

Using Continuous Response and Self-Report Measures to Understand Spokesperson Evaluation Processes During Water Crises

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Abstract: This study investigated how perceptions of news conference sources varied from measures taken in real-time to those taken retrospectively after exposure to news conference footage. A 4 (source type) X 4 (message replication) mixed design experiment was conducted in which participants viewed four organizational spokespersons responding to water crises involving organizations. Participants evaluated spokespersons using a handheld dial during stimulus exposure, and then, retrospectively, using self-report measures. Evaluation of source trustworthiness tended to increase over time, regardless of the type of source. However, retrospective self-report measures demonstrated that public relations practitioner credibility suffered in comparison to that of other sources. Implications are discussed for public relations practice and future research in source credibility.

Keywords: *source credibility, public relations, engineer, president, dial test, news conference*

Water resource management scholarship has discussed the importance of professional development to effectively address global water issues (McIntosh and Taylor 2013); for example, some have discussed the importance of developing interdisciplinary skill sets such as technical expertise and effective communication skills (Loucks 2008). To this point, communication research has been slow to test and inform effective communication strategies for organizations and professionals who respond to water issues. The important role of (dis)trust in public-water resource management relationships has been noted as it may directly influence management decisions, community engagement, and policy formation (Leahy and Anderson 2008; Smith et al. 2013). However, research to date has not examined how different types of water agency spokespersons may influence individuals' credibility perceptions during water crises.

A crisis may be defined as the manifestation of risk (Heath and Palenchar 2009) or, from an

organizational perspective, a significant event with a potentially negative result that may affect an organization or industry and its stakeholders, products or services, or reputation (Fearn-Banks 2007). Public relations practitioners engage in communication efforts on an organization's behalf to avoid conflict, or manage it when it occurs. A primary function of a public relations practitioner or organizational spokesperson during a crisis is to accurately and quickly provide complete information to relevant audiences about the situation (Wilcox and Cameron 2009). A news conference is a common mechanism for relaying such information to news outlets and the public.

Public relations literature indicates that information sources often moderate message effectiveness. While some research suggests cues such as spokesperson gender and ethnicity do not influence perceptions of credibility (Mohammed 2012), other research indicates that in the absence of relevant information (e.g., experience with previous crises), heuristic cues may influence

credibility perceptions (Hong and Len-Riós 2015).

Sources affiliated with an organization in crisis tend to be perceived as less credible than sources that are unaffiliated with an organization (Callison and Zillmann 2002; Callison 2004) and sources whose organizational affiliation is unidentified (Callison 2001). Public relations practitioners may not be judged any more negatively than other internal sources affiliated with the same organization (e.g., CEO or engineer) (Callison 2004), but they are perceived as less credible than hired or independent third-party sources (Callison and Zillmann 2002). However, public relations practitioners and the organizations for which they are employed are perceived as less credible than unidentified sources and their affiliate organizations, especially when the spokesperson is conveying company-negative news (Callison 2001).

Initially, early research in the field was conducted to see how a source's credibility influenced communication effectiveness (Hovland and Weiss 1951). These initial study designs involved the explicit manipulation of credibility through attribution of presented information to either a source a priori labeled as "trustworthy" (a respected researcher publishing in a journal, for example) or "untrustworthy" (a well-known gossip columnist publishing in a magazine, for example) source. Subsequently, when participants found certain information more believable, justifiable, or fair, the researchers explained that it was because the trustworthy sources were more credible, although this effect was not stable over time.

Subsequent research in source credibility built upon this foundation, which established that audiences consider source factors when processing and judging the quality of information presented (Hovland et al. 1949; Hovland and Weiss 1951). Further research focused on investigating the construct of credibility itself (McCroskey 1966; Berlo et al. 1969). Berlo and McCroskey both developed credibility scales by rating individual speakers across a variety of items that were ultimately reduced to manageable batteries of items, and as a result, credibility became a common dependent variable in many mass communication studies. Common to this vein of research were pen-and-paper measures requiring research participants

to indicate responses on semantic differential scales from among a list of items presented post-message exposure, and this a priori evaluation using itemized scales has dominated the literature. The current study advances this methodology by introducing continuous response during message consumption.

Understanding how individuals evaluate the credibility of spokespersons in water crises could have notable consequences for organizations' crisis management strategies and subsequent reputation and relationship management outcomes. Much research in the source credibility formative theory domain has relied on print stimuli and retrospective self-report measures for assessing evaluations of communicator credibility. Recent research examining credibility perceptions has adopted audiovisual stimuli—primarily examining the influence of audiovisual news content on credibility perceptions (Tewksbury et al. 2011; Nelson and Park 2015). With the availability of audiovisual stimuli and continuous response measurement systems (Biocca et al. 1994), examination of credibility components or other source assessments is possible. Continuous response measurement systems have been used in media research since the 1940s (Millard 1992), but such measurement systems have yet to be widely adopted by source credibility and public relations scholars. Continuous response measurement has been used in the political communication literature. For example, political election research suggests that continuous response measurement is a reliable and valid paradigm for examining immediate positive and negative impressions of televised political candidates to help delineate participants' post-consumption evaluations (Maier et al. 2006).

The current study attempts to make two contributions to research on source credibility. First, the study tests the effects of source identification on perceptions of credibility and trustworthiness in a digital video environment rather than in the more commonly used print format. Second, the current study aims to understand individuals' real-time perceptions of source credibility during exposure to news conference footage, including various spokespersons involved in water crises. Reactions to media content were assessed through dial test measures (i.e., real-time opinions; Biocca et al.

1994) to develop a more nuanced understanding of individuals' perceptions of communicator credibility as the message unfolds in real-time. Given the previous literature, the following hypotheses were posed:

H1: Public relations-labeled sources are viewed as less credible than organizational presidents and engineers when discussing organizational crisis.

H2: Perception formation of source trustworthiness occurs in real-time as identifying factors are revealed such that public relations sources are seen as less trustworthy than other sources when discussing organizational crisis.

Method

Design

The experiment employed a 4 (source type) X 4 (message replication) mixed design. Presentation order served as a between-subjects variable. Source type and message replication served as within-subjects variables. Participants were randomly assigned in groups of no more than six per session to specific conditions. Each participant viewed four messages, each covering a different water crisis (i.e., gas leak in ocean, pipeline rupture in community, wastewater discharge in a river, and water reservoir contamination). Source type and message replication were counterbalanced between groups of participants to mitigate order effects. Each participant saw all four clips in a systematically rotated order, with one of each source type rotated through each different scenario clip.

Participants

Continuous response and questionnaire data were collected from a sample ($N = 184$) of undergraduate students enrolled in media and communication courses at a large southwestern university. The sample size provided adequate power due to two manipulations being repeated within subject. Nine respondents failed to actively manipulate their assigned continuous response dial (i.e., participants left their dial on a single digit for more than 75% of all stimulus exposure) and were

excluded from data analyses. In essence, excluded respondents set down their dials and failed to participate during stimulus exposure.

Stimuli

Experimental stimuli consisted of four excerpts from video press conferences edited to be similar in format and content. Excerpts were taken from real-world press conference footage. To control for the influence of spokesperson characteristics, such as gender and race, on participants' source credibility evaluations, each video clip displayed a Caucasian male spokesperson responding to a crisis event. The stimuli ranged from 43 seconds to 80 seconds ($M = 55$ seconds). Each clip contained an embedded key superimposed and manipulated by the researchers that identified the source speaking on behalf of the organization. The key appeared in the lower third of the screen on a partially transparent background in accordance with common media practice. Each key contained the same format: Name, Title (e.g., James Phelps, PR Manager for Marion Corporation) with a point size of 24 for the name and a point size of 14 for the source title. Each key appeared 11 seconds into the video and remained on-screen for 8 seconds. Both name and source type were counterbalanced so that each name appeared with each source type across message replications. In the control conditions, only source name was revealed; job title was excluded.

Measurement

Independent Variables. Source type was manipulated by varying a source job label as "PR Manager," "President," or "Head Engineer." Also included was a job label control condition where the source was named in the key but not identified as holding a specific job title. All participants viewed each source type so that consumption of the four clips resulted in exposure to one PR source, one CEO-type source, one engineer source (engineer), and one source with no job title. These different sources appeared in one of four news conference scenarios so that no respondent saw the same scenario more than once and so that all source types were seen once by each participant. The design ensured that all source types, scenarios, and orders were counterbalanced.

Message replication was operationalized by the organization affiliated with the video clip, the name of the spokesperson, and the crisis scenario to which spokespersons responded. The organization message replication contained four fictitious organizations considered to be internal source affiliations or four fictitious organizations considered to be external source affiliations. Internal organizations included “Chapman Enterprises,” “Montgomery Solutions,” “Buchanan Incorporated,” and “Marion Corporation.” External organizations included “State Commission for Environmental Quality,” “County Environmental Restoration Dept.,” “Dept. of Regional Environmental Protection,” and “Municipal Environmental Board.”

Each video clip contained one spokesperson responding on behalf of an organization involved in a water crisis scenario. The name of the spokesperson included four message replications: “Michael Brown,” “Robert Davis,” “David Johnson,” and “James Phelps.” The name and organization affiliation of the spokesperson were counterbalanced between video clip scenarios to mitigate interaction effects associated with source name/affiliation and the scenario portrayed in the video clip.

Dependent Variables. Participants’ **perception of spokesperson credibility** was assessed via self-report measures by asking respondents to indicate whether each spokesperson they viewed was “dishonest” (reverse coded), “qualified,” “intelligent,” “sincere,” “trustworthy,” “knowledgeable,” and “credible.” Perception of spokesperson credibility was operationalized as participants’ score averaged from Likert items ranging from 0 (not at all) to 10 (extremely) per source type.

Participants’ **perception of spokesperson trustworthiness** was continuously measured second-by-second for the duration of each video clip. Participants were asked: “Throughout the video, please rate the trustworthiness of the speaker from 0 to 10, where 0 = ‘Strongly Distrust’ and 10 = ‘Strongly Trust.’”

Demographics were assessed, including measures of participants’ gender, age, and academic major.

Procedure

Participants signed up for a convenient time to participate in a study session by using the college’s online recruitment system. Participants arrived at the continuous response theater (i.e., audience testing lab) in the college’s research facility in order to participate in a study session. Participants were randomly assigned to an experimental condition, and they participated with a group of no more than six participants.

After participants arrived at the lab, they were given an information sheet and verbal instructions regarding the nature of the study. Participants were randomly assigned a dial with a unique identification number and were asked to indicate their dial’s identification number and their session time on their paper-and-pencil questionnaire so that dial data and paper-and-pencil responses could be matched for data analysis procedures. Participants were given instructions regarding the use of handheld dials to evaluate the media content they would view. The handheld dial controllers are coordinated by Perception Analyzer hardware and software. Perception Analyzer handheld wireless units permit respondents to register responses to stimulus material in real-time as it is consumed. The units possess a digital readout that displays the rating the dial is registering with the receiver, which polls all wireless units in operation at one-second intervals.

To practice using the dials, participants answered demographic questions of gender, age, and other demographics. Afterward, participants were instructed to begin with their dials pointed to “5” or neutral. Then participants viewed each of four video clips on a 108-inch projector screen and continuously evaluated the trustworthiness of the speaker on screen. After viewing each of the four video clips, participants completed self-report dependent measures specific to each clip they viewed. Between clips, participants were reminded to begin with their dials pointed to “5” or neutral and to continuously evaluate the trustworthiness of the speaker throughout the duration of the video. Upon completing the final self-report measures, participants were thanked for their time and dismissed.

Results

Post Exposure Data Reduction

Items from the aggregate of participants' self-report measures were subjected to exploratory factor analysis. For the spokesperson credibility scale, one factor emerged with an eigenvalue over 1, accounting for 70.05% of variance. All items (qualified, 0.87; intelligent, 0.89; sincere, 0.80; trustworthy, 0.91; knowledgeable, 0.91; and credible, 0.91) loaded highly on the factor with the exception of dishonest (0.50). Consequently, the dishonest item was removed from the scale and the remaining items were re-analyzed. Again, one factor emerged with an eigenvalue over 1, accounting for 78.30% of variance. All items (qualified, 0.88; intelligent, 0.90; sincere, 0.80; trustworthy, 0.91; knowledgeable, 0.91; and credible, 0.91) loaded highly on the factor. The scale yielded high inter-item consistency ($\alpha = 0.94$); the six items were combined and each participant's mean score was used as their perception of spokesperson credibility in data analysis procedures. Because all items loaded onto a single factor for each scale, promax rotation of the components for each scale was unnecessary.

Analyses

H1 posited that information sources labeled as public relations practitioners would be perceived as less credible than engineers or presidents in times of organizational crisis when gauged after consumption of the messages. Data analysis revealed support for H1. A within-subject design repeated measures ANOVA ($F(3, 516) = 9.12, p < 0.05, \eta_p^2 = 0.050$) suggested that PR practitioners were labeled less credible ($M = 6.83, SD = 2.15$) than were presidents ($M = 7.23, SD = 1.87$) and engineers ($M = 7.31, SD = 1.84$), who were not significantly different from each other by LSD test. It should be noted that the control information sources, who were identified only by name and not by job title, were significantly less credible ($M = 6.40, SD = 1.92$) than any of the three other sources suggesting that no job descriptor is particularly detrimental to perceptions of credibility. A follow-up analysis was conducted to examine participants' perceptions of trustworthiness of each source as a single-item dependent variable (to mirror the

single-item continuous response measurement). Analysis revealed a significant effect ($F(3, 519) = 3.18, p = 0.02, \eta_p^2 = 0.02$) such that engineers ($M = 6.96, SD = 2.04$) and presidents ($M = 7.07, SD = 2.16$) were perceived as significantly more trustworthy than the control ($M = 6.44, SD = 2.26$). However, PR practitioners ($M = 6.71, SD = 2.50$) were not perceived as any more or less trustworthy than other source types.

H2 posited that perceptions of sources would vary in real-time as source job descriptions were revealed. As traditional experimental research in source credibility has relied on post-exposure measures that followed consumption of entire stimulus material packages, research has yet to demonstrate the speed at which judgments are made and how those judgments may evolve over the consumption period. H2 was partially supported. Continuous response data in the current study suggest that perceptions of source trustworthiness are first made almost instantaneously when source identifiers are revealed to audiences. In fact, when comparing baseline evaluations taken just seconds before sources were identified, to evaluations taken four seconds after source identification occurred, all sources experienced a numerical increase in trustworthiness. A paired samples t-test for each source condition demonstrated that presidents registered the largest bump from baseline ($M_{Pre} = 4.88; M_{Post} = 5.08; SD_{Pre} = 0.84; SD_{Post} = 1.25$) with a raw increase of 0.20 in trustworthiness ($t(172) = 3.53, p < 0.001$) while PR practitioners also saw a significant bump of 0.14 ($M_{Pre} = 4.90; M_{Post} = 5.04; SD_{Pre} = 1.12; SD_{Post} = 1.42$) ($t(172) = 2.33, p = 0.02$). Engineers saw an increase that approached significance 0.11 ($M_{Pre} = 4.83; M_{Post} = 4.94; SD_{Pre} = 0.82; SD_{Post} = 1.25$) ($t(172) = 1.66, p = 0.098$), and the control group, who was identified only by name but without job title, saw the smallest and non-statistically significant increase ($M_{Pre} = 4.89; M_{Post} = 4.97; SD_{Pre} = 0.89; SD_{Post} = 1.35$) ($t(172) = 1.17, p = 0.24$).

In an investigation of trustworthiness perceptions for more sustained and prolonged exposure, similar analyses were conducted where pre-exposure baselines were compared to an average of the first one-third of the clip following source identification as well as the second and final third. As can be seen in Table 1, for all source

conditions, perceptions of trustworthiness varied consistently and significantly throughout stimulus exposure, with all sources trending in a positive direction throughout the clip. While engineers ($F(3, 516) = 92.24, p < 0.001, \eta_p^2 = 0.349$), presidents ($F(3, 516) = 94.32, p < 0.001, \eta_p^2 = 0.354$), and PR practitioners ($F(3, 516) = 72.25, p < 0.001, \eta_p^2 = 0.296$) saw the largest increases, the control

sources all experienced a trustworthiness increase over time ($F(3, 516) = 52.25, p < 0.001, \eta_p^2 = 0.233$) when comparing these time periods. Figure 1 represents graphically how trustworthiness trended over time within each source category and displays how the control group consistently rated lower than all other sources who were identified by job title.

Table 1. Perception of source trustworthiness over time.

| Source | Time of Measurement | | | |
|-----------|---------------------|-------------------|-------------------|-------------------|
| | Pre-Exposure | First Third* | Middle Third* | Final Third* |
| PR | 4.90 ^A | 5.73 ^B | 6.23 ^C | 6.48 ^D |
| President | 4.88 ^A | 5.84 ^B | 6.37 ^C | 6.54 ^D |
| Engineer | 4.83 ^A | 5.77 ^B | 6.41 ^C | 6.58 ^D |
| Control | 4.89 ^A | 5.43 ^B | 6.00 ^C | 6.21 ^D |

Note: All means not sharing a superscript are different by LSD post-hoc test horizontally.

*Thirds are averaged dial response in relationship to entirety of stimulus material following exposure to source information revelation per scenario.

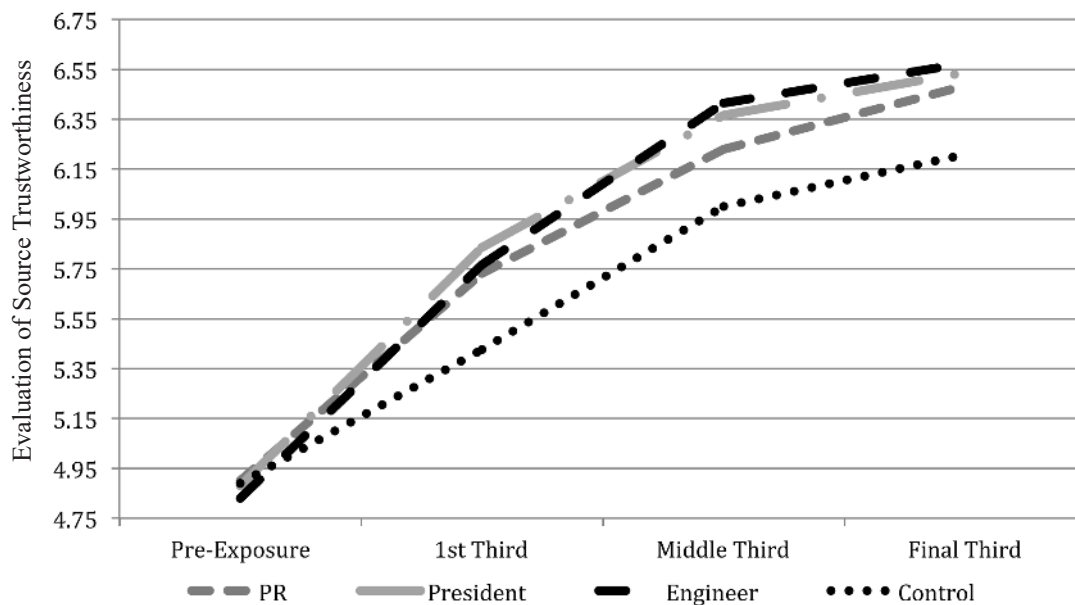


Figure 1. Evaluation of source trustworthiness over duration of clip exposure.

Note: Pre-exposure value was determined by averaging an individual's ratings across the three seconds prior to the source identification key appearing on screen. The thirds ratings were determined by averaging all seconds across the first, second, and final third of all measures taken second-by-second following the timestamp second the key first appeared on screen.

Discussion

Researchers are not new to investigating how the public perceives spokespersons in regard to source credibility effectiveness. However, the extant literature lacks in methodological variety, which could extend the findings into new arenas and broaden the field's ability to generalize across a wider array of contexts. Pencil-and-paper self-report measures that were taken in retrospect following consumption of stimulus material were coupled with continuous response data collected second-by-second while participants watched a news conference unfold. The use of audiovisual content during continuous data collection also provided an opportunity to move source credibility research into the audiovisual context, currently the more typical media consumption environment (Grabe and Bucy 2009).

Sources identified as public relations practitioners were perceived as less credible in retrospective measures, as compared to other identified sources. This finding, as well as past research in the area, suggests that organizations in crisis may want to look elsewhere than the PR department for a spokesperson. However, as shown through these results, the search for a news conference presenter may not require going outside of the company. Specifically, PR sources in this study lagged significantly behind a news conference information source identified as an engineer (engineer in the case of a water crisis) as well as behind a source identified as an agency president, and data revealed the president was evaluated as credible as an engineer during a water crisis.

The fact that the unlabeled control source was the least credible of all those tested lends support to the argument that audiences are looking for source clues to help them evaluate people who provide public information. Without any manifest identifiers for the control source other than his name, it would seem respondents were reluctant to give him any benefit of the doubt and rated him beneath the PR practitioner in terms of credibility. That said, this finding suggests that even a typically poorly perceived identifier is superior to not having one at all.

In terms of the continuous response data, the

current study offers a first look at how quickly source revelation may impact opinions in an organizational crisis setting. Within four seconds of a source being labeled, perceptions of that source along the dimension of trustworthiness were impacted. Where in the past, academicians have been limited to the knowledge that source factors influence perceptions at some unknown point after they are revealed, this project sheds light on just how quickly the impact may occur. Additionally, data show perceptions continue to evolve throughout the message consumption time period. Ultimately, one question raised here is what other source factors may be instantly impactful. Similarly, another question specific to effectiveness of public relations practitioners centers on the fact that while trustworthiness of sources improved to similar levels for all job-identified sources, public relations practitioners were evaluated poorly comparatively on the construct of credibility when respondents were asked to consider the news conference in retrospect after it ended. This study offers no explanation of this seeming discrepancy. While data here may imply that there is some disjoint between credibility and trustworthiness, it is also plausible that the cognitive processing required in real-time evaluation differs on some fundamental level from the processing required in a more reflective, post-exposure assessment. Researchers should investigate the nature of these differences. The reported data may suggest that organizational spokespersons should not assume that being perceived as credible equates to being perceived as trustworthy. If so, spokespersons may need to engage in different communication strategies to be perceived as both credible and trustworthy.

Limitations and Recommendations for Future Research

Limitations are inherent in experimental research, and the current study is no exception. One limitation here is the use of trustworthiness as the sole indicator of spokesperson evaluations. While trustworthiness is a well-known dimension underlying the credibility construct (Callison 2001), results from trustworthiness and credibility dependent measures seemed to tell different stories. Although social scientists are trained to utilize a

battery of indicators to assess latent constructs (Crano and Brewer 2002), an inherent limitation of the continuous response measurement system used in this study is the fact that participants may only evaluate content by responding to one item and one scaled response. We reported the results of a single-item self-report measure of trustworthiness to compare to the battery of credibility items. Additionally, a follow-up analysis was conducted with the single trustworthiness self-report item, which seemed to trend similarly to the battery of all credibility items. Future research should incorporate multiple sessions and test the array of credibility components using the single-time dial format to more specifically understand how self-report and continuous response evaluations of source credibility unfold over time and in retrospect.

The data seem to suggest that perhaps evaluative processing during and after media consumption influences post-consumption appraisals. That is, perhaps credibility evaluations crystallize over time (as reflected by continuous response measurement), such that when participants are asked to evaluate the credibility of spokespersons after stimulus exposure has ended, rumination about the source's credibility may be reflected in the aggregate post-consumption snapshot provided by self-report measures. Future research should endeavor to better understand how credibility evaluations unfold over time and how to reliably and validly measure and compare continuous and retrospective measures.

The study is limited in its ability to generalize to spokesperson characteristics beyond job title. Future research should examine how additional spokesperson characteristics (e.g., gender, race, etc.) may influence continuous response evaluations of spokesperson credibility. Additionally, public relations practitioners are often employed in roles that bear different titles, such as chief communication officer, public affairs specialist, media relations coordinator, communications manager, and the like. Future research may consider how variations in public relations job titles might influence source credibility evaluations.

Conclusion

The current study offers insight for both academics and industry. Academic researchers investigating source credibility and its impact on perceptions of source effectiveness can glean from this project the idea that factors such as job title not only influence opinions but that these opinions form almost instantly and continue to evolve throughout message consumption. In contrast to past studies that have measured source credibility at a static point in time following all exposure to stimulus material, here data are collected dynamically in real-time as well as in a one-shot post-exposure setting. Comparisons of the two types of data collection suggest that cognitive processing of source factors may vary depending on the task assigned and ability to contemplate a full exposure with speed of response requirements removed. The findings here also suggest more work is needed to effectively relate data gathered through one technique to another.

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