial-heat surveys, which offer hypothetical matchups between candidates running for office ("If the election were held today, would you vote for . . . ?"), respondents can be given the names of two candidates. Sometimes, the candidates' names might be labeled with their party affiliation (Democrat Barack Obama or Republican Mitt Romney), or in the case of a race in which an incumbent is running, the two candidates might be labeled by their relative position (President Barack Obama or challenger Mitt Romney). As the large corpus of literature in framing indicates, the inclusion of such information can shape political attitudes and beliefs (or in this case, reported intended behaviors; see Scheufele & Iyengar, 2014, for a recent review). In this case, this information can activate a respondent's partisanship or a pro-establishment bias; such orientations work alongside numerous other predictors such as name recognition, particularly in low-level races (Kam & Zechmeister, 2013).

Achieving clarity in surveys means understanding what respondents (or members of the researcher's population of interest) know about an issue. If the topic of study is not too salient or is relatively new on the social and political landscape, researchers might benefit from *providing additional information* yet *avoiding inundating the respondent with information*. As Saris and Gallhofer (2007) observed, questions can also be extended without offering new information in a way that can lead to more accurate data. Using abortion as an issue of interest, they noted how the question "Should abortion be legalized? (no/yes)" can be lengthened as follows: "The next question concerns the legalization of abortion. People have different opinions about this issue. Therefore, we would like to know your personal opinion. Can you tell me what your opinion is, should abortion be legalized? (no/yes)" (Saris & Gallhofer, 2007, pp. 133-134). This longer question clearly does not include substantively new information, but it can provide the respondent more time to think and therefore can lead to enhanced data quality. If, however, the topic of study is well-trodden (e.g., local crime or the economy), including information in general measures of these topics can be unnecessary and burdensome to the respondent.

Finally, regardless of the questions asked, *question order* should always be a consideration. Because the survey response process (Tourangeau et al., 2000) is predicated in large part on the information the respondent had before the onset of the survey and/or was exposed to during the interview process, question order matters. Common

question-order effects are consistency effects, in which respondents give consonant answers to two or more questions (Schuman & Presser, 1996), and contrast effects, when respondents consciously reject the influence of prior questions when answering a particular item (Smith, 1992). The potential for question-order effects is why polling organizations ask their MIP and approval-rating questions *before* questions about specific policies and issues.

Best Practices in the Disclosure of Survey Findings

Reporting Data From Probability Samples

Given the aforementioned challenges to survey quality, and considering the other sources of error addressed by the TSE framework, this section presents best practices for the reporting of survey findings. Understanding these sources of error and how they can affect survey estimates is critical in evaluating the quality of the figures and conclusions drawn from the data. The American Association for Public Opinion Research (AAPOR; 2010) advocates that upon release of a survey-based report, specific types of information (at a minimum) are disclosed immediately.

This information includes (a) who sponsored the research, who conducted the study, as well as who funded it; (b) the exact wording and presentation of questions and responses; (c) a full description of the population under study and sampling frame used to identify it; (d) a description of the sample design, and method of respondent selection (i.e., using probability or nonprobability sampling); (e) sample sizes and a discussion of the precision of the findings, including estimates of sampling error and weighting or estimating procedures; and (f) the method(s) and dates of data collection. AAPOR (2015) also advocated for the reporting of response rates computed according to its Standard Definitions.

In their review of nearly 500 survey-research-based articles published in four mass communication journals between 2001 and 2010 using the TSE framework, Ha et al. (2015) found the lack of information on response rates and survey limitations to be common problems.

In our aforementioned content analysis of journal articles published during an overlapping period (2008-2014), we found quite some variance in the types of surveys employed as well as the extent to which methodological details were provided. First, nearly two-thirds (63.3%) of survey research articles utilized primary data, and the plurality of articles were based on online surveys (40.9%). Telephone surveys and face-to-face surveys were still common, at 26.4% and 24.8%, respectively; mail surveys appeared least frequently, in 7.9% of survey-based articles.

Across the 330 survey-based articles, mention of the population studied was near-universal, and four in five articles mentioned the sample design. Seven in 10 mentioned the dates of fieldwork, and less than half (48.5%) noted the study's response or cooperation rate. The provision of question wording varied greatly: Over a third (38.5%) of articles provided a general description of the questions used; nearly a half (46.7%) supplied the exact wording for some of the key measures; and only 14.8% noted the exact question wording for all items.

Table 1. Comparison of Methodological Details in Articles Based on Primary-Versus Secondary-Data Collection Efforts.

Methodological details	Data collection		χ^2	df, p value
	Primary (n = 209)	Secondary (n = 107)		
Mode of data collection			60.83	3 df, p < .000
Face-to-face	29.2	17.8		
Mail	7.7	7.5		
Telephone	12.4	52.3		
Web	50.7	22.4		
Dates of fieldwork	57.4	93.5	43.46	1 df, p < .000
Question wording			8.04	2 df, p < .018
General description of all items	41.6	31.8		
Exact wording for some items	47.4	45.8		
Exact wording for all items	11.0	22.4		
Population studied	99.5	98.1	1.46	1 df, p < .228
Sample design	75.6	87.9	6.58	1 df, p < .01
Response or cooperation rate	40.7	59.8	10.41	1 df, p < .001
Limitations	84.7	81.3	0.59	1 df, p < .443

Note. The articles presented here do not total 330, as coders could not discern whether some articles employed primary or secondary data.

Notably, significant differences emerged between articles based on primary data versus secondary data. As shown in Table 1, modes of data collection were distributed significantly differently across the two groups of articles. Specifically, half of the articles based on primary data collection efforts utilized web surveys (50.7%), whereas more than half of the articles based on secondary data came from telephone interviews (52.3%). It is reasonable to assume this difference stems in part from the relative financial ease with which Internet-based surveys are conducted.

In addition, authors who utilized *secondary data* tended to be significantly more likely to disclose methodological details (bottom half of Table 1). Those relying on secondary survey data were significantly more likely to report the dates of fieldwork, the sample design, and the response or cooperation rate. However, they were no more likely than those analyzing their own primary data to note the population studied or provide caveats and limitations to their study.

A cursory look at these data would be cause for both pessimism and optimism. However, less than full adherence to AAPOR's disclosure standards cannot be viewed necessarily as flagrant disregard on the part of the researchers. Rather, the content that gets published (or not) in an article likely stems in part from the prioritization set by reviewers, not to mention space constraints and word limits set by editors.

Fortunately, publishers have begun to recognize the impact of these constraints, and journals now offer authors the opportunity to provide additional information online.

Such information can include supplemental analyses, details about measurement, and information about question wording (e.g., Tesler, 2015), even data sets and codes for data analysis (e.g., Kiewiet de Jonge, in press). Online appendices offer an easy way of sharing information that ranges from text-based background information to more complex video footage. As a vehicle, these supplemental repositories have great potential to move survey researchers closer to the disclosure practices recommended— and indeed, greater transparency. Such opportunities align with current efforts such as the Data Access and Research Transparency (DA-RT) movement begun in political science, the AAPOR Transparency Initiative, and the Berkeley Initiative for Transparency in the Social Sciences (BITSS). These efforts emphasize the need for open science that ultimately will enhance the credibility, legitimacy, and value of social science research.

Reporting Data From Nonprobability Samples

When surveys are conducted without the benefit of probability sampling (i.e., not every member of the frame has a known and nonzero chance of selection), researchers should pay particular attention to reporting their methods and conclusions such that the research consumer can fully understand the assumptions and limitations stemming from the sampling approach. Nonprobability methods have been used increasingly with the rise of online surveys (Baker et al., 2013). These surveys typically employ panels of individuals prerecruited for the convenience of the researcher. Such panels, also termed "opt-in panels," are an especially attractive option for researchers faced with time or cost constraints. The literature includes several examples of research employing nonprobability designs yielding results that are comparable with, or even superior to, probability surveys. Preelection polling in particular has relied on nonprobability methods increasingly in recent years (e.g., Silver, 2012; Twyman, 2008; Vavreck & Rivers, 2008).

To recruit these panels, providers such as Harris Interactive, YouGov, and Toluna often use quotas or other methods to ensure that, to the fullest extent possible, the makeup of the panel reflects the demographic distributions present in the general population. To account for the convenience design of opt-in panels, researchers compensate for the lack of known selection probabilities when analyzing their data. They utilize strategies such as sample matching with probability-based sources (Vavreck & Rivers, 2008), frequency-distribution matching (Rothman & Greenland, 1998), and propensity score models for bias reduction (Terhanian & Bremer, 2012). Overall, weighting is the most common strategy employed to correct deviations of the sample from the population of interest (see Pasek, 2015, for a recent application).

While probability samples have the benefit of the TSE framework for evaluation, nonprobability samples cannot fit into a single rubric of quality. In such cases, transparency is essential. Making inferences from any probability or nonprobability survey requires some reliance on modeling assumptions. Baker et al. (2013) concluded that "non-probability samples may be appropriate for making statistical inferences, but the validity of the inferences rests on the appropriateness of the assumptions underlying the model and how deviations from those assumptions affect the specific estimates" (p. 5).

The utility of online samples and the quality of data emerging from such samples continue to be topics of great debate and concern. At the same time, single-digit response rates from probability-based samples, coupled with recent election forecasting debacles in the United States, the United Kingdom, and Israel, raise questions about the quality of data from more "traditional" surveys. So despite a growing acceptance of online surveys, a healthy skepticism remains. For example, according to the Pew Research Center (2015), the viability of online polling is made possible by "the fact that the vast majority of Americans now use the internet." The report goes on to state, "But 89% [today's internet adoption rate] is not 100%, and surveys that include only those who use the internet (and are willing to take surveys online) run the risk of producing biased results." In a comparison of web- and non-web-based samples, the Pew Research Center found over two-thirds of 406 items had a 0- or 1-point difference. However, as web-based samples are biased in their responses to Internet- and technology-related items, journalism and mass communication scholars interested in assessing point estimates of new media use need to take note. Regardless of the levels of optimism or concern regarding online polls, they are here to stay. As SurveyMonkey's Jon Cohen noted, "The reality is that people are responding to surveys. We need to meet people where they are" (Higgins, 2015).

With all the data generated by the proliferation of web-based surveys, how then does the research consumer assess the survey design and results of data collected from a nonprobability design? According to AAPOR, it is vital for researchers to fully describe the methods used to draw the sample, collect the survey data, and make inferences from the data collected. The report warns against "black-box" methodologies that, coupled with inadequate information, will impede assessments of the quality of research.

Opportunities and Challenges for Survey Research Today

Until the 1990s, surveys were conducted almost exclusively in person, via landline telephone, and by mail. As our content analysis of survey-based articles illustrates, today web-based surveys are relatively commonplace in journalism and mass communication research (see Hoffman & Young, 2011, who juxtapose their use against the use of telephone and mail surveys). The Internet aside, recent trends in survey research and developments on the communications landscape have introduced opportunities and challenges for the field.

Survey Research in an Era of Technology (Mobile Devices)

The increasing reliance on technology to conduct survey research has been fueled by the decline in landline telephone coverage, which in the United States has decreased such that nearly half of all households can no longer be reached this way (Blumberg & Luke, 2015). Cellular telephones and related mobile devices have become the norm, but researchers face significant costs and stringent rules about contacting individuals via a mobile device. However, the increased functionality brought about by the digital

age has expanded how people access and share information via these devices. With the rapid adoption of smartphones, researchers have new options to supplement or even replace more traditional methods.

Much research on mobile surveys to date has focused on response to web surveys via a mobile browser, looking at, for example, issues related to viewability, the implications of employing long lists of questions, and breakoffs (Buskirk & Andrus, 2012). However, other mobile tools have the potential to provide "in-the-moment" data on a continuous basis throughout the day, including location-based or event-based survey data. Respondent location on mobile devices can be determined via global positioning software (GPS), and the supplementation of survey data with visual data, such as photos or videos of the respondent's local environment, is a real possibility in this new age. These opportunities are exemplified in Bailey et al.'s (2011) study of South Africans during the 2010 World Cup.

Pertinent to journalism and mass communication scholars, smartphones allow for the better understanding of how individuals engage with media and technology. The Pew Research Center (2015) conducted an "experience sampling" survey of smartphone owners who were contacted twice a day for a week. At each point of contact, these individuals were asked how they had used their phone in the hour immediately preceding the survey. This study allowed researchers to discern the smartphone features and apps the smartphone owners used, where they were used, the types of problems the phones were used to solve, and the emotions the owners felt in using their devices.

Such a "mobile exposure diary," as Ohme, de Vreese, and Albaek (in press) see it, can be used to effectively collect data frequently from short and simple surveys. These "diaries," which ask about specific media content in short lapsed periods, presumably require less cognitive effort. Ohme et al.'s exposure measures follow their audio-page-stream typology: Respondents are first asked where they heard about politics today, then where they read about politics today, and finally, if they were exposed to political information on social media, what they actually read.

Within the possibilities for leveraging mobile technology for research, one specific area of promise is the use of short message service (SMS), also known as text messaging or texting, to engage and interact with survey respondents. Researchers are now using text to remind respondents to reply to surveys (Virtanen, Sirkia, & Iokiranta, 2007), to learn about the working status of mobile phones (Buskirk, Callegaro, & Rao, 2010; Steeh, Buskirk, & Callegaro, 2007), and even to conduct short self-administered surveys (e.g., Down & Drake, 2003). Schober et al. (2015) have extensively studied the utility of the latter application, comparing text interviews versus voice interviews with both human and automated interviewers. They find that text surveys require more time to administer but can result in higher completion rates, respondent satisfaction, and data quality. Importantly, they find text messaging allows researchers to interact with respondents in a medium that matches today's communication norms. The asynchronous nature of texting allows respondents to respond to each item when convenient and when they are able to reflect on the question at hand. The lack of a physically present interviewer can even foster more honest and candid responses in text interviews compared with voice interviews.

Regardless of the new possibilities for engaging with and collecting data from respondents, mobile devices come with their own set of considerations and limitations that should be considered before they are employed for survey research. The AAPOR Task Force on Emerging Technologies (Link et al., 2014) advocates that mobile research must match the tools and task to the respondents. Mobile devices may be appropriate for some (but not all) types of data collection, and for some (but not all) respondent types. Researchers should carefully consider the appropriateness of mobile methods before they are employed in a research study. Researchers also should follow established guidelines for contacting cell phones; after all, laws and guidelines for contacting respondents via cell phone often apply to other uses of mobile technology for research.

In this age of smartphone ubiquity, researchers must also recognize that if they are conducting online surveys, they are conducting mobile surveys. Unless response is restricted to desktops and laptops, some individuals will attempt to respond on a mobile device. Unless consideration has been given in advance to the appearance and functionality of the web survey in a mobile setting, data quality can be seriously adversely affected. This suggests the importance of keeping the survey tasks short and simple and remembering that mobile respondents typically have little time to participate in a study "on the go." It is also important to be respectful of respondents' time and the limitations of screen real estate to provide a task that fits the practical limitations and requirements of the user and device. Finally, researchers must remember that, as with other types of survey research, pretesting is essential. Mobile research requires as much, if not more, pretesting to assure that respondents on a variety of devices and in a variety of environments are in position to supply the highest quality data with the lowest amount of measurement error possible.

Survey Research in an Age of Social Media

Beyond mobile technologies, other changes in communications are altering the research landscape, opening new opportunities to measure behaviors and opinions but also introducing new challenges for measurement. In particular, the advent of social media has changed the ways in which individuals both access and share information. It also has afforded researchers new data collection tools and alternative sources of data to augment or potentially replace some traditional methods.

Social media have been used in recent years to actively supplement the survey process through questionnaire development, recruitment, locating, and other applications. To inform questionnaire design, researchers typically employ methods such as cognitive interviewing and focus groups with members of the target population. Recruiting participants and conducting interviews in person, however, can be costly and time-consuming. Geographic diversity in these pretests is also usually limited to the local area of a cognitive laboratory or focus group facility. Through social media, options exist to target, advertise, recruit, and even conduct self-guided cognitive interviews or online focus groups (see Murphy, Keating, & Edgar, 2014, for a full discussion). Social media platforms can also be used for direct recruitment of nonprobability samples for surveys.

Advertisements on sites like Twitter and Facebook can be targeted to individuals fitting specific profiles based on demographics, interests, and the content of their posts. For example, Bhutta (2012) used such platforms to successfully recruit 3,500 Catholics to complete an online survey rapidly and at a low cost. Regarding locating, several researchers have used Facebook to supplement the task of finding and contacting participants in longitudinal studies (Borie-Holtz, 2012; Fleeman, Francis, Henderson, Woodford, & Jani, 2013; Jaffee & Mills, 2012; Rhodes & Marks, 2011).

Social media have also been used passively, or without any interaction between a researcher and subject, as both an alternative and a supplement to traditional survey research methods. This is possible through accessing the large amounts of content-analyzable data posted by individuals and made available through the application programming interfaces (APIs) provided by most social media platforms. Such "big data" sources represent massive potential and challenges for survey research (Japec et al., 2015). Their allure, in part, is that social media content contains individual behavior, attitudes, and opinions, among other information.

Twitter, in particular, has been used to passively study public opinion in many recent research articles. It is an attractive platform for researchers given its popularity, public availability of data, access to network structures between individuals, and the manageable size of posts—Twitter limits posts or "tweets" to 140 characters. Recent research has focused on Twitter's potential to reflect public opinion and applications for its political and social research (e.g., Cavazos-Rehg et al., 2015; Ceron, Curini, Iacus, & Porro, 2014; Murthy & Petto, 2015; O'Connor, Balasubramanyan, Routledge, & Smith, 2010). These studies assume that the content people share on Twitter reflects their attention at a given time, and therefore can provide insights into their behaviors and opinions on a variety of topics. Twitter has been used to measure reactions to breaking news, the outbreak of diseases, and other public phenomena (Bandari, Asur, & Huberman, 2012; Hu et al., 2012; Lanagan & Smeaton, 2011; Petrovic et al., 2013). These studies generally demonstrate an ability of Twitter to conform to other traditional data sources like surveys or predict outcomes in elections. However, other researchers have found inconsistent results, especially in the political arena (Gayo-Avello, 2011, 2013; Jungherr, Jürgens, & Schoen, 2012).

Challenges with using Twitter, or other social media data, in research stem from the lack of coverage and systematic methods for determining and controlling error sources. For instance, only 23% of online adults in the United States use Twitter (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015). In addition, Twitter users are not always individuals. Businesses, media outlets, and even spammers employ Twitter to share and promote certain content. Finally, much of the process of deriving opinion from social media data relies on assumptions made by the researcher in choosing the appropriate keywords in searching content and in training computer algorithms to automatically detect and code "sentiment" or positive, neutral, and negative opinions on a particular topic. The conclusions drawn can vary depending on the choices and assumptions made by the researcher in organizing and interpreting the social media data, so documentation of the process is vital for evaluating the research conducted.

For survey researchers, the greatest value may come from the use of social media in conjunction with surveys. The active applications for questionnaire design, recruitment, and locating are options along with hybrids of active and passive analysis; for instance, Murphy (2014) surveyed individuals and then supplemented their responses with information gleaned from the content they posted on Twitter. The AAPOR Task Force Report on Social Media in Public Opinion Research (Murphy, Link, et al., 2014) provides a good reference for issues concerning the supplementing of survey data with social media resources, and possibilities for the future. The report suggests that social media may currently be best fit for deriving qualitative insights rather than survey-like point estimates. As with survey research, social media research will require replicable and transparent experimentation and reporting to gauge its viability as a source of behavior and opinion. A major outstanding question is whether online social media mean what we think they mean. To validate, further interaction with those who post social media to learn about their intentions and behaviors will be necessary.

Conclusion: Survey Research in an Age of Increasingly Prevalent Survey Research

To varying degrees, mobile technologies and social media are playing more prominent and familiar roles in survey research. The technologies that allow a survey to be designed and implemented in various manners also allow researchers to embed experiments in surveys (or include more sophisticated survey designs in experimental designs). They also facilitate the ease with which survey research can be conducted on a cross-national comparative basis, an advantage given the number of issues that have become transnational, such as immigration, terrorism, women's rights, and climate change.

In addition, as data collection and data transparency efforts become more widespread, the replication of survey data, either for substantive or methodological purposes, will become more routine. In other words, growing access to survey research data will make it significantly easier for scholars to mine data, pose hypotheses, and ask questions. However, an increase in access to data does not necessarily bring with it an increase in publishable research. As Holbert and Hmielowski (2011) wrote, "A researcher seeking out a data set that has already been collected for the purposes of addressing a specific research question cannot create something out of nothing (e.g., make a specific item materialize that was not collected)" (p. 92). In canvassing the terrain of secondary data analyses (many of which can be found in journalism and mass communication studies), they note that successful endeavors are marked by creativity. The choice of data, the creation of variables, and the data analyses of any secondary data analytic study can be assessed in terms of their novelty; effectiveness, derived from valid and reliable results; and authenticity, the degree to which the study represents and is true to a specific discipline.

Holbert and Hmielowski's (2011) typology reminds all survey researchers that although the contours of journalism and mass communication and their constituent

methods, including survey methodology, continue to expand, issues of conceptualization will always be key.

Declaration of Conflicting Interests

Funding

References

American Association for Public Opinion Research. (2010). *Disclosure standards*. Retrieved from https://www.aapor.org/Standards-Ethics/AAPOR-Code-of-Ethics/Survey-Disclosure-Checklist/Disclosure-Standards.aspx

American Association for Public Opinion Research. (2015). *Standard definitions: Final dispositions of case codes and outcome rates for surveys* (8th ed.). Oakbrook Terrace, IL: Author.

Askay, D. A. (2015). Silence in the crowd: The spiral of silence in contributing to the positive bias of opinions in an online review system. *New Media & Society*, *17*, 1811-1829. doi:10.1177/1461444814535190

Bailey, J. T., Conry, S., Bensky, E. N., Vanno, L., Benezra, K., Makowska, H., & Link, M. (2011, April). *Using mobile digital ethnography to measure the 2010 World Cup*. Paper presented at the Mobile Research Conference, London, England.

Baker, R., Brick, J. M., Bates, N. A., Battaglia, M., Couper, M. P., Dever, J., . . . Tourangeau, R. (2013). *Report of the AAPOR task force on non-probability sampling*. Retrieved from http://www.aapor.org/AAPOR_Main/media/MainSiteFiles/NPS_TF_Report_Final_7_revised_FNL_6_22_13.pdf

Bandari, R., Asur, S., & Huberman, B. A. (2012). The pulse of news in social media: Forecasting popularity. *Association for the Advancement of Artificial Intelligence*. Retrieved from http://arxiv.org/abs/1202.0332

Belson, W. (1981). *The design and understanding of survey questions*. London, England: Gower.

Bhutta, C. B. (2012). Not by the book: Facebook as a sampling frame. *Sociological Methods Research*, *41*, 57-88.

Biemer, P. P., & Lyberg, L. E. (2003). *Introduction to survey quality*. Hoboken, NJ: John Wiley.

Blair, G., & Imai, K. (2012). Statistical analysis of list experiments. *Political Analysis*, *20*, 47-77. doi:10.1093/pan/mpr048

Blumberg, S., & Luke, J. (2015). *Wireless substitution: Early release of estimates from the national health interview survey, July–December 2014*. Retrieved from http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201506.pdf

Borie-Holtz, D. (2012, May). *Update your status lately? Then why not respond to our survey*! Paper presented at the Annual Conference of the American Association of Public Opinion Research, Orlando, FL.

Brosius, H.-B., & Haas, A. (2011). Agenda setting. In P. Moy (Ed.), *Oxford bibliographies in communication*. New York, NY: Oxford University Press. doi:10.1093/obo/9780199756841-0021

Buskirk, T. D., & Andrus, C. (2012). Smart surveys for smartphone: Exploring various approaches for conducting online mobile surveys via smartphones. *Survey Practice*, *5*(1), 1-11. Retrieved from http://surveypractice.wordpress.com/2012/02/21/smart-surveys-for-smart-phones/

Buskirk, T. D., Callegaro, M., & Rao, K. (2010). "N the network"? Using internet resources for predicting cell phone number status. *Social Science Computer Review*, *28*, 271-286. doi:10.1177/0894439309353026

Cavazos-Rehg, P. A., Krauss, M., Fisher, S. L., Salyer, P., Grucza, R. A., & Bierut, L. J. (2015). Twitter chatter about marijuana. *Journal of Adolescent Health*, *56*, 139-145. doi:10.1016/j.jadohealth.2014.10.270

Ceron, A., Curini, L., Iacus, S. M., & Porro, G. (2014). Every tweet counts? How sentiment analysis of social media can improve our knowledge of citizens' political preferences with an application to Italy and France. *New Media & Society*, *16*, 340-358. doi:10.1177/1461444813480466

Cooper, R., Potter, W. J., & Dupagne, M. (1993). A status report on methods used in mass communication research. *Journalism Educator*, *48*(4), 54-61. doi:10.1177/107769589304800408

de Leeuw, E. D., Hox, J. J., & Dillman, D. A. (2008). *International handbook of survey methodology*. New York, NY: Lawrence Erlbaum.

Dillman, D. A. (1978). *Mail and telephone surveys: The total design method*. New York, NY: John Wiley.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken, NJ: John Wiley.

Donsbach, W. (2006). The identity of communication research. *Journal of Communication*, *56*, 437-448. doi:10.1111/j.1460-2466.2006.00294.x

Donsbach, W., Salmon, C. T., & Tsfati, Y. (2013). *The spiral of silence: New perspectives on communication and public opinion*. New York, NY: Routledge.

Down, J., & Drake, S. (2003, September 17-19). *SMS polling: A methodological review*. Paper presented at the Fourth ASC International Conference on Survey and Statistical Computing, Warwick, UK.

Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., & Madden, M. (2015). *Social media update 2014*. Washington, DC: Pew Internet and American Life Project. Retrieved from http://www.pewinternet.org/files/2015/01/PI_SocialMediaUpdate20144.pdf

Fleeman, A., Francis, K., Henderson, T., Woodford, M., & Jani, M. (2013, May). *The use of email, text messages, and Facebook to increase response rates among adolescents in a longitudinal study*. Paper presented at the annual conference of the American Association of Public Opinion Research, Boston, MA.

Gayo-Avello, D. (2011). Don't turn social media into another "Literary Digest" poll. *Communications of the ACM*, *54*(10), 121-128. doi:10.1145/2001269.2001297

Gayo-Avello, D. (2013). A meta-analysis of state-of-the-art electoral prediction from Twitter data. *Social Science Computer Review*, *31*, 649-679. doi:10.1177/0894439313493979

Gearhart, S., & Zhang, W. (2014). Gay bullying and online opinion expression: Testing spiral of silence in the social media environment. *Social Science Computer Review*, *32*, 18-36. doi:10.1177/0894439313504261

Glynn, A. N. (2013). What can we learn with statistical truth serum? Design and analysis of the list experiment. *Public Opinion Quarterly*, *77*(S1), 159-172. doi:10.1093/poq/nfs070

Glynn, C. J., & McLeod, J. M. (1984). Public opinion du jour: An examination of the spiral of silence. *Public Opinion Quarterly*, *48*, 731-740. doi:10.1086/268879

Groves, R. M., Fowler, F. J., Jr., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2004). *Survey methodology*. Hoboken, NJ: John Wiley.

Groves, R. M., & Lyberg, L. (2010). Total survey error: Past, present, and future. *Public Opinion Quarterly*, *74*, 849-879. doi:10.1093/poq/nfq065

Ha, L., Hu, X., Fang, L., Henize, S., Park, S., Stana, A., & Zhang, X. (2015). Use of survey research in top mass communication journals 2001-2010 and the total survey error paradigm. *Review of Communication*, *15*, 39-59. doi:10.1080/15358593.2015

Hanitzsch, T., & Berganza, R. (2012). Explaining journalists' trust in public institutions across 20 countries: Media freedom, corruption and ownership matter most. *Journal of Communication*, *62*, 794-814. doi:10.1111/j.1460-2466.2012.01663.x

Higgins, M. (2015, November 20). SurveyMonkey fills the gap as traditional political polls flounder. *Bloomberg Politics*. Retrieved from http://www.bloomberg.com/politics/articles/2015-11-20/surveymonkey-fills-the-gap-as-traditional-political-polls-flounder

Ho, S. S., & McLeod, D. M. (2008). Social-psychological influences on opinion expression in face-to-face and computer-mediated communication. *Communication Research*, *35*, 190-207. doi:10.1177/0093650207313159

Hoffman, L. H., & Young, D. G. (2011). Political communication research: Challenges, trends, and opportunities. In E. P. Bucy & R. L. Holbert (Eds.), *The sourcebook for political communication research: Methods, measures, and analytical techniques* (pp. 55-77). New York, NY: Routledge.

Holbert, R. L., & Hmielowski, J. D. (2011). Secondary analysis in political communication viewed as a creative act. In E. P. Bucy & R. L. Holbert (Eds.), *The sourcebook for political communication research: Methods, measures, and analytical techniques* (pp. 81-95). New York, NY: Routledge.

Hu, M., Liu, S., Wei, F., Wu, Y., Stasko, J., & Ma, K.-L. (2012, May). *Breaking news on Twitter*. Paper presented at the Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, Austin, TX.

Jaffee, E. M., & Mills, M. L. (2012, May). *Evaluating new technologies for retention of rural youth in longitudinal survey research*. Paper presented at the annual conference of the American Association of Public Opinion Research, Orlando, FL.

Japec, L., Kreuter, F., Berg, M., Biemer, P., Decker, P., Lampe, C., Lane, J., . . . Usher, A. (2015). Big data in survey research. *Public Opinion Quarterly*, *79*, 839-880. doi:10.1093/poq/nfv039

Jungherr, A., Jürgens, P., & Schoen, H. (2012). Why the pirate party won the German election of 2009 or the trouble with predictions: A response to Tumasjan, A., Sprenger, T. O., Sander, P. G., & Welpe, I. M. "Predicting elections with Twitter: What 140 characters reveal about political sentiment." *Social Science Computer Review*, *30*, 229-234. doi:10.1177/0894439311404119

Kam, C. D., & Zechmeister, E. J. (2013). Name recognition and candidate support. *American Journal of Political Science*, *57*, 971-986. doi:10.1111/ajps.12034

Kiewiet de Jonge, C. (in press). Should researchers abandon questions about "democracy"? Evidence from Latin America. *Public Opinion Quarterly*.

Lacy, S., Watson, B. R., Riffe, D., & Lovejoy, J. (2015). Issues and best practices in content analysis. *Journalism & Mass Communication Quarterly*, *92*, 791-811. doi:10.1177/1077699015607338

Ladd, E. C. (1994). The Holocaust poll error: A modern cautionary tale. *The Public Perspective*, *5*(5), 3-5. Retrieved from https://ropercenter.cornell.edu/public-perspective/ppscan/55/55003.pdf

Lanagan, J., & Smeaton, A. F. (2011, July 17-21). *Using Twitter to detect and tag important events in sports media*. Paper presented at the Fifth International AAAI Conference on Weblogs and Social Media, Barcelona, Spain.

Lensvelt-Mulders, G. (2008). Surveying sensitive topics. In E. D. de Leeuw, J. J. Hox, & D. A. Dillman (Eds.), *International handbook of survey methodology* (pp. 461-478). New York, NY: Lawrence Erlbaum.

Link, M., Murphy, J., Schober, M. F., Buskirk, T., Childs, J. H., & Tesfaye, C. L. (2014). *Mobile technologies for conducting, augmenting and potentially replacing surveys: Report of the AAPOR Task Force on Emerging Technologies in Public Opinion Research*. Oakbrook Terrace, IL: American Association for Public Opinion Research. Retrieved from http://www.aapor.org/AAPOR_Main/media/MainSiteFiles/REVISED_Mobile_Technology_Report_Final_revised10June14.pdf

Lupia, A. (2008). *Challenges and opportunities in open-ended coding*. Presentation at the Conference on Optimal Coding of Open-Ended Survey Data, Ann Arbor, MI. Retrieved from https://iriss.stanford.edu/sites/default/files/lupia_slides.pdf

Lupia, A. (2016). *Uninformed: Why people seem to know so little about politics and what we can do about it*. New York, NY: Oxford University Press.

McCombs, M. E., & Shaw, D. L. (1972). The agenda-setting function of mass media. *Public Opinion Quarterly*, *36*, 176-187. doi:10.1086/267990

Morgan, M., & Shanahan, J. (2010). The state of cultivation. *Journal of Broadcasting and Electronic Media*, *54*, 337-355. doi:10.1080/08838151003735018

Murphy, J. J. (2014). Using respondent tweets to fill in survey gaps. *Quirk's Marketing Research Media*. Retrieved from http://www.quirks.com/articles/2014/20140125-1.aspx

Murphy, J. J., Keating, M. D., & Edgar, J. (2014). Crowdsourcing in the cognitive interviewing process. In *Proceedings of the 2013 Federal Committee on Statistical Methodology Research Conference*. Retrieved from http://fcsm.sites.usa.gov/files/2014/05/H1_Murphy_2013FCSM.pdf

Murphy, J. J., Link, M. W., Childs, J. H., Tesfaye, C. L., Dean, E., Stern, M., . . . Harwood, P. (2014). *Social media in public opinion research: Report of the AAPOR Task Force on Emerging Technologies in Public Opinion Research*. Oakbrook Terrace, IL: American Association for Public Opinion Research. Retrieved from http://www.aapor.org/AAPOR_Main/media/MainSiteFiles/AAPOR_Social_Media_Report_FNL.pdf

Murthy, D., & Petto, L. R. (2015). Comparing print coverage and tweets in elections: A case study of the 2011-2012 U.S. Republican primaries. *Social Science Computer Review*, *33*, 298-314. doi:10.1177/0894439314541925

Noelle-Neumann, E. (1974). The spiral of silence: A theory of public opinion. *Journal of Communication*, *24*(2), 43-51. doi:10.1111/j.1460-2466.1974.tb00367.x

Noelle-Neumann, E. (1993). *The spiral of silence: Public opinion—Our public skin*. Chicago, IL: University of Chicago Press.

O'Connor, B., Balasubramanyan, R., Routledge, B. R., & Smith, N. A. (2010, May). *From tweets to polls: Linking text sentiment to public opinion time series*. Paper presented at the Fourth International AAAI Conference on Weblogs and Social Media, Washington, DC.

Ohme, J., de Vreese, C., & Albaek, E. (in press). Exposure research going mobile: A smart-phone-based measurement of media exposure to political information in a convergent media environment. *Communication Methods and Measures*.

Pasek, J. (2015). When will nonprobability surveys mirror probability surveys? Considering types of inferences and weighting strategies as criteria for correspondence. *International Journal of Public Opinion Research*. Advance online publication. doi:10.1093/ijpor/edv016

Petrovic, S., Osborne, M., McCreadie, R., Macdonald, C., Ounis, I., & Shrimpton, L. (2013, July 8-10). *Can Twitter replace newswire for breaking news*? Paper presented at the Seventh International AAAI Conference on Weblogs and Social Media, Boston, MA.

Pew Research Center. (2015). *Coverage error in internet surveys: Who web-only surveys miss and how that affects results*. Retrieved from http://www.pewresearch.org/files/2015/09/2015-09-22_coverage-error-in-internet-surveys.pdf

Prior, M. (2009). Improving media effects research through better measurement of news exposure. *The Journal of Politics*, *71*, 893-908. doi:10.1017/S0022381609090781

Rhodes, B. B., & Marks, E. L. (2011). Using Facebook to locate sample members. *Survey Practice*, *4*(5). Retrieved from http://www.surveypractice.org/index.php/SurveyPractice/article/view/83/html

Rossi, P. H., Wright, J. D., & Anderson, A. B. (1983). *Handbook of survey research*. San Diego, CA: Academic Press.

Rothman, K. J., & Greenland, S. (1998). *Modern epidemiology* (2nd ed.). Philadelphia, PA: Lippincott Williams & Wilkins.

Saris, W. E., & Gallhofer, I. N. (2007). *Design, evaluation, and analysis of questionnaires for survey research*. Hoboken, NJ: John Wiley.

Scheufele, D. A., & Iyengar, S. (2014). The state of framing research: A call for new directions. In K. Kenski & K. H. Jamieson (Eds.), *The Oxford handbook of political communication*. New York, NY: Oxford University Press. doi:10.1093/oxfordhb/9780199793471.013.47

Schober, M. F., Conrad, F. G., Antoun, C., Ehlen, P., Fail, S., Hupp, A. L., . . . Zhanget, C. (2015). Precision and disclosure in text and voice interviews on smartphones. *PLoS ONE*, *10*(6), e0128337. doi:10.1371/journal.pone.0128337

Schuman, H., & Converse, J. M. (1971). The effects of black and white interviewers on black responses in 1968. *Public Opinion Quarterly*, *35*, 44-68. doi:10.1086/267866

Schuman, H., & Presser, S. (1996). *Questions & answers in attitude surveys: Experiments on question form, wording, and context*. Thousand Oaks, CA: SAGE.

Sheatsley, P. B. (1983). Questionnaire construction and item writing. In P. H. Rossi, J. D. Wright, & A. B. Anderson (Eds.), *Handbook of survey research* (pp. 195-230). San Diego, CA: Academic Press.

Silver, N. (2012, November 10). Which polls fared best (and worst) in the 2012 presidential race. *The New York Times*. Retrieved from http://fivethirtyeight.blogs.nytimes.com/2012/11/10/which-polls-fared-best-and-worst-in-the-2012-presidential-race/?_r=0

Smith, T. W. (1992). Thoughts on the nature of context effects. In N. Schwarz & S. Sudman (Eds.), *Context effects in social and psychological research* (pp. 163-184). New York, NY: Springer-Verlag.

Sniderman, P. M., Tetlock, P. E., & Piazza, T. (1992). *Codebook for the 1991 National Race and Politics Survey*. Berkeley, CA: Survey Research Center. Retrieved from http://sda.berkeley.edu/D3/Natlrace/Doc/nrac.htm

Steeh, C., Buskirk, T. D., & Callegaro, M. (2007). Using text messages in U.S. mobile phone surveys. *Field Methods*, *19*, 59-75. doi:10.1177/1525822X06292852

Sudman, S., & Bradburn, N. M. (1982). *Asking questions: A practical guide to questionnaire design*. San Francisco, CA: Jossey-Bass.

Terhanian, G., & Bremer, J. (2012). A smarter way to select respondents for surveys? *International Journal of Market Research*, *54*, 751-780. doi:10.2501/IJMR-54-6-751-780

Tesler, M. (2015). Priming predispositions and changing policy positions: An account of when mass opinion is primed or changed. *American Journal Political Science*, *59*, 806-824. doi:10.1111/ajps.12157

Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. New York, NY: John Wiley.

Tourangeau, R., Rips, L. J., & Rasinski, K. (2000). *The psychology of survey response*. New York, NY: Cambridge University Press.

Trumbo, C. W. (2004). Research methods in mass communication research: A census of eight journals, 1990-2000. *Journalism & Mass Communication Quarterly*, *81*, 417-436. doi:10.1177/107769900408100212

Turner, C. E., & Martin, E. (1984). *Surveying subjective phenomena*. New York, NY: Russell Sage.

Twyman, J. (2008). Getting it right: YouGov and online survey research in Britain. *Journal of Elections, Public Opinion and Parties*, *18*, 343-354. doi:10.1080/17457280802305169

U.S. Bureau of the Census. (2003). *Census Bureau standard: Pretesting questionnaires and related materials for surveys and censuses*. Retrieved from https://www.census.gov/srd/pretest-standards.pdf

Vavreck, L., & Rivers, D. (2008). The 2006 Cooperative Congressional Election Study. *Journal of Elections, Public Opinion and Parties*, *18*, 355-366. doi:10.1080/17457280802305177

Virtanen, V., Sirkia, T., & Iokiranta, V. (2007). Reducing nonresponse by SMS reminders in mail surveys. *Social Science Computer Review*, *25*, 384-395. doi:10.1177/0894439307299588

Weaver, D. H., Beam, R. A., Brownlee, B. J., Voakes, P. S., & Wilhoit, C. (2006). *The American journalist in the 21st century: U.S. news people at the dawn of a new millennium*. New York, NY: Taylor & Francis.

Weisberg, H. F. (2005). *The total survey error approach: A guide to the new science of survey research*. Chicago, IL: University of Chicago Press.

Weisberg, H. F., Krosnick, J. A., & Bowen, B. D. (1996). *An introduction to survey research, polling, and data analysis* (3rd ed.). Thousand Oaks, CA: SAGE.

Willis, G. (2005). *Cognitive interviewing: A tool for improving questionnaire design*. Thousand Oaks, CA: SAGE.

Author Biographies

Patricia Moy (PhD, University of Wisconsin–Madison) is the Christy Cressey Professor of Communication, Associate Vice Provost for Academic and Student Affairs, and adjunct professor of political science at the University of Washington. Her research focuses on communication and citizenship, and examines the process by which communication shapes public opinion and democratic orientations. She is president of the World Association for Public Opinion Research, editor of *Public Opinion Quarterly*, and editor-in-chief of *Oxford Bibliographies in Communication*. She is a former chair of the International Communication Association's Political Communication Division and a fellow and former president of the Midwest Association for Public Opinion Research.

Joe Murphy (MA, Georgetown University) is a senior survey methodologist at RTI International. He investigates options minimizing error, respondent burden, and cost in surveys. His recent research focus has been on the role of new technologies and communication platforms such as mobile devices and social media in survey research. His substantive interests and experience include energy and health care. He is a former Executive Council member of the American Association for Public Opinion Research and former president of the Midwest Association for Public Opinion Research.