

ORIGINAL ARTICLE

Empirical Intersections in Communication Research: Replication, Multiple Quantitative Methods, and Bridging the Quantitative–Qualitative DivideWilliam L. Benoit¹ & R. Lance Holbert²

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This article concerns ways research can be related: intersections between studies. By “studies,” we do not necessarily mean two publications—although they could be published separately—but two distinct empirical investigations into human communication (we do not use “empirical” as synonymous with “quantitative” analysis and interpretation of texts—observations in qualitative and critical research are also forms of empirical inquiry). We assume that understanding communication is enhanced when research is not conducted in isolation. We do not claim that isolated studies cannot contribute to the literature; but research that relates to other research—reinforcing, integrating, elaborating—can provide greater breadth and depth to our understanding. Furthermore, programmatic research, which systematically investigates an aspect of communication with a series of related studies conducted across contexts or with multiple methods, is particularly valuable in our efforts to understand communication. Programmatic research is not just efficient for scholars (every new study does not require a completely different literature review, theory, or method), but each study can reinforce the conclusions of other studies and may extend the scope of the theory to new contexts. Isolated or unique studies definitely have a place in the literature, but unrelated studies simply cannot provide the depth or breadth of understanding of communication possible with programmatic research.

First, the most basic relationship between two studies is *replication*, in which one study repeats the procedures of another study. Second, two distinct quantitative (or qualitative) methods can be employed in a single study. For example, the classic agenda setting study couples quantitative analysis of news content with surveys of the opinions of news consumers (see, e.g., McCombs, 2004; McCombs & Shaw, 1972). Third, qualitative and quantitative methods can be combined in mixed methods research. This article will elaborate on these three kinds of empirical intersections:

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intersections in replication, intersection within a single method, and intersections in mixed method.

Intersections in replication

There is a long tradition of argument promoting replication in the social sciences (see Campbell & Jackson, 1979; Collins, 1985; Rosenthal, 1976). Replications allow more definitive statements, enhancing certainty about the nature of relationships studied (Rosenthal, 1991b). Lamal (1991) said replication is at the very heart of the scientific method and “necessary because our knowledge is corrigible” (p. 31). The utility of a replication can be assessed by three criteria: when, how, and by whom is the replication being conducted (Rosenthal, 1991b). Replications early in an area of research deserve greater merit. Replications that closely follow previous studies are preferred. Pure replications are rarely published in communication because they are not seen as having sufficient value to take up valuable journal space, but this attitude may be to our field’s detriment (Boster, 2002). In addition, replications performed by different investigators with distinct research agendas are preferred. One basic research distinction could be field of study. For example, Holbert, Benoit, Hansen, and Wen (2002) studied relationships between various political mass communication information outlets and individual-level political knowledge, replicating relationships identified by two political scientists, Brians and Wattenberg (1996).

Replication of any kind is particularly important when social scientists are working with what has come to be defined as “theories of the middle range” (Chaffee & Hochheimer, 1985). Middle-range theories “search for general ‘laws’ about human behavior” (Chaffee & Hochheimer, 1985, p. 86), and buildup over time and across studies as a series of relationships becomes evident to researchers. Chaffee and Hochheimer point to the early work of Lazarsfeld and colleagues as being representative of a research agenda of this kind (e.g., Berelson, Lazarsfeld, & McPhee, 1954; Lazarsfeld, Berelson, & Gaudet, 1944). Any theory of the middle range must involve a concerted focus on replication by a community of scholarship across time. Results that may arise at one point in time and within a particular context may not withstand the test of time, but this may never become known without replication. Chaffee and Hochheimer argued that the Lazarsfeld tradition lost its way in terms of valuing replication. The unfortunate result was decades of misplaced confidence in the limited effects thesis and the two-step model that dominated the field for so many years (e.g., Klapper, 1960).

It is important to recognize that replication as a scientific principle can be applied to *any* method of research. When researchers initially think of replication, they often envision some type of primary data collection involving survey methods or experimentation. However, researchers should also recognize that replication can occur via secondary analysis (e.g., Holbert, 2005). Replication in a secondary analysis scenario has the potential to overcome an inherent weakness found in any primary data collection replication in terms of *who* is doing the data collection. A secondary

analysis study can involve multiple data sets collected by a diverse set of researchers, rather than relying on data collected by a researcher with a specific research agenda.

In addition, formal replication can also be conducted for content analytic work. The use of replication using content analysis has been particularly weak in the field of communication, most likely due to the difficult nature of conducting any single content analysis. However, it is extremely important to conduct and formally assess replications in content analytical work in order to be able to assess whether a specific set of messages are offered consistently across time (e.g., Signorielli, 2003). Intercoder reliability is useful in content analysis; unfortunately, too many studies do not include such data and, when it is included, intercoder reliability is usually conducted on only a subset of the texts employed in a content analysis (typically 10–20% of the sample of texts). Replication should be valued in all areas of empirical communication research, regardless of context or method.

Replication need not only concern an assessment of the relationship between two variables across studies or a content analytical finding across studies. One form of multiple method research that is reflective of a replication of sorts has been constructed for the assessment of measurement as well. Campbell and Fiske (1959) were the first to articulate an approach to assessing simultaneously convergent and discriminant validity (see also Webb, Campbell, Schwartz, & Sechrest, 1966). This approach is known as multitrait, multimethod (MTMM) matrix models, with the most common technique used to testing these models being confirmatory factor analysis in structural equation modeling (SEM; see Marsh & Grayson, 1995). An MTMM matrix model is described by Kenny and Kashy (1992):

. . . this matrix involves factorially combining a set of traits with a set of measurement methods. This factorial combination of traits and methods allows an examination of variance that is due to traits, variance that is due to methods, and unique or error variance. (p. 165)

The variance associated with the traits concerns the discriminant validity of a scale, whereas the variance associated with method allows for assessment of convergent validity. MTMM matrix models assess the degree to which one trait is able to establish itself unidimensionally from other traits (i.e., discriminant validity), and the degree to which the use of multiple methods to measure the same construct converge on the measurement of that construct relative to other constructs (i.e., convergent validity). MTMM models embrace the ideal of using multiple method research to reach the same conclusions. The collection of MTMM data within a single research project does not reflect replication in the sense of the conducting of multiple studies, but nested within the single study is the use of multiple methods and the confirming of a given set of results across methods, and this is a solid reflection of the intent of replication at its most basic level.

Four criteria can assess an MTMM matrix model (see Bryant, 2000). The first criterion deals with convergent validity, whereas the latter three criteria focus on the discriminant validity portion of the model. First, researchers can establish

convergent validity by determining that the correlations among the multiple methods are sizeable and significantly different from zero. Second, the correlations among the multiple methods that are measuring the same construct should be greater than the relationships between multiple methods, which are measuring distinct constructs. Third, the correlations among different methods of measuring the same concept should be stronger than the correlations among the same methods of measuring different concepts. Fourth, the pattern of relationships among the different concepts should be identical, no matter whether the same or distinct methods of measuring have been employed. The simultaneous assessment of these criteria in MTMM matrix models will allow for true advancements to be made in measurement for the communication sciences. It is clear that MTMM matrix models provide a sophisticated, efficient means by which to improve the discipline's assessment of measurement models. With the newly formed journal in the discipline, *Communication Methods and Measures*, it is our hope that the formation and testing of MTMM matrix models will become more of a staple of communication research.

Researchers should also recognize that particular analytical techniques have developed specific means by which to assess the replicability of a result. The multivariate technique of SEM is a good example of an analytic procedure that has evolved with an eye toward valuing replication. One potential downside of SEM is that researchers can (and often times do) engage in respecifying a particular model that does not initially fit well and will rework the model until they have created a data-driven model that is "overfit" to the particular qualities of a single data set (Holbert & Stephenson, 2002). Any data-driven model that is overfit has a decreased likelihood of replicating. As a result, specific model-fit statistics (e.g., expected cross validation index) have been created for the express purpose of assessing the likelihood that a given model will replicate (see Holbert & Stephenson, 2008). In addition, specific modeling techniques (e.g., the split-sample technique) have been created to allow researchers to conduct a direct analytical assessment of the replicability of their findings within a single study (Kline, 2005).

In short, communication researchers need to properly value replication as a social scientific principle. If replication would be treated in line with its virtue, then the field would be conducting and publishing more replications. In addition, it is important that the field employ the most advanced analytical techniques available that have been designed specifically for replication. The field of communication has begun to value the underlying principles of replication through the increase in meta-analytic work published in our field's top journals. Meta-analysis seeks insights about a given relationship by using data that is not saddled with the imperfections of any one study (see, e.g., Hunter & Schmidt, 2004; Rosenthal, 1991a). Replication seeks to advance the same goal, arguing that multiple studies have advantages over a single study. Meta-analyses have provided additional clarity to entire subfields of communication research (e.g., Allen & Priess, 1998) and have also aided in bringing greater understanding to more specific communication inquiries (e.g., Allen & Burrell, 2002; Benoit, Hansen, & Verser, 2003; D'Alessio & Allen, 2000). Meta-analyses clarify

a specific relationship by establishing a mean effect size across multiple studies while replication seeks to directly assess the consistency of an effect size between multiple studies. An indirect assessment of replication can be found in the study of potential moderator variables within a meta-analysis (e.g., student vs. general population sample, teens vs. elementary school subjects). If a meta-analytical finding involving a single relationship is found not to be influenced by a single set of potential moderator variables, then this is an indirect assessment of that finding having greater replicability from study to study. No matter the case, just as meta-analysis has begun to receive a proper level of attention within the field of communication, so too should there be a return to valuing more basic replication in empirical communication research.

Intersections within method

Using two different quantitative methods together can offer advantages not available through the deployment of either method alone (see Simon & Iyengar, 1995). The same logic applies to qualitative research (e.g., West & Gastil, 2004, combine participant observation and ethnographic interviews in their study); however, we focus on intersections within quantitative research here to illustrate the potential of intersections within a broad research method.

The intersection of quantitative content analysis, survey research, and experimental research can be found in the evolution of cultivation research over the past few decades. Gerbner and colleagues (e.g., Gerbner, 1977; Gerbner, Gross, Morgan, & Signorielli, 1980, 1982) developed what they came to define as the “cultural indicators” research strategy (Gerbner, Gross, Morgan, Signorielli, & Shanahan, 2002, p. 45). The cultural indicators approach consists of three methods of research and embodies a multiple method perspective. The first aspect, institutional process analysis, has been the least used over the course of the line of research and focuses on an assessment of policies established within a media system (e.g., television network policies) and/or a broader social system (e.g., governmental regulation and enforcement) that impact what types of media messages are offered to a public and how these message are disseminated to that same public. In terms of levels of analysis, this first research front exists at a more macro (i.e., system) level of analysis (Pan & McLeod, 1991; see Scheufele, 1999; for example of macro–micro cross-level mass communication model).

The second and third research areas, message system analysis and cultivation analysis, are the two methodological aspects of Gerbner and colleagues’ work that communication researchers most commonly associate with cultivation research in general. Message system analysis uses traditional content analysis techniques to assess the dominant messages being provided through television. For example, cultivation researchers will often analyze a week’s worth of prime-time television content and take counts of portrayals they want to assess relative to whatever perception of social reality they are focused on for a particular research project (Gerbner et al.,

2002). Cultivation analysis uses traditional survey research methods, and individual participants are asked about two key variables, overall television exposure (e.g., amount of time spent watching television over the course of an average day) and social reality perceptions (e.g., likelihood of being the victim of a violent crime), central to the theoretical arguments put forward by the cultivation researchers (e.g., the mean world syndrome). At the heart of this approach to cultivation is a valuing of a multiple method perspective. It is essential for these researchers to identify the messages being offered on television and to then link the level of television consumption in general to potentially skewed perceptions of social reality. Cultivation research of this kind has been conducted relative to such social issues as violence (e.g., Gerber & Gross, 1976), sex roles (e.g., Morgan, 1987), marriage (e.g., Signorielli, 1991), aging (e.g., Signorielli, 2004), and the environment (Shanahan & McComas, 1999), to name but a few examples.

Additional cultivation-based research has sought to improve specific methodological aspects of the cultural indicators approach. For example, Potter and Chang (1990) assessed a series of alternative exposure measures (e.g., exposure to types of programs, proportional exposure among show types) relative to the traditional cultivation measure of total exposure. One important finding here was that exposure to specific genres retained predictive power of cultivation-based effects above and beyond the influence of total television exposure (see also Hawkins & Pingree, 1981). Moy and Pfau (2000) used the finding that genre-specific measures aid the study of cultivation-based effects for their multiple method study (combined content analysis and survey research) of media influence on public confidence in a range of democratic institutions (e.g., presidency, legislative branch, the courts, schools). What is most important to recognize is that methodological advancements made in one area of a broader multiple-method approach will result in methodological advancements in the other methods as well. For example, because Moy and Pfau were convinced by Potter and others to ask media exposure questions about a range of television subgenres, then they also had to conduct their content analysis in such a manner as to define and code for subgenres. In short, the embracing of a multiple-method approach to research means that advancements made in one method can have a ripple effect on the other methods used within the broader research agenda.

Far more recently, Shrum (2007) found that the methods of survey data collection (i.e., phone survey vs. mail survey) commonly associated with cultivation analysis can lead to important differences in the measure of cultivation's central dependent variables (e.g., affluence, crime, marital problems) and the relationship between media exposure and perceptions of social reality. Shrum (2007) concludes that the jury is still out as to which survey method may be best for the study of cultivation influence (or any other media effect), but it is clear that the finding that something so basic as method of survey data collection can influence the media effects found within a particular research agenda requires the use of multiple survey methods across time for the assessment of any cultivation effect meta-analytically with method of survey data collection assessed as a potential moderator of effect size.

The recent Shrum survey methods finding points to the need to embrace a multiple method perspective in that reliance on any single method of survey data collection (e.g., phone) will inevitably lead to a misplaced estimation of a cultivation effect. It is not that every single study needs to use multiple methods (although this is a possibility), but, more importantly, that the collective community of cultivation scholarship needs to diversify its use of survey methodologies.

Shrum and colleagues (e.g., Shrum, 2001; Shrum & O'Guinn, 1993; Shrum, Wyer, & O'Guinn, 1998) have also introduced the method of experimentation to the study of cultivation. A lingering theoretical issue related to the study of cultivation concerned the underlying cognitive mechanisms at work in the formation of the cultivation effect. Shrum's heuristic processing model has been assessed through a series of experiments and now offers some insights into how the cultivation effect takes shape within the minds of viewers (see Shrum, 2002, for summary). The use of experimentation as a method was of central importance to uncovering these new microlevel pieces of knowledge. The use of the three original areas of the cultural indicators approach to cultivation (i.e., institutional process analysis, message system analysis, cultivation analysis) simply did not allow for cognitive-based questions to be properly addressed. Only by placing experimentation as a method within the fold of the study of cultivation writ large did this greater understanding come to fruition.

Building from Shrum's work in this area, Bradley and colleagues (e.g., Bradley, 2007; Bradley, Maxian, Freeman, Wise, & Brown, 2007) have expanded the nature of experimental work being conducted in association with cultivation. Bradley offers a series of simulation models of specific cognitive processes that mirror what is outlined by Shrum and then matches up these simulations with raw data collected from human participants. His findings coincide with the Shrum findings but reflect a level of analysis that is more psychophysiological in nature. The Bradley experimental method, used in coordination with the Shrum experimental studies, allows the field to gain a much more coherent picture of the "black box processes" at work in the cultivation effect. These results become all the more important when they are linked with results obtained from the more traditional survey research, content analysis work, and the macrolevel study of media and governmental institutions that has been a part of cultivation research for several decades. A combination of all these methods of research begin to form a broader picture of understanding that can only come from multiple method research.

Intersections between qualitative and quantitative research

Although a great deal of work discusses these two broad research methods (for qualitative methods, see, e.g., Berg, 2006; Denzin & Lincoln, 2005; for quantitative methods, see, e.g., Babbie, 2004; Hayes, 2005; Keppel, 1991), we will briefly distinguish the two approaches to understanding human behavior. Denzin and Lincoln (1998) write that

The word *qualitative* implies an emphasis on processes and meanings that are not rigorously examined, or measured (if measured at all), in terms of quantity, amount, intensity, or frequency. Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers stress the value-laden nature of inquiry. They seek answers to questions that stress how social experience is created and given meaning. In contrast, quantitative studies emphasize the measurement and analysis of causal relationships between variables, not processes. Inquiry is purported to be within a value-free framework. (p. 8; emphasis original)

The lines of demarcation may be drawn a little heavily here. For example, not all quantitative research investigates causality (and indeed, the caution against assuming that correlation is evidence of causation, e.g., is commonplace in quantitative methods; see Hayes, 2005). Furthermore, work using SEM as an analytic technique is often driven by the desire to understand processes of influence (see Holbert & Stephenson, 2003).

Qualitative research originated in diverse disciplines such as anthropology and sociology (see, e.g., Vidich & Lyman, 1998), whereas modern quantitative research arose in large part out of research on agriculture (e.g., Wright, 1921). The great diversity in both approaches—as well as the fact that both approaches are deployed to understand human beings and their behavior—makes it difficult to draw sharp distinctions between these two important forms of inquiry. Still, it is fair to say that qualitative work is more concerned with meaning (the meanings held or constructed by people) and stresses context more than quantitative research. Quantitative research, as the name implies, measures variables (size, frequency, and intensity) and is more interested in generalizing across context than qualitative work. Both kinds of work rely on description (albeit descriptions of different kinds): Qualitative work tends to be interpretive, whereas quantitative work usually examines relationships between or among variables.

These two kinds of methods tend to ask, and answer, different questions. Each method has strengths and weaknesses, and these strengths and weaknesses are based on the different sets of assumptions and ways of looking at the world within their respective epistemological frameworks. So, we argue that quantitative and qualitative research methods may be best seen as complementing one another. The use of only quantitative methodologies results in conclusions that are constrained by the assumptions of the method, and the same can be said for claims obtained solely through qualitative research. Results that point in the same direction and obtained across the quantitative–qualitative divide offer greater merit because those findings were obtained regardless of the assumptions of a particular method. In addition, a combination of qualitative–quantitative insights can lead to a richer understand of a given phenomenon because each method provides unique insights that cannot be obtained by the other method.

Since 1978, when Denzin (1978) promulgated the concept of triangulation (of data sources, investigators, theories, and methods),¹ theorists have been interested in understanding research that combines multiple methods (see also Patton, 1990). Jick (1979) contrasted triangulation within and between methods (the former concerns research combining more than one quantitative or more than one qualitative method; the latter term refers to research combining qualitative and quantitative methods). This section concerns triangulation between methods. Probably the most common descriptor for such work is “mixed methods” research, studies that “combine the qualitative and quantitative approaches into the research methodology of a single study or multiphased study” (Tashakkori & Teddlie, 1998, pp. 17–18). Note that mixed method research involves more than one method of data collection and data analysis (Tashakkori & Teddlie, 1998, p. 43; see also Creswell & Plano Clark, 2007, p. 6). Creswell and Plano Clark explain the assumption of this approach: “By mixing the datasets, the researcher provides a better understanding of the problem than if either dataset had been used alone” (p. 6).

Some scholars (Creswell, 2003; Morse, 2003; Tashakkori & Teddlie, 1998) distinguish between studies in which one type of method precedes the other (sequential) and studies in which both methods proceed simultaneously (parallel or concurrent). Perhaps even more useful is a typology of mixed methods research focused on the purpose of such research. Greene, Caracelli, and Graham (1989; see also Rossman & Wilson, 1985), based on a review of mixed methods studies, proposed a typology of five purposes for mixed methods research:

- Triangulation seeks convergence, corroboration, correspondence of results from the different methods.
- Complementarity seeks elaboration, enhancement, illustration, clarification of the results of one method with the results of another method.
- Development seeks to use the results from one method to help develop or inform the other method, where development is broadly construed to include sampling and implementation, as well as measurement decisions.
- Initiation seeks the discovery of paradox and contradiction, new perspectives or frameworks, the recasting of questions or results from one method with questions or results from the other method.
- Explanation seeks to extend the breadth and range of inquiry by using different methods for different inquiry components. (p. 250)

So, intersections between quantitative and qualitative research can serve multiple purposes in research into human communication behavior.

We offer two brief illustrations of how communication research can profitably combine quantitative and qualitative methods (Greene et al., 1989, offer examples of research pursuing each purpose listed above). Williams (2006) investigates cultivation theory in the context of online role-playing games. This study employed participant observation to better understand the context of the study and then

conducted a field experiment to see whether playing a violent role-playing game influences attitudes toward the prevalence of crime in the real world. Benoit and McHale (2003) used the method of constant comparison to develop a grounded theory of the dimensions of personal qualities discussed in presidential candidates' television spots. Then, the categories (and related terms) developed in the qualitative study were employed as search terms in a quantitative computer content analysis to investigate differences in emphasis on the dimensions of personal qualities in primary versus general campaign spots, ads from Republican and Democratic candidates, and ads from election winners and losers. Both of these studies were able to offer a richer set of insights based on their working at the intersection of quantitative and qualitative methodologies (see also Holbert, Shah, & Kwak, 2003).

Conclusions

This article has discussed empirical intersections in communication research. We argue for the importance of programmatic research and identify replication as the most basic form of intersection and advocate the importance of this kind of research. Then, we show that research can usefully employ more than one qualitative or quantitative method. Then, we explore mixed methods research, intersections of quantitative and qualitative research. In our opinion, the field of communication is both mature and healthy enough to benefit from insights obtained from a variety of research intersections. We hope that communication research conducted at methodological intersections will be valued and continue to grow in the coming years and become all the more prevalent in our journals as time moves forward. Isolated studies can certainly offer important insights, but research that integrates multiple studies can provide further depth and breadth to our understanding of human communication behavior.

Note

- 1 Data triangulation concerns what we discuss as replication. Investigator triangulation also concerns replication, the notion we discuss as who is performing the replication. We do not discuss theoretical triangulation, using more than one theory to understand a phenomenon. Finally, what Denzin (1978) discusses as methodological triangulation is what we term mixed methods research.

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