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THE COMPARATIVE METHOD
OF MOST-SIMILAR AND MOST-DIFFERENT SYSTEMS
FOR CRISIS COMMUNICATION RESEARCH

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Abstract

This article contributes to research methodology in crisis communication. It explores the potentialities, values, and limitations of the comparative method of most-different and most-similar systems for crisis communication research by reviewing its development and application within the field of comparative politics. As a social scientific mode of inquiry, we propose that this research method has the potential to bridge crisis communication research's rich legacy of interpretive case studies with its growing body of experimental research, and that it can add an intriguing layer of inquiry to the field. Concluding, the article suggests directions for future comparative crisis communication research.

Introduction

As crisis communication has become an established subfield of research, scholars have produced knowledge using a variety of research methods. Yet overall, methodological discussions have been limited, and the methodological landscape continues to be dominated by interpretive case studies and social scientific experiments, two methods on opposite sides of the epistemological spectrum (for instance, An & Cheng, 2010; Avery et. al., 2010). Expanding the variety of research methodologies between these two poles thus provides considerable potential to advance the field. Aiming to encourage the application of the comparative method of most-different (MDS) and most-similar systems (MSS) to the study of crisis communication, this article discusses its advantages and potentialities for the field.

While comparative research encompasses a variety of approaches aimed at different descriptive and explanatory goals (see Pfetsch & Esser, 2012), this article focuses exclusively on the comparative method of MDS and MSS. As a social scientific mode of inquiry, we propose that it has the potential to bridge crisis communication research's rich tradition of interpretive case studies with its growing body of research producing evidence-based knowledge through experimental designs, because it allows for exploring and identifying mechanisms of cause and effect based on cases as units of analysis. Doing so, the method, which has rarely been used in crisis communication research, provides unique opportunities to generate, test, and expand the field.

We especially draw on debates, developments, and standards of application of this methodology within the field of comparative politics, where it is applied to study national and regional crises, among other phenomena. Comparative politics has a long history of debate and cultivation of the comparative method as one of its defining modes of inquiry (e.g. Bennett &

Elman, 2007; Collier 2008; Fearon and Laitan 2008; Gerring, 2008; George & Bennett, 2005; Goertz, 2008; King, Keohane & Verba, 1994; Lijphart, 1971; Lijphart, 1975; Przeworski & Teune, 1970; Sartori, 1991) and has significantly impacted comparative research in other disciplines including sociology (see Lieberson, 1991; Ragin, 1987), management science (e.g. Cheng, 1994), and psychology (e.g. Brislin, 1976), as well as recent discussions on comparative methods in communication studies (for instance, Esser & Hanitzsch, 2012; Pfetsch & Esser, 2016), among others. Because of the epistemological challenges of studying relationships among complex social, political and cultural institutions, this debate struggled with questions of integrating insights from rich interpretive work with cross-national quantitative studies and ground-level field experiments. The insights from this struggle are particularly useful for crisis communication research as studying crises similarly challenges researchers to understand the interactions of large organizations, decision-makers, and networks of stakeholders within complex social and cultural contexts.

We first outline the methodological landscape in crisis communication, while focusing particularly on organizational crisis communication and crisis response. Following, we discuss the comparative method of MDS and MSS. Specifically, we focus on application and methodological questions, including guidelines for case selection and analysis. The article proceeds by discussing the theoretical relevance and relation of these types of comparative case studies to large-N and experimental methods and sketches out how single case studies (SCS) interact with the comparative method. Doing so, we clarify the distinction between the methodological and theoretical limitations of SCS and the comparative method to highlight the methodologically rigorous contributions this methodology can make to the study of crisis communication. Concluding, we provide implications and directions for future comparative crisis

communication research.

Methodology and comparison in crisis communication research

While crisis communication has strong roots in interpretive and rhetorical case study research, scholars have applied an increasing variety of research methods (An & Cheng, 2010; Avery et. al, 2010; Coombs, 2010; Ha & Boyton, 2014;). Coombs (2010) mapped three main methodological orientations; "informal research," characterized by case studies and textual analyses, "transition research," carried out via content analyses, and "formal research," rooted in social scientific epistemology and methods, particularly experiments. Overall, case studies, textual analyses, content analyses, and experimental methods are among the dominant research methods in crisis communication (Coombs & Holladay, 2010).

At the same time, crisis communication scholars have called for the application of more social scientific methods in order to produce replicable and generalizable conclusions about relationships, cause, and effect (see Coombs, 2010 & 2016; Cutler, 2004). Ha & Boyton's (2014) survey of crisis communication research found that the use of experiments, surveys and mixed methods has, indeed, increased over time. Avery et. Al (2010) earlier established that the majority of crisis communication studies between 1991 and 2009 drew on two key influential theories (corporate apologia and SCCT) and used experiments (SCCT) as well as (rhetorical) case studies (corporate apologia).

This methodological landscape reflects that the phenomenon crisis communication requires deep understanding of context and complexity as well as knowledge of cause and effect. Case studies have profoundly impacted the field and provided insights for theory developments (for instance, Frandsen & Johansen, 2010; Seeger & Ulmer, 2002; Ulmer & Sellnow, 2000; Williams & Treadaway, 1992). Their value lies in their ability to gain deep understandings of

crisis communication phenomena and processes within their actual contexts and in their use of various qualitative and quantitative methods to analyse a broad range of artefacts and data (see Hartley, 2004). Facing fewer trade-offs between the amount of evidence processed and the validity of the measures of concepts than large-N research (George & Bennett, 2005), they are thus ideally suited to account for complexity of the social systems, processes, and relationships in which crises develop and unfold (see Gilpin & Murphy, 2010). What's more, case studies afford a range of empirical indicators of complex concepts and do not require that concepts be developed *ex an*te. Thus, they have identified new concepts for later testing as well as "left-out variables" (George & Bennett, 2005, p. 20) from prior studies. Finally, they also allow for close examinations of social mechanisms that may underlay causation (George & Bennett 2005). Seeger and Ulmer's (2002) case studies, for instance, identified a set of post-crisis virtues and characteristics of "a constructive post-crisis response" (p. 132). Single case studies, however, have a limited ability to make generalizable claims or test hypotheses.

The growing body of experimental research on the other end of the epistemological spectrum has established robust generalizable knowledge about cause and effect by testing relationships between independent and dependent variables. Because of their controlled nature, researchers can have high levels of confidence in causation, and experimental designs lend themselves to replication. This makes them an ideal method to measure the effects of crisis messages on different types of audiences (see Coombs, 2010). At the same time, experiments accomplish their explanatory power by reducing complexity as they focus on crisis scenarios outside of their actual contexts. Results may thus not always translate to real-life crises (see Morton & Williams, 2008).

As a social scientific method, the comparative method of MDS and MSS can add to

methodological variety between these two poles as it increases confidence in causal relationships[1] based on case analyses. Aiming to generate and explore causal claims based on rigorous comparison and analysis of cases selected and arranged by their attributes and outcomes, it considers a higher degree of complexity and context than experimental studies to generate middle-range theory.

Within communication studies, comparative communication research - defined as research that "involves comparison between a minimum of two macro-level units […] with respect to at least one object of investigation relevant to communication research" (Esser & Hanitzsch, 2016, p. 5) – has gained importance during the past 20 years (Esser & Hanitzsch, 2016). Across areas of communication the development of comparative research is generally characterized by a shift from descriptive comparative designs toward more sophisticated explanatory approaches, including the method of MDS and MSS (Esser & Hanitzsch, 2016). It is particularly advanced within political and intercultural communication research (Esser & Hanitzsch, 2016); yet even comparative research in political communication has, according to Pfetsch and Esser (2016), not reached "mature adulthood yet" (p. 39).[1]

In crisis communication, comparative research is currently gaining relevance and attention with the emergence of international crisis communication (see Coombs, 2016; Schwarz, Seeger & Auer, 2016; Schwarz 2016). Indeed, a growing interest in "national and cultural context factors as independent or explaining sets of variables" (Schwarz, Seeger, & Auer 2016, p. 3)

[1] It is important to note that there is, of course, a considerable debate to degree of control needed to prove causation irrefutably with statistical or experimental methods as well as comparison. Clearly, causal claims are never made without a degree of uncertainty. The underlying rationale for drawing conclusions about cause and effect based on comparative analysis will be outlined in the following sections. Most basically, however, it follows the same logic of comparison with controls as parametric statistical methods, such as multivariate regression, and is based on Prezworski & Teune (1970) as well as Lijphart's (1971) influential work on comparison as modes of inquiry, among others.

makes the method of MDS and MSS particularly intriguing.

Among the comparative approaches crisis communication scholars have used, the methods of MDS and MSS have rarely been applied. Studies have focused on identifying similarities and differences across cases (for instance, Liu, 2010; Persson 2016; Scanlon, 2012; Woods, 2016;), illustrating the soundness of frameworks (for instance, Yin & Jing, 2014), and establishing covariation between variables through large-N comparative analysis (for instance, Wang & Wang 2014). Scholars have also used comparative case selection toward explanatory aims (for instance, Garcia, 2011; Huang, 2012; Jiang et al. 2015; Lyu, 2012; Maiorescu, 2015; Olsson, Nord & Falkenheimer, 2015; Schwarz 2014; Zhou & Shin, 2017). These studies, however, neither apply nor claim to apply strict MSS or MDS designs. Thus, they may not control for all explanatory variables and/or might make inferences about multiple variables based on too few cases. They have further rarely taken advantage of the range of qualitative data and analysis to capture context, which is a primary advantage of MSS and MDS case study research. Finally, theoretical relevance often seems to trump a case's methodological fit for MSS or MDS designs as a base for case selection. The comparative method of MDS and MSS thus still holds rarely tapped potential for crisis communication research.

Using the Comparative Method of Most-Different and Most-Similar Systems

Central debates about rigorous methods and case selection evolved around tensions between considering complexity, context, and history on the one hand, and reducing complexity to establish causes of outcomes on the other hand. As the method evolved in interplay between interpretivist and social scientific arguments, comparative research considered a wider range of important attributes and literature for case selection based on difference or similarity, and large-N statistical work recognized the contributions comparative case studies can make for theory

generation and testing. By no means is this discourse settled, but it now focuses on detente, bridging, and mutual contribution to theorizing and knowledge-building (for instance, Ragin, 1987; Seawright & Gerring, 2008; Tarrow, 1995).

Recognizing the value of SCS, however, has been central for the development of comparative method. It pushed social scientists to reflect on lost complexity and context in statistical and other designs (Coppedge, 1999) and encouraged a culture of valuing context and socio-political variety (Bates, 1997). This led to two important questions about how SCS can interact with social scientific modes of inquiry such as comparative and statistical methods. First, how might cases be selected, and thus evidence within them arranged, so we might approach generalizable causal conclusions from few cases? Second, how do case studies relate to conclusions drawn from large-N statistical and experimental methods?[2]

Selection, Arrangement, and Analysis of Comparative Case Studies

The method of MDS and MSS aims to isolate causes by careful arrangement of cases based upon their attributes. Specifically, it improves confidence in inferences by intentionally choosing cases while compelling either the controlling of covariates as confounding variables or the elimination of covariates among rival explanations. It thus suggests a causal relationship with residual correlation with the dependent variable.

Purposefully selecting cases remains the most common mode of the comparative method as it has significant advantages over random selection (Lijphart, 1971). Because no two cases will be completely identical or different, the comparative method identifies important attributes

[2] While experiments have not long been common in comparative politics as a field of study given the limitations of manipulating cases that are often large institutions or mass behaviors, they have been embraced as a means of testing individual responses related to theories of political behavior such as vote- buying or political messaging (e.g. Gonzalez-Ocantos et. al, 2012 & 2014, Geer & Geer, 2003).

to establish difference and similarity. Thus, researchers applying either an MSS or MDS design will draw on established theories and concepts to identify variables that likely have produced or influenced the outcome of interest.

Method of most-different systems (MDS). MDS leverages the basic logic that if two cases have the same outcome, and if those cases share only one important attribute, then that attribute must explain that common outcome. Thus, the method of MDS aims to select cases so that the only covariation among variables is between a shared explanatory variable across two or more cases and the outcome variable. Ensuring diversity on all relevant explanatory variables but for one increases confidence that this variable has theoretical importance in explaining the common outcome (Przeworski & Teune, 1970). Figure 1 shows that for a given case where X denotes a potential attribute that may distinguish a case from others, the outcome for a case defined by a value on a given X nevertheless is associated with an invariable outcome Y_1.

Case	Variable	Outcome
	$X_1, X_2, X_3 \ldots$	Y_1
A	1, 1, 1	1
B	2, 2, 2	1
C	3, 3, 3	1
D	4, 4, 4	1

Figure 1: Method of Most-Different Systems[3]

For example, a Skocpol's (1979) influential study of political revolutions brought attention to the benefits and power of MDS designs. She compared the Russian, Chinese, and French revolutions precisely because they took place in different eras and political systems (Skocpol,1979). Maximizing diversity across cases, the study identified shared, comparable paths to revolutions that had previously been ignored, including pressure on a state from military

[3] Adapted from Prezworski & Teune (1970, p. 37)

engagements abroad. It thus eliminated "irrelevant systemic factors" (Przeworski & Teune, 1970, p. 35) and, relative to a SCS, Skocpol (1979) concluded with increased confidence that external military pressures contributed to the cause of these revolutions. The conclusions of the study were indeed confirmed across diverse social and political contexts and different eras, and the study established that many of the countries' features had little immediate causal impact on the respective revolutions.

The practical application of MDS begins with the identification of theoretically relevant attributes that might explain an outcome. Combing the literature, the researcher should identify where prior research indicates a significant influence at all for a variable. Because MDS relies on maximizing diversity across cases except for one commonality, the success of the method hinges on thorough identification of prior explanatory variables (Meckstroth, 1975; Przworski & Teune, 1970). Caution should, however, be exercised when relying on variables identified by past research. Inherent to cross-cultural research are issues of equivalence, including the challenges of measurement validity across context, place and time (for instance, Hanitzsch & Esser, 2012; Hui & Triandis 1985; Vandenberg & Lance 2000; Wirth & Kolb, 2012). Because case studies involve close consideration of context and culture, measurement validity is often seen as their major strength (Bennett & George, 2005, p.19, Joachim & Haverland, 2012, p. 65). However, at a minimum MSS and MDS designs require establishing cross-cultural comparability between values on variables to justify similarity or difference and to "[combine] cross-national and nation-specific indicators [so] reliable and valid assessments [can] be made" (Przeworski and Teune, 1966, p. 521). Because this problem is particularly challenging when measurement involves individuals as respondents, additional caution should be taken where selection variables are aggregates of survey or individual level data (Reeskens & Hooghe, 2008).

Challenges of equivalence also entail achieving equivalence of language and meaning as well as of methods used within each case (Hanitzsch & Esser, 2012; Wirth & Kolb, 2012). Heterogeneity across cases in MDS can be maximized only by adding cases. Any set of cases defined by attributes X_1 & X_2 can be selected to differ in maximal ways. However, by adding cases the relative heterogeneity of the whole set increases. For example, a study of leadership responses to crises might identify crises in the USA and China, because the cultural contexts differ substantially. Heterogeneity of the set increases further if we add a case from Madagascar. However, adding too many cases can lead to an infeasible number for in-depth examination. Heterogeneity should thus be maximized among the first pair and, to the extent possible, additional cases be added.

Many MDS studies are based on only 2-3 cases, though more are desirable. MDS designs draw on the diversity of well-established methods for case study analysis. However, because the diversity forced into this research design maximizes variation of context, typically structural, particular attention should be paid to evidence of sub-systemic explanations such as organization, group, or individual (Przeworski & Teune, 1970). Thus, if across a maximized range of cultural contexts certain types of organizational leaders all respond similarly to crises, then MDS not only increases our confidence that the explanation is "type of leader," but also suggests that the inference is generalizable (see Sartori, 1991). This form of controlling thus also helps grapple with the immense complexity of crisis contexts.

The strength of MDS lies in its ability to generate theory by uncovering previously unseen explanations across cases. However, because MDS does not select cases on a prior explanatory variable, it can be limited to eliminating prior explanations (Przeworski & Teune, 1970, Sartori, 1991). MDS is thus uniquely suited to extend theory, but not to test hypotheses. A

crisis communication study might, for instance, use this approach to explore variables that make repeat crises more likely. Researchers would select cases of organizational repeat crises (dependent variable) that differ on all key independent variables, while maximizing heterogeneity across cases to the extent possible. These attributes would carefully be identified based on existing theory and literature, and the study needs to establish and document why and how these attributes matter and differ. Once arranged, the case analysis proceeds by utilizing modes of inquiry appropriate to identify a shared variable or interacting shared variables that can explain why and how the organizations experienced repeat crises despite the differences across cases. Similarly, an MDS study might identify cases that differ on all explanatory variables of SCCT to the greatest extent possible, but had a similar outcome, namely similar degrees of prescribed responsibility. If the researchers can – through deep case analysis and comparison – establish that and how one shared characteristic explains the outcome in both cases, they would draw attention to gaps in the theoretical framework, and the findings could provide a significant impetus for theory-building and testing.

Methods of most similar systems (MSS). MSS rests on the logic that if two cases have different outcomes, but all other important attributes are the same, then the singular difference must explain the outcome.[4] MSS thus maximizes homogeneity and selects cases to minimize heterogeneity of relevant attributes across cases (Przeworksi & Teune 1970). Because the treatment variable is not randomly applied to the sample and the researcher does not control the application of treatment, MSS relies on a pseudo-experimental logic of controlling for explanatory variables.

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[4] This method is also frequently referred to as the method of "concomitant variation" but for purposes of consistency the term Most-Similar Systems (MSS) will be used here as the logic does not differ.

Case	Controls	Treatment	Outcome
	$X_1, X_2 \ldots$	X_3	Y_1
A	1 , 0	0	0
B	1 , 0	1	1
C	1 , 0	1	1
D	1 , 0	0	0
n...	1 , 0	0	0

Figure 2. Case selection via controls, treatment, and outcome in MSS[5]

In figure 2, cases A-D share uniform values on all control variables and a singular difference across all independent variables, the treatment. To the extent that the treatment varies systematically with the value of the outcome variable, the pseudo-experimental logic suggests a causal, or significant, relationship between treatment and outcome. MSS designs range from two cases to as many as feasible. Resources and effort required to collect the detailed evidence are the major limitations to the number of cases. This practical limit subjects comparative research to the problem that the number of potential variables to be controlled for is large but the number of cases is small (Lijphart, 1971). MSS justifies the use of few cases through its pseudo-experimental matching on all relevant explanatory variables while allowing the variable of interest to vary. MSS thus retains the degrees of freedom to make estimates of the effect of the single variable of interest in a two-case design, or of n-1 variables for designs with more than two cases.

The research process includes four steps. First, the practical application of MSS begins by identifying the control variables as suggested by the relevant body of research. Control are thus derived from a review of the literature, just as in statistical work. Though quantification of control variables is not necessary in comparative research, developing distinct categories across

[5] Adapted from Prezworski & Teune (1970, 37)

values on control variables is (King, Keohane, & Verba, 1994). For example, one need not code leadership style in a crisis on a numeric index, but mutually exclusive categories that capture differing types of leadership styles must be developed in order to classify and arrange potential cases for inclusion.

The second step is to identify and categorize the explanatory variable of interest and the outcome to be explained. Neither the dependent nor the key explanatory variables will likely be truly unknown at this stage. The particular research interest of most MSS studies is usually some instance of a larger class of phenomena. Researchers must categorize the values on the outcome variable, so that they are mutually exclusive. This frequently includes the presence or absence of an outcome entirely. The key explanatory variable is thus usually a part of a hypothesis derived from empirical research or an extension of the research that suggested a relationship.

With the explanatory variable defined it needs to be categorized into mutually exclusive values across the variable, again, often the presence or absence of a condition entirely or broad differences like “accommodative response” and “denial.” Similarly to MDS, the researcher must also exercise caution to measurement validity across cultural contexts, when applicable. Further, confidence in successful control of complex system-level context hinges on valid cross-system measurement as well as astute theoretical and empirical judgement bolstered by theoretical knowledge, close familiarity or investigation of case context, and local or intimate knowledge of contexts.

Third, the cases should be selected and arranged conforming to figure 3. Cases should be selected to maximize the homogeneity on all control variables. Because mutually exclusive categories can mask variation within those categories, these instances should be minimized to improve confidence in approaching the *ceteris paribus* condition. For example, if democracy is

applied as a binary category, it should be recognized that it includes a wide range of democracies from robust to shallow.

Case	Controls $X_1, X_2 \ldots$	Treatment X_3	Outcome Y_1
A	1, 0	1	1
B	1, 0	0	0

Figure 3. A two-case arrangement in MSS

Contemporary comparative research has developed increasingly sophisticated techniques for case selection. Large-N regression, for instance, can help finding cases that are theoretical outliers in need of closer inspection (Liebermann, 2005; Gerring, 2007). Recognizing that cases are typically aggregates of several variables measured at smaller units of analysis, Abadie, Diamond, and Hainmueller (2015) further suggest that quantitative measures of lower units of analysis variables can be used to rigorously identify "synthetic controls" in the application of MSS.

MSS can be used to test hypotheses or to generate theory. To test hypotheses, cases should be selected based on heterogeneity on the explanatory variable and the outcomes. Thus, the research hypothesis defines the explanatory variable. If the primary purpose is theory generation, one maximizes homogeneity of controls and maximizes heterogeneity among outcomes. Finally, once cases are selected and arranged (see Fig. 3) qualitative analysis should proceed with close empirical examination by testing how the explanatory variable impacts outcomes, or by uncovering previously unseen variations among the cases that may explain the outcomes (Przeworski & Teune, 1970).

An MSS crisis communication study might select two or more crisis cases with similar attributes on all independent variables of SCCT (crisis type, crisis history, relationship history/prior reputation of the organization), but with different outcomes on the dependent

variable (attribution of responsibility). Case selection would further attempt least possible variation on other relevant factors. Having carefully established and argued the relevance and presence of these attributes in the selected cases and shown how the similarities and differences have been verified through empirical analysis, the study would proceed with case analysis to identify the variable that may best explain the differing outcomes. Doing so, they may utilize qualitative and quantitative methods.

However, to account for the complexity of socially constructed crises, using a variety of qualitative evidence (established, for instance, trough interpretive text analysis, archival methods, interviews, process tracing, triangulation, etc.) is vital. The analysis might find that the type of organization impacted how media coverage attributed responsibility to the organizations. Alternatively, researchers may have been able to establish the latter assumption as a hypothesis. Taking a deductive approach, they would again identify and arrange cases based on their similarity on all independent SCCT variables and other relevant aspects but differ in type of organization (treatment) and outcome (dependent variable). The empirical analysis aims to identify if and how type of organization affected the difference in attribution of responsibility. If the findings can convincingly establish that type of organization impacted the outcome, they increase confidence in the causal relationship and encourage further testing and theory-building.

Relative theoretical value and relation of MDS and MSS t o large-N and experimental designs

Lijphart (1971) identified the process of the comparative method, namely controlling for confounding explanations to isolate causation between explanation and outcome, to rest upon similar logics as experiments and statistical methods. Each method eliminates rival explanations by control through matched samples or, in the case of statistical work, partial correlation. The comparative methods of MDS and MSS in crisis communication are “formal methods” (see

Coombs, 2010) with increased measurement validity and complexity.

At the same time, differences and relationships between comparative methods and large-N/experimental studies are important to recognize. While well-constructed comparative case studies generate rigorous conclusions, their power to generalize is certainly smaller than that of large-N studies and experiments (King, Keohane, & Verba, 1994). Of course, even experiments are imperfect controls for covariates and rest on assumptions of random sampling-induced treatment and control group comparability, which is often only plausible in laboratory settings (see Holland, 1986). Similarly, MSS cannot be 100% certain that it has controlled by selecting identical cases for comparison. Relative to experimental methods, MSS is thus necessarily less confident. However, to the extent that the cases are representative of broader populations of cases, out-of-sample inferences are justifiable "partial generalizations" (Lijphart, 1971, p. 687) and only relatively less confident than large-N statistical studies and experiments. They can confidently be extended as powerful causal arguments that should prompt further testing using a wide range of methodologies.

Because of the uncertainty about having identified all relevant independent variables to either maximize (MDS) or minimize (MSS) heterogeneity on those independent variables (Gerring 2008), this method requires a robust understanding of the existing theoretical work on the topic (Meckstroth, 1975) and of the phenomenon in its real-world settings. A study arranged as MDS, for instance, cannot draw rigorous conclusions, if there are multiple relevant independent variables, which define the cases as similar. Conversely, implementing MSS when the cases show variation on relevant, but omitted, explanatory variables will not allow rigorous conclusions.

Further, the comparative method of MSS does proceed more slowly in hypothesis testing.

Because comparative studies are limited in the number of cases, they frequently only test one or two hypotheses (Przeworski & Teune 1970). Forfeiting degrees of freedom thus necessarily limits their ability to assess multiple hypotheses or to compute multiple regressions (King, Keohane, and Verba, 1994).

Differently from large-N and experimental studies, MSS and MDS derive parameter estimates of relationships between two variables from rich empirical work and evidence within case studies. Researchers must thus provide careful, often qualitative, analysis and documentation to build confidence in those estimates (see Bennett & George, 2005; Esser & Hanzitzsch 2012, p. 13). For instance, instead of providing regression coefficients, a comparative study would carefully lay out evidence and arguments for how corporate culture influences the dependent variable based on empirical observations and analysis. Further, while statistical work provides the mathematical basis to assess the magnitude of effects relative to explanatory variables, MSS and MDS rely solely on empirical evidence to estimate magnitude. At the same time, "case studies remain much stronger at assessing *whether* and *how* a variable mattered to the outcome than at assessing *how much* it mattered" (George & Bennett, 2005, p. 25). Because they primarily employ qualitative evidence, comparative case studies also cannot provide estimates of uncertainty resulting from chance. Instead, they rely on empirical evidence to establish how and why cause and effect correlate and on how well the variables to control for were chosen.

Relative to experimental methods, the comparative method affords greater contextual analysis of large social institutions, organizations, and cultural context. Even where a single crisis is studied for its impact on individuals via experiment, it is ultimately testing for an average human response to a single case. Rarely can true experiments thus be based on crises or whole organizations as units of analysis or test variations in cultural context, organizational structure, or

even historical era.

Another key advantage of comparative case studies is the contextualization and "field-testing" of rigorous conclusions from experimental research within messy social environments. Studies applying the comparative method should think hard about how they "aggregate" the average treatment effects from experimental studies within rich institutional or cultural contexts of multiple cases while drawing conclusions about institutional or cultural variation. This entails taking seriously the mechanisms of how people respond to crises and crisis messages uncovered by experimental studies while considering the complex ways collections of individuals behave outside of the lab. Case studies can thus build models of individual behaviours on the conclusions of experimental work, and experimental work can draw on comparative studies for assessments of external validity in differing social contexts and to suggest new avenues of research.

Implications for future crisis communication research

From Tylenol to Exxon Valdez and Aaron Feuerstein, a canon of prominent case studies has shaped crisis communication. With its ability to generate social-scientific knowledge based on case analyses, the comparative method of MDS and MSS presents a valuable tool for crisis communication research with the potential to inspire new directions, questions and answers. Providing a middle ground between considering and reducing complexity, it adds a layer of inquiry between the field's deep roots in single case study research and its reliance on experimental studies. Frequently aiming to identify and explore causal relationships based on macro-level cases, the approach allows to account for complex networks of relationships, processes, and contexts. Rigorous comparative studies thus present unique opportunities to build, extend, and test social scientific crisis communication theory and identify independent variables

that have not been considered before.

The comparative methods of MDS and MSS require that researchers select their cases for comparison based on carefully identified attributes. Importantly, their studies need to provide convincing arguments for why this selection meets the standards of the comparative method of MDS or MSS based on a solid grounding within existing theories and research findings. An MDS study selects cases with similar outcomes that differ on all relevant explanatory variables but for one to establish what may have most likely led to the shared outcome. The method of MSS selects cases that are similar on all relevant explanatory attributes (except one), but had different outcomes, in order to discover new independent variables or test hypotheses. These comparative studies then need to investigate and show how attributes worked within the cases by applying a variety of appropriate methods for data collection and analysis. To judge the validity of a comparative study of MDS or MSS reviewers in turn, need to pay special attention to the outlined rationales and evidence for selection of cases and attributes.

While the comparative method of MDS and MDS holds manifold potential, four future directions for comparative crisis communication research seem particularly promising. First, future comparative crisis communication research can provide intriguing opportunities to analyse and identify the influence of different structural and social contexts on crises and crisis communication (see Ross, 2009). Indeed, Auer, Schwarz, and Seeger (2016) concluded that key elements of crises and crisis response vary across countries, cultures, social subsystems, While culture may need to be reduced to quantifiable indicators in large-N studies and is almost impossible to capture in an experimental design outside of individuals as units of analysis, the comparative method allows for rigorous cross-cultural analyses to identify whether and how cultural variables impact particular aspects of crisis communication. Studies using MSS designs

can, for instance, compare similar crises with different outcomes within different cultural contexts to problematize the conclusions from experimental work and establish not just that cultural context matters, but how it matters. At the same time, the method of MDS can help identify explanatory variables that may stay constant across systems and thus help the endeavour to "develop measures that are valid across national cultures" (Coombs, 2016, p. 463).

Second, based on a growing body of matured social scientific crisis communication concepts and theories, scholars can also draw on this method to revisit our subfield's large library of case studies, in which causality is eschewed and/or generalizability is stated to be limited, to consider questions of cause and effect or to discover new explanatory variables. Research may arrange established cases purposely and rigorously for comparison to investigate questions prior SCS have not been able to speak to or resolve. The comparative method would allow for identifying variables that made seemingly different crisis responses lead to the similar outcomes or similar crises to different outcomes. This may further aid the conversion of identified influences in existing SCS into causal processes.

Third, the development of shared discipline-level datasets containing vetted measures of organizational and cultural attributes, and/or components of crises, could assist crisis communication scholars with rigorous case selection. Comparative research has been advantaged by widely-used datasets (ex. Polity, V-DEM, Correlates of War) as shared measures have improved exchange between qualitative and quantitative scholars, and the rigor of case selection. Several existing datasets capturing elements of societies such as the World Value Survey, Afrobarometer, and the European Social Survey or Eurobarometer offer useful attitudinal and cultural measures for crisis communication scholars when choosing cases.

Finally, the comparative method provides intriguing opportunities for analyses across

time and, thus, across societal and organizational changes (Katznelson, 2009; Pierson & Skocpol, 2002). Scholars may, for instance, arrange similar past and current cases to investigate and verify if and how specific changes in organizational environments have impacted crisis responses over time. Applying these comparative methods to cases across long time spans would allow for the investigation of large-scale institutional, technological or cultural shifts as either an outcome or as the explanation for shifts in crises and crisis communication in different cultures, contexts, and places.

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