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ORIGINAL ARTICLE

# Scientific Uncertainty in News Coverage of Cancer Research: Effects of Hedging on Scientists' and Journalists' Credibility

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*News reports of scientific research are rarely hedged; in other words, the reports do not contain caveats, limitations, or other indicators of scientific uncertainty. Some have suggested that hedging may influence news consumers' perceptions of scientists' and journalists' credibility (perceptions that may be related to support for scientific research and/or adoption of scientific recommendations). But whether hedging does affect audience perceptions is unknown. A multiple-message experiment (*N *= 601) found that across five messages, both scientists and journalists were viewed as more trustworthy (a) when news coverage of cancer research was hedged (e.g., study limitations were reported) and (b) when the hedging was attributed to the scientists responsible for the research (as opposed to scientists unaffiliated with the research).*

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In 1981, several prestigious U.S. newspapers gave front-page coverage to a single study suggesting a link between the consumption of coffee and pancreatic cancer. Parascandola (2000) noted that very few caveats were included in the initial news coverage, even though the study was tentative, roundly criticized by the research community, and ultimately revised by the authors. Because of the revision, many newspapers ran follow-up stories that detailed the controversy surrounding the study and dismissed the results. Parascandola lamented, "people who followed the story from beginning to end likely ended up with a cynical view of medical science, where the 'experts' make pronouncements only to sheepishly revoke them later" (p. 2).

The episode documented by Parascandola (2000) does not appear to be an isolated incident. Content analyses have found that news coverage of scientific research is rarely hedged (e.g., Pellechia, 1997; Tankard & Ryan, 1974); in other words, the research is stripped of caveats, limitations, and other indicators of scientific uncertainty. As a result, news coverage of science routinely depicts research as more certain than it is (Stocking, 1999). Of course, because scientists are always

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managing scientific uncertainty, they are also the initiators of the simplification process. Star (1983) has argued that scientists start the process of simplifying science (by removing uncertainties) sometimes before the research has even begun.

Hedging is the use of linguistic elements to signal tentativeness or caution while expressing information (Crismore & Vande Kopple, 1988). Researchers studying interpersonal communication (Brown & Levinson, 1978) have argued that hedging is a form of politeness used by communicators to meet and protect face needs. Within written communication, scholars have argued that hedging may have a variety of effects, from undermining readability to promoting compromise (e.g., Shaughnessy, 1977).

But does hedging matter? That is, does hedging scientific discourse have a meaningful effect on news consumers? Parascandola (2000) asserted that a lack of hedging in news coverage of science might have a negative effect on the credibility of the scientific community. He believed that news consumers might react to insufficiently hedged coverage by developing a cynical view of medical science. Others have voiced similar concerns (e.g., Angell & Kassirer, 1994; Nelkin, 1995; Schwartz & Woloshin, 2004); however, despite the frequency of such claims, no effects-based study exists demonstrating that exposure to hedged coverage impacts public perception of science. At present, it is an untested hypothesis.

The purpose of the present study was to test whether hedging does affect news consumers (positively or negatively). On a practical level, scientists are justifiably concerned about how media portrayals of science affect their credibility and, by extension, public support for scientific research and funding (Hartz & Chappell, 1997) and public adherence to research recommendations (Arora & Arora, 2006). Some within the scientific community are so concerned that they have become wary of interacting with the press (Hartz & Chappell, 1997).

In a larger sense, research on hedging will advance our understanding of the effects of powerless/powerful language. That is, it may be helpful to think of hedging as a form of powerless language (i.e., language that is uncertain and heavily qualified) and not as a form of powerful language (i.e., language that is certain and assertive). Past research has found that communicators are perceived as more credible when they use powerful language rather than powerless language (Burrell & Koper, 1998; for a review, see Hosman, 2002). Early research on the public communication of science was grounded in a similar belief; for instance, scientists were often encouraged to remove scientific uncertainties (i.e., to use powerful language) to appear more confident (for a discussion of this research, see Zehr, 1999). However, in a meta-analysis of the effects of powerless/powerful language on credibility, Burrell and Koper (1998) argued that the basic finding (i.e., that powerful language enhances credibility) should be viewed with caution because of insufficient variation in study context. They noted that most research on powerless/powerful language has been conducted in one of two settings (courtrooms and classrooms); a facet of the research that significantly limited the generalizability of the results. What is needed is research examining the effects of powerless/powerful language in new contexts—especially contexts where powerless language might be favored—followed by explanations of when and where context might matter.

The present study also expands our understanding of how laypeople process uncertainty. Communication researchers have long viewed uncertainty as an anxiety-inducing state (Berger & Calabrese, 1975), but more recent scholarship suggests that human beings actively manage uncertainty in ways that support their interests (Brashers, 2001). In the case of science news, Corbett and Durfee (2004) have pointed out that what is needed is "a bridge between the journalistic construction of scientific uncertainty and audience perceptions" (p. 144). That is, researchers need to connect what is known about science news coverage (i.e., that it is rarely hedged) with research examining how news audiences are affected by that coverage (e.g., Does not hedging news coverage of science invoke anxiety or shape perceptions of the scientific community?). The present study contributes to the latter by measuring audience reactions to different versions (e.g., not hedged vs. hedged) of the same news story.

## The certainty of scientific news

Framed from a scientific standpoint, a major problem with most science news coverage is that journalists simplify complex information by minimizing or omitting important scientific uncertainties. Stocking (1999) has argued that journalists "make science more certain than it is" by removing caveats, relying on too few sources, neglecting context, stressing the results over the process, and presenting science as a quest whose future is assured. Angell and Kassirer (1994) offered a similar interpretation of the science news environment:

> [R]esearchers often end their reports with the phrase, "More work is required," which is more than a bromide. But . . . neither the public nor the media are inclined to wait for confirmatory studies. Often, the media reports are exaggerated or oversimplified. (p. 189–190)

Claims of this kind are very common, indicating that it is a compelling issue within the domain of science news (e.g., DeVries, 1988; Hartz & Chappell, 1997; Nelkin, 1995; Parascandola, 2000; Pellechia, 1997; Schwartz & Woloshin, 2004; Zehr, 1999). Even science journalists have criticized their own reporting practices as being unnecessarily streamlined and potentially misleading (e.g., Cooper & Yukimura, 2002).

Content analytic work supports the claim that science news coverage is largely devoid of scientific uncertainty. For instance, content analyses have consistently found that 36–40% of news stories overstate the generalizability of scientific findings by omitting key conditional statements (Pellechia, 1997; Singer, 1990; Singer & Endreny, 1993; Tankard & Ryan, 1974). Errors of commission, such as misreporting the number of participants in a study, are also common (Singer, 1990; Tankard & Ryan, 1974), but scientists evaluating coverage of their own research perceive errors of omission as more problematic (Dunwoody, 1986; McCall, 1988; Tankard & Ryan, 1974). Errors of omission may be more troublesome for scientists because they are caused, in part, by purposeful streamlining of scientific discourse during the news production process (Dunwoody, 1986).

Qualitative studies also suggest that certain types of science news are particularly prone to simplification. Several commentators have noted that news coverage of cancer research is routinely stripped of all hedging (Brody, 1999; Reynolds, 2001; Russell, 1999). Critics have accused the news media of falling victim to a "carcinogen-of-the-week" style of reporting, where the news media act more like scaremongers than vehicles for the dissemination of public information (Russell, 1999, p. 167). Even those who are critical of science news reporting in general commonly use cancer research as their primary example (e.g., Parascandola, 2000; Rall, 1994). So, although there does seem to be an overall trend toward not hedging science news, cancer research appears to be particularly likely to receive this treatment.

## The infallible institution: Uncertainty and science

Why do modern scientists care so much about scientific uncertainty? The answer can be found in writings on the philosophy of science, especially in the work of Karl Popper. A scientist by trade, Popper (1961) proposed what is generally considered to be the modern paradigm of scientific inquiry:

> The old scientific ideal of *epistēmē*—of absolutely certain, demonstrable knowledge—has proved to be an idol. The demand for scientific objectivity makes it inevitable that every scientific statement must remain *tentative forever*. It may indeed be corroborated, but every corroboration is relative to other statements which, again, are tentative.
>
> . . . The wrong view of science betrays itself in the craving to be right; for it is not his *possession* of knowledge, of irrefutable truth, that makes the man of science, but his persistent and recklessly critical *quest* for truth. (emphasis in original; pp. 280–281)

For Popper, science was not about methods, data, or even observations (common descriptors used in other definitions of science), it was a decision to subject "tentative answers" to "ever more rigorous tests" (p. 281). Science was not about making the universe known, rather it was about striving to always know more.

If every scientific statement must remain tentative, then scientists are always grappling with scientific uncertainty. That is, scientists are perpetually constructing the extent to which anything is known. Zehr (1999) described this process as one of constant management. Scientists must actively construct or deconstruct the certainty of knowledge to explain what they are doing and why. On a similar note, scientific debates typically concern how much is known and with what confidence (Campbell, 1985). The end result is a communication environment focused on scientific uncertainty.

To better understand the role of uncertainty in scientific discourse, Hyland (1996) examined the frequency and type of uncertainty claims in scientific journal articles. He found that original reports of research contained consistent lexical hedging (roughly 2% of words were hedged, e.g., might, could, may) and discourse-based hedging (i.e., entire statements that conveyed limitations of the study). Concerning the latter, three types of discourse-based hedging accounted for 15% of all hedging in scientific articles: (a) limitations about experimental conditions (3.7 statements per article); (b) model, theory, or methodology limitations (3.2 statements per article); and (c) admission to lack of knowledge (2.1 statements per article).

## Hedging and credibility

The construct of credibility has been defined and subjected to factor analyses many times over (e.g., Hovland, Janis, & Kelley, 1953; McCroskey, 1966; McCroskey & Young, 1981). Reviews of this research have argued that credibility is a multidimensional construct with at least two underlying factors: expertise and trustworthiness (McCroskey & Young, 1981; O'Keefe, 2002).[1] Stated briefly, expertise (sometimes called competence) is a measure of "whether the communicator is in a position to *know* the truth" (emphasis in original; O'Keefe, 2002, p. 183). Trustworthiness, on the other hand, is "whether the communicator will likely be inclined to *tell* the truth" (emphasis in original; O'Keefe, 2002, p. 183). Other factors like dynamism and goodwill have been suggested and even empirically supported (e.g., Whitehead, 1968); however, several scholars have argued that the appearance of additional factors underlying credibility is largely a byproduct of misguided factor analysis (for further discussion of this topic, see McCroskey & Young, 1981).

Explicated as expertise and trustworthiness, it is easy to see why scientists are typically viewed by the public as highly credible (National Science Board, 2006). Scientists are well educated (i.e., high expertise) and philosophically dedicated to the objective pursuit of knowledge (i.e., high trustworthiness). It is also more readily apparent how hedging scientific research might affect scientists' credibility, namely, by increasing scientists' trustworthiness. Of course, Popper (1961) suggested this long ago. He argued that keeping knowledge "tentative for ever" was, among other things, a strategy for maintaining and communicating objectivity (p. 280). Perceived objectivity is an aspect of trustworthiness (i.e., the perception that a communicator will tell the truth). In other words, Popper was implicitly arguing that communicating scientific uncertainty helps maintain the trustworthiness of scientists.

Past research supports the notion that subtle features of a message can influence source credibility. Particularly relevant to this study, researchers have explored differences between powerless and powerful language. In a meta-analysis of the effects of powerless/powerful language on credibility, Burrell and Koper (1998) found that powerful language significantly enhanced source credibility. This, of course, suggests that not hedging news coverage of science (i.e., transforming powerless language into powerful language) may enhance the credibility of scientists. However, Burrell and

Koper also noted that they were unable to examine the potential moderating role of context in their analysis because most studies were situated within one of two contexts: courtrooms (e.g., lawyers, witnesses, jurors) or classrooms (e.g., teachers). They encouraged researchers to explore the effects of powerless/powerful language in other contexts.

Powerless language may hinder communicators in many contexts, but there is reason to believe that communication functions differently in the context of science. One explanation for the observed differences between powerful and powerless language is that the two styles of communicating represent varying levels of control (over self or others). The basic finding has been that powerful language exhibits more control, whereas powerless language exhibits less control (Hosman & Siltanen, 2006). Stated differently, powerful language may be favored in contexts where power is equated with control. But in the context of science, power is not equated with control. For example, powerless language is often the mark of a strong argument in scientific discourse. Meyer (1997) stated this argument well:

> While in oral face-to-face communication hedging is regarded as a hallmark of "powerless" speech-style . . . in written academic discourse it may serve to strengthen the argument. (p. 21)

Crismore and Vande Kopple (1997) conducted a study that provides initial support for this idea. They found that high school students rated the author of a scientific text on primate evolution more "believable" when the text was hedged. However, the study had several limitations. First, it is unclear if students perceived the author of the text to be a scientist. The text was taken from a textbook written for high school students. Sometimes, high school textbooks are written by scientists and sometimes they are written by individuals without a scientific background. Second, the design of the study limits the generalizability of the finding (i.e., there was only one science text manipulated). Limitations aside, the study does offer support for the idea that powerless language may increase scientists' credibility. The present study helps sort out this ambiguity.

One potential moderator of the relationship between hedging and scientific trustworthiness is the source. That is, journalists can attribute hedging to either scientists responsible for the research (henceforth, the "primary scientists") or scientists unaffiliated with the research (henceforth, the "unaffiliated scientists").

Interestingly enough, journalistic norms may actually favor the attribution of hedging to scientists unaffiliated with the research in question. Tuchman (1972) argued that objectivity is a driving force behind U.S. news norms. Several researchers have asserted that objectivity-driven norms are particularly noticeable in news coverage of scientific research (e.g., Dearing, 1995; Dunwoody, 1999). One way journalists maintain objectivity (or at least communicate objectivity to their audience) is through balance (Tuchman, 1972). Journalists routinely insert balance into a story by citing multiple sources representing different perspectives. Including multiple sources with (apparently) different perspectives emphasizes journalistic objectivity.

Thus, journalists may be tempted to attribute hedging (i.e., caveats, limitations of the study) to unaffiliated scientists to enhance their own trustworthiness. And journalists have good reason to be concerned about their trustworthiness; survey research has demonstrated that media credibility is low and possibly on the decline (Kohut, 2006).

According to Nelkin (1995), journalistic notions of objectivity were originally modeled after the scientific method. Like scientists, journalists used objectivity to distance themselves from their subjects and to maintain credibility with their audiences. However, over time, objectivity came to mean very different things to scientists and journalists. For scientists, objectivity became rooted in data and self-reflexivity; journalists, on the other hand, came to view objectivity as a matter of access and presentation (Nelkin, 1995).

At present, both scientists and journalists value objectivity (even though they interpret it differently), and their perceptions of objectivity govern their communication practices. For example, scientists believe that personally acknowledging research limitations may strengthen the public's perception of their trustworthiness. Past research (Crismore & Vande Kopple, 1997) has provided tentative support for this relationship, suggesting that nonscientists do perceive scientists more positively when the latter hedge their claims.

H1: When attributed to primary scientists, hedging in news coverage of scientific research will increase primary scientists' trustworthiness.

For similar reasons, journalists believe that attributing hedging to unaffiliated scientists may strengthen the public's perception of their trustworthiness.

H2: When attributed to unaffiliated scientists, hedging in news coverage of scientific research will increase journalists' trustworthiness.

At the same time, it is unclear whether streamlining will affect the public's perception of scientists' or journalists' expertise (regardless of source attribution).

RQ1: Is hedging in news coverage of scientific research related to primary scientists' expertise?

RQ2: Is hedging in news coverage of scientific research related to journalists' expertise?

## Methodology

### Multiple-message designs

To increase the generalizability of the findings, the present study used a multiple-message design. Similar to a meta-analysis, a multiple-message design allows researchers to examine the effects of a manipulation across messages (Jackson & Brashers, 1994).

### Procedure

All individuals ($N = 601$) in a 2 (hedged vs. not hedged) $\times$ 2 (primary scientists vs. unaffiliated scientists) $\times$ 5 (message) between-participants experiment were randomly assigned to 1 of 20 conditions. To recruit participants, a researcher visited a variety of communication courses at a large university in the Midwestern United States. All participants were offered extra credit for their participation. Participants interested in the study wrote down their names and e-mail addresses on a sign-up sheet circulated by the researcher. The researcher then thanked the participants and left the classroom. Later that evening, participants who had expressed interest in the study were sent an e-mail message briefly explaining the study and providing a link to a password-protected web site (the password was in the message). Participants who visited the web site encountered all the following: a consent form (they clicked a button to express consent), a series of demographic questions, a news article (embedded in a *Chicago Sun-Times* web page; all news articles appeared to come from the online version of that newspaper), a series of questions measuring variables of interest, and a debriefing form. Participants' responses were tracked using an online software program. The response rate was high; of those solicited, 86% completed the study.

**Participants**

Six hundred and one college students voluntarily participated in the study. Slightly more females (56%) participated than males (44%). The mean age was 19.6 years ($SD = 1.3$). The racial background of the participants was almost identical to the demographics of the United States: 71% Caucasian, 11% African American, 8% Asian, 6% Hispanic, and 4% described themselves as "other."

**Stimulus materials**

As previously stated, news coverage of cancer research is thought to be an exemplary case of streamlined news (e.g., Brody, 1999); therefore, five randomly selected cancer news stories were used in this study. To obtain a random sample of U.S. news articles focused on cancer research, the author performed a guided news search of the Lexis-Nexis database. The guided news search had the following parameters: "general news" or "U.S. news" (for news category), "major papers" or "Midwest regional sources" (for news source), "1/1/2003-1/1/2006" (for specific date range), and "cancer research" or "cancer study" in "headline, lead paragraph(s), terms" (for search terms). All international newspapers included in the "major papers" news source category were omitted from the final sample.

The author used a random number generator to select news articles. Twenty articles were initially identified using the random number generator, five of which qualified for the present study. To qualify, a news article had to have at least three sentences containing cancer information (i.e., to eliminate articles where cancer is merely mentioned in a laundry list of other illnesses) and have a research study or studies as its primary focus (e.g., clinical trials, studies on cancer causes/treatments/risks, new reports of cancer incidence). The aforementioned criteria were taken from a recent content analysis of U.S. cancer news coverage (for more details, see Stryker, Jensen, & Moriarty, in press).

The five remaining news articles were manipulated in several ways. First, the amount of hedging in the article was varied to create two conditions: hedged and not hedged. Hyland (1996) argued that hedging can be lexical (e.g., single words or phrases like *may*, *could*, *might*) or discourse based (i.e., entire sentences describing limitations of a study). Scientists seem to be more concerned about the latter (e.g., Schwartz & Woloshin, 2004); thus, the present study added or subtracted discourse-based hedging from the manipulations. The not-hedged condition was constructed by adding a single sentence conveying scientific uncertainty: a stock phrase stating that "it was too early to make definitive claims and that more research needed to be done." This was thought to be an appropriate realization because researchers have noted that even news coverage of science that is not hedged occasionally includes single statements about the need for more research (Parascandola, 2000). The hedged condition, on the other hand, was designed to mirror the actual scientific uncertainty desired by the primary researchers (in each of the news articles). That is, hedged coverage was defined as the level of scientific uncertainty the researchers wanted to convey. The level of scientific uncertainty desired by the researchers was assessed by examining the discussion/conclusion/comment section of the research report(s) on which the five news articles were based. The scientific uncertainty contained in the original article was crafted into an additional paragraph and added to the hedged versions of the news articles.

Second, the source of the hedging was manipulated. The hedging was either attributed to the scientist(s) responsible for the research (the "primary scientists" condition) or to a contrived scientist unaffiliated with the project (the "unaffiliated scientists" condition).[2]

For example, one of the news articles used in this study reported on research on lycopene, a substance in tomatoes that may have anticarcinogenic properties (Woods, 2003). In the not-hedged-primary scientists condition, a single paragraph was added in which the researchers responsible for the study (i.e., the primary scientists; in this case, Dr. Steven K. Clinton) conveyed general scientific uncertainty about the results:

> Though promising, Clinton noted that it was too early to make definitive claims and that more research needed to be done.

In the hedged-primary scientists condition, the paragraph was expanded to include all the scientific uncertainties conveyed in the actual peer-reviewed research publication on which the news article was based (i.e., Boileau et al., 2003):

> Clinton pointed out several limitations of the study. The first is that the study was done using rats and not humans. Studies of this type typically utilize rats as participants (because rats have been found to be good proxies for humans), but there are still physiological differences between the two. In addition, the study does not rule out the possibility that lycopene helps to prevent prostate cancer. "Although we can conclude that lycopene alone, in this model system and at

this dose, did not statistically significantly alter the risk of prostate cancer, it remains possible that lycopene, when provided in combination with the other phytochemicals found in whole tomato powder, may contribute to the benefits observed," Clinton noted. Finally, rats in the pure lycopene condition received more than 10 times the lycopene that those in the tomato powder diet did. Clinton suggested that this may have influenced the results.

In the unaffiliated scientists conditions, Dr. Clinton was changed to Dr. Melissa Carson (a fictitious researcher). Dr. Carson was described as "an oncologist unaffiliated with Clinton's research team and currently located at the Harvard School of Public Health."

Even though the present study defined the manipulations according to message features (as opposed to message effects), it is still useful to consider whether participant's perceived a difference between the hedged and the not-hedged conditions (given the complexity of the manipulation). Using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*), participants were asked the extent to which they agreed that "the limitations of this study were presented clearly." A three-way, mixed-model analysis of variance (ANOVA)—with participant reaction as the dependent variable, hedging and source attribution as fixed factors, and message as a random factor—revealed a significant main effect for hedging, $F(1, 4) = 25.06$, $p < .001$, partial $\eta^2 = .86$. Participants in the hedged condition were more likely to agree that the limitations were presented clearly ($M = 4.51$, $SD = 1.59$) than those in the not-hedged condition ($M = 3.58$, $SD = 1.52$). Consistent with the logic of the manipulation, there was no main effect for source attribution, $F(1, 4) = 0.08$, $p = .79$, and no Hedging × Source interaction, $F(1, 4) = 3.38$, $p = .13$. In addition, there were no significant main effects or interactions for message, $F(4, 581) = 0.49$, $p = .74$; Hedging × Message, $F(4, 581) = 1.78$, $p = .26$; Source × Message, $F(4, 581) = 1.85$, $p = .28$; or Hedging × Source × Message, $F(4, 581) = 0.32$, $p = .86$, a finding that suggests that the manipulation was stable across messages.

### Measures

#### *Credibility*

Following exposure to the stimulus, participants rated the credibility of two groups: the scientists responsible for the research (i.e., the primary scientists) and the journalists responsible for the news story. Credibility consists of at least two underlying factors, expertise and trustworthiness, which were measured with items modeled after those used in prior research (e.g., Gaziano & McGrath, 1986; McCroskey & Young, 1981). Expertise was measured with four 7-point items (e.g., experienced–inexperienced, well trained–poorly trained) that were averaged to form a scale. The scale was reliable for both scientists' ($\alpha = .89$, $M = 5.12$, $SD = 1.01$) and journalists' ($\alpha = .81$, $M = 4.81$, $SD = 0.93$) expertise ratings. Trustworthiness was measured in a similar fashion, using four 7-point items (e.g., trustworthy–untrustworthy, tell the whole story–doesn't tell the whole story) to form a scale. The scale was reliable for both scientists' ($\alpha$ = .84, $M$ = 4.57, $SD$ = 0.97) and journalists' ($\alpha$ = .78, $M$ = 4.59, $SD$ = 0.92) trustworthiness ratings.

## Results

### H1: Scientists' trustworthiness

H1 posited that hedging and source attribution would interact to affect primary scientists' trustworthiness ratings (so that primary scientists would be perceived as more trustworthy in the hedged condition than in the not-hedged condition). A three-way, mixed-model ANOVA—with scientists' trustworthiness ratings as the dependent variable, hedging and source attribution as fixed factors, and message as a random factor—revealed no significant main effects for hedging, $F(1, 4) = 0.85$, $p = .40$, or source attribution, $F(1, 4) = 0.00$, $p = .93$. However, as hypothesized, there was a statistically significant Hedging × Source interaction, $F(1, 4) = 15.47$, $p = .01$, partial $\eta^2 = .79$.

To better understand the interaction, a simple main effects analysis was carried out (see Table 1 for means and standard deviations). The analysis revealed that hedging influenced trustworthiness ratings for participants in the primary scientists condition, $F(1, 597) = 7.31$, $p < .01$, partial $\eta^2 = .49$, but not for those in the unaffiliated scientists condition, $F(1, 597) = 0.21$, $p = .64$.[3] Participants in the primary scientists condition rated scientists as more trustworthy when they were attributed higher levels of scientific uncertainty. Thus, H1 was supported.

In a multiple-message design, it is also valuable to consider the consistency of the effect across messages. There was no significant main effect for message, $F(4, 581) = 0.80$, $p = .55$, but there were significant interactions between Hedging × Message, $F(4, 581) = 8.94$, $p = .03$, partial $\eta^2 = .89$, and Source × Message, $F(4, 581) = 11.03$,

**Table 1** Trustworthiness Ratings by Hedging × Source

| | Not Hedged | Hedged |
|---|---|---|
| | Scientists' trustworthiness | |
| Primary scientists | $4.48^a$ (1.00) | $4.78^b$ (1.03) |
| Unaffiliated scientists | $4.64^a$ (0.93) | $4.59^a$ (0.92) |
| *n* | 303 | 298 |
| | Journalists' trustworthiness | |
| Primary scientists | $4.53^a$ (0.95) | $4.76^b$ (0.93) |
| Unaffiliated scientists | $4.70^a$ (0.92) | $4.59^a$ (0.94) |
| *n* | 303 | 298 |

*Note:* Summary of means (with standard deviations in parentheses) for trustworthiness ratings by Hedging × Source. Higher scores indicate more positive perceptions. Comparisons between means, specified by lower case superscript letters, are horizontal only. Cell means that do not share a superscript letter are significantly different, $p < .05$.

$p = .02$, partial $\eta^2 = .91$. If there had been main effects for either hedging or source, then these message interactions would have suggested that the effects varied significantly by message. However, in the present study, the only significant effect was a Hedging × Source interaction. As a result, the message interaction of interest is the Hedging × Source × Message three-way interaction, which was not statistically significant, $F(4, 581) = 0.32$, $p = .86$. In other words, the interaction effect was very stable across messages (i.e., the nonsignificant three-way interaction).

*Follow-up moderated mediation analysis*

O'Keefe (2003) argued that experimental manipulations are best defined according to intrinsic message features and that variables traditionally conceived of as manipulation checks are more usefully explored as potential mediators (for a similar argument situated within a media effects context, see Tao & Bucy, 2007). In the present study, a manipulation check revealed that hedging was positively associated with the perception that study limitations were reported clearly (henceforth referred to as "perceived limitation"). Subsequent analyses have shown that—when attributed to primary scientists—hedging is also positively associated with the perception that primary scientists are more trustworthy. In light of these two findings, it is useful to test whether perceived limitation mediates the effect of hedging on scientists' trustworthiness. Additionally, because source attribution is a moderator of the effect of hedging on scientists' trustworthiness, it is also necessary to explore the relationship between perceived limitation and source attribution. Thus, this analysis might be more accurately described as "moderated mediation" because the strength of the mediation is "conditional on the value of at least one moderator variable" (Preacher, Rucker, & Hayes, 2007, p. 195).

Using statistical methods outlined in Preacher et al. (2007), two regression analyses were conducted to test (a) whether the indirect effect of hedging on scientists' trustworthiness was significant and (b) whether it was moderated by source attribution.[4] Table 2 shows the results of these analyses according to the outcome variable of interest. The perceived limitations model was a simple regression predicting perceived limitation (i.e., the mediator variable) from hedging (i.e., the independent variable). The scientists' trustworthiness model is a multiple regression predicting scientists' trustworthiness (i.e., the dependent variable) from perceived limitation, hedging, source attribution (i.e., the moderator variable), and the interaction between hedging and source attribution.

The analysis revealed that hedging significantly predicted perceived limitation (coefficient = 1.06, $p < .001$) and that perceived limitation significantly predicted scientists' trustworthiness (coefficient = 0.14, $p < .001$). In other words, hedging had an indirect effect on scientists' trustworthiness via perceived limitation. The analysis also revealed that the Hedging × Source Attribution interaction effect was now only marginally significant (coefficient = −0.29, $p = .05$). The latter finding suggests that perceived limitation at least partially mediates the relationship between the interaction and the scientists' trustworthiness. Bootstrap statistics were calculated to better

**Table 2** Regression Results for Moderated Mediation Analyses

| Predictor | *B* | *SE* | *t* |
|---|---|---|---|
| | Perceived limitation model | | |
| Constant | 3.49 | 0.12 | 27.72** |
| Hedging | 1.06 | 0.17 | 5.96** |
| Source attribution | 0.16 | 0.17 | 0.94 |
| Hedging × Source | −0.28 | 0.25 | −1.10 |
| | Scientists' trustworthiness model | | |
| Constant | 3.97 | 0.11 | 34.51** |
| Perceived limitation | 0.14 | 0.02 | 5.73** |
| Hedging | 0.13 | 0.11 | 1.20 |
| Source attribution | 0.13 | 0.10 | 1.26 |
| Hedging × Source | −0.29 | 0.15 | −1.93† |
| | Journalists' trustworthiness model | | |
| Constant | 4.11 | 0.11 | 36.58** |
| Perceived limitation | 0.11 | 0.02 | 4.88** |
| Hedging | 0.10 | 0.10 | 0.92 |
| Source attribution | 0.14 | 0.10 | 1.40 |
| Hedging × Source | −0.30 | 0.15 | −2.04* |

*Note:* Results are presented by outcome variable. Three regressions were conducted (one for each outcome variable) using methods outlined in Preacher et al. (2007). *B*s are unstandardized coefficients.
†$p < .10$. *$p < .05$. **$p < .01$.

understand this complex relationship. Bootstrapping (bootstrap samples = 5,000) showed that source attribution moderated the indirect effect such that the effect was stronger when hedging was attributed to primary scientists (coefficient = 0.15, $SE$ = 0.04, Boot $Z = 3.74$, $p < .001$) than to unaffiliated scientists (coefficient = 0.11, $SE$ = 0.03, Boot $Z = 3.39$, $p < .001$).

Taken together, the results suggest that one way hedging influences scientists' trustworthiness is by altering reader perceptions about the clarity of the study limitations. However, the analysis also revealed that there may be a portion of variance (i.e., the marginally significant Hedging × Source Attribution interaction effect) unrelated to participant perceptions of the study limitations. Explanations for this effect are considered in the Discussion section.

**H2: Journalists' trustworthiness**

H2 posited that hedging and source attribution would interact to affect journalists' trustworthiness ratings (so that journalists' trustworthiness ratings would be higher in the hedged condition than in the not-hedged condition). A three-way, mixed-model ANOVA with scientists' trustworthiness ratings as the dependent variable revealed no significant main effect for hedging, $F(1, 4) = 0.36$, $p = .57$, or source attribution, $F(1, 4) = 0.00$, $p = .97$; however, consistent with the hypothesis, there was a statistically significant Hedging × Source interaction, $F(1, 4) = 19.31$, $p = .01$, partial $\eta^2 = .82$.

To better understand the interaction, a simple main effects analysis was carried out (see Table 1 for means and standard deviations). The analysis revealed that hedging influenced trustworthiness ratings for participants in the primary scientists' condition, $F(1, 597) = 4.48$, $p = .03$, partial $\eta^2 = .44$, but not for those in the unaffiliated scientists' condition, $F(1, 597) = 1.09$, $p = .29$. Participants in the primary scientists' condition rated journalists as more trustworthy when the primary scientists were attributed higher levels of scientific uncertainty. This finding is interesting but counter to the hypothesis. Thus, H2 was not supported.

It is useful to consider the consistency of the treatment effect across replications. There was no significant main effect for message, $F(4, 581) = 0.85$, $p = .53$, but there were significant interactions between Hedging × Message, $F(4, 581) = 6.21$, $p = .05$, partial $\eta^2 = .86$, and Source × Message, $F(4, 581) = 12.86$, $p = .01$, partial $\eta^2 = .92$. However, as mentioned previously, the key message interaction of interest is the Hedging × Source × Message three-way interaction, which was not statistically significant, $F(4, 581) = 0.25$, $p = .90$. In other words, the interaction effect was very stable across messages (i.e., the nonsignificant three-way interaction).

*Follow-up moderated mediation analysis*

Moderated mediation analyses were conducted to better understand the relationship between hedging, source attribution, perceived limitation, and journalists' trustworthiness. Table 2 shows the results of these analyses. The analyses revealed that hedging significantly predicts perceived limitation (coefficient = 1.06, $p < .001$) and that perceived limitation significantly predicts journalists' trustworthiness (coefficient = 0.11, $p < .001$). In other words, hedging has an indirect effect on journalists' trustworthiness via perceived limitation. The analysis also revealed that the Hedging × Source Attribution interaction effect (coefficient = −0.30, $p = .04$) was reduced in size, but it still accounted for a portion of variance—above and beyond perceived limitation—in the dependent variable. The latter finding suggests that perceived limitation at least partially mediates the relationship between the interaction and the journalists' trustworthiness. Bootstrap statistics were calculated to better understand this complex relationship. Bootstrapping (bootstrap samples = 5,000) showed that source attribution moderated the indirect effect such that the effect was stronger when hedging was attributed to primary scientists (coefficient = 0.12, $SE = 0.03$, Boot $Z = 3.56$, $p < .001$) than to unaffiliated scientists (coefficient = 0.09, $SE = 0.02$, Boot $Z = 3.19$, $p < .01$).

Taken together, the results suggest that one way hedging influences journalists' trustworthiness is by altering reader perceptions about the clarity of the study limitations. However, once again, there is a portion of variance (i.e., the Hedging × Source Attribution interaction effect) that does not appear to be accounted for by participant perceptions of the study limitations.

**RQ1: Scientists' expertise**

The first research question considered whether hedging would be related to participants' ratings of scientists' expertise. A three-way, mixed-model ANOVA with scientists' expertise ratings as the dependent variable revealed no significant main effects for hedging, $F(1, 4) = 1.82$, $p = .24$, or source attribution, $F(1, 4) = 0.29$, $p = .61$. The Hedging × Source interaction was not significant either, $F(1, 4) = 1.24$, $p = .32$. Thus, the present data suggest that hedging is not related to participants' ratings of scientists' expertise.

It is useful to consider the consistency of the results across replications. There was no significant main effect or interaction for message, $F(4, 581) = 2.54$, $p = .25$; Hedging × Message, $F(4, 581) = 0.87$, $p = .54$; Source × Message, $F(4, 581) = 2.14$, $p = .24$; or Hedging × Source × Message, $F(4, 581) = 1.67$, $p = .15$. This suggests that the null results observed here were very consistent across messages.

**RQ2: Journalists' expertise**

The second research question considered whether hedging would be related to participants' ratings of journalists' expertise. A two-way, mixed-model ANOVA with journalists' expertise ratings as the dependent variable revealed no significant main effects for hedging, $F(1, 4) = 2.01$, $p = .22$, or source attribution, $F(1, 4) = 0.23$, $p = .65$. The Hedging × Source interaction was not significant either, $F(1, 4) = 6.28$, $p = .06$. Thus, the present data suggest that hedging is not related to participants' ratings of journalists' expertise.

It is useful to consider the consistency of the results across replications. There was no significant main effect or interaction for message, $F(4, 581) = 1.15$, $p = .45$; Hedging × Message, $F(4, 581) = 1.52$, $p = .34$; Source × Message, $F(4, 581) = 2.36$, $p = .21$; or Hedging × Source × Message, $F(4, 581) = 1.12$, $p = .34$. This suggests that the null results observed here were very consistent across messages.

## Discussion

Popper (1961) believed that communicating scientific uncertainty was an essential part of maintaining the credibility of science. The results of the present study support this belief. Scientists were viewed as more trustworthy (a) when news coverage of cancer research was hedged and (b) when the hedging was attributed to the scientists responsible for the research (as opposed to scientists unaffiliated with the research). This finding offers additional credence to prior qualitative research on this topic and bolsters the argument of those concerned about the streamlining of scientific discourse in the news (e.g., Parascandola, 2000; Stocking, 1999).

**The infallible institution (revisited)**

Considered differently, the present study stands in stark contrast to older, once heralded notions concerning the communication of science. Originally, scientists favored the idea of removing caveats and contingencies from their public statements, hoping that doing so would increase the authority of science for lay audiences (Zehr, 1999). Early work in the sociology of science even sought to aid scientists and journalists in this enterprise by searching for methods to hide or mask scientific uncertainty when communicating with the public (i.e., to use powerful language). Over time, this perspective appears to have lost support, as modern critiques of science communication mention it only as a matter of historical interest (e.g., Nelkin, 1995; Zehr, 1999). Perhaps this idea will resurface at some point in the future and maybe researchers will identify situations where not hedging scientific communication *is* beneficial to science, but the present study suggests the former to be undesirable and the latter unlikely.

### Powerless language

Burrell and Koper (1998) suggested that powerless/powerful language differences may vary according to context, whereby powerful language would be favored in some situations and not in others. The present study provides initial support for this idea; scientists communicating limitations about their own research were evaluated more positively than those using more powerful language. One reason for this difference may be the extent to which a certain context equates power with control (over self or others). Unlike many professions, science favors a more self-critical style of communication that may alter the norms of communication. Future research on powerless/powerful language should continue to examine whether powerless/powerful language differences are related to context and control.

### Lexical and discourse-based hedging

In an earlier study, Crismore and Vande Kopple (1997) found that increased lexical hedging was related to believability. High school students reading a scientific text perceived the author (who they may have thought was a scientist) as more believable when the text was presented as hedged.

Instead of lexical hedges, participants in the present study were exposed to discourse-based hedges. However, the results were identical. College students reading a news article about cancer research also perceived scientists as more trustworthy when the article was hedged.

Taken together, the results of the two studies suggest that lexical and discourse-based hedges have a similar effect on scientific credibility. Not only does this similarity validate the findings of both studies, but it also suggests that researchers should consider how lexical and discourse-based hedges interact. Perhaps the presence of both types of hedging has a cumulative effect on scientists' credibility or maybe they do not interact at all. For the time being, it is only possible to say that lexical and discourse-based hedges appear to have identical effects on scientists' credibility.

### Journalists' trustworthiness and uncertainty

Participants' ratings of scientists' trustworthiness varied as expected, but journalists' trustworthiness ratings were considerably different than hypothesized. It was hypothesized that balance norms—which journalists adhere to primarily because they believe that the public values balanced reporting—would create a situation where journalists would be perceived as more trustworthy when hedging was attributed to unaffiliated scientists. However, counter to this hypothesis, attributing hedging to unaffiliated scientists did not increase journalists' trustworthiness. In fact, journalists benefited the most (a) when news coverage of cancer research was hedged and (b) when the hedging was attributed to the scientists responsible for the research. That is, journalists' and scientists' trustworthiness ratings functioned identically.

There are at least three possible explanations of this finding. First, it may be the case that the hedged-primary scientists condition significantly increased journalists' credibility because it was counter to readers' expectations. That is, news consumers may have expected journalists to use predictable frames (e.g., balance frames) that starkly contrasted to the self-critical representation offered in the hedged-primary scientists condition. According to expectancy violation (EV) theory (Burgoon, 1978), the hedged-primary scientists condition may be an example of a positive EV, that is, a situation where readers have a negative expectation (i.e., journalists are not trustworthy, they frame stories to highlight conflict) that is violated by a positive experience (i.e., the story is not framed to highlight conflict). Research testing EV theory has found that positive EVs can positively influence communicator characteristics, including credibility (e.g., Burgoon & Le Poire, 1993). In a sense, positive EVs seem to force perceivers to rectify incongruent cognitions (negative expectation and positive experience), with the resulting outcome often favoring a reassessment of negative expectations (e.g., journalists are trustworthy).

Assessing the legitimacy of this explanation requires more information on news consumers' expectations of news coverage of cancer research (and news coverage of science in general). If researchers knew more about what news consumers expect, then it would be possible to examine whether violations of these expectations drive media effects.

A second possible explanation of the results is that laypeople may evaluate science journalists differently because they view scientists differently than other groups. For instance, scientists want to be perceived as self-critical (Popper, 1961), a perception that may be ingrained in the general populace. Thus, it could be the case that laypeople dislike news coverage of science that adheres to the cookie-cutter template of objectivity through balance, preferring to digest science on its own terms rather than at the hands of the media. As a result, journalists who attempt to frame science news as a conflict may be perceived as less trustworthy for trying to make a "news story" out of a "science story." Continued exploration of the underlying cognitive processes at work in this situation should consider how to test this explanation.

Finally, a clever reader might postulate that the results of this study are merely an example of the age-old adage, "more is better." Experimental work is fraught with studies supporting this idea, perhaps because manipulations often require researchers to add something to the treatment condition. For example, in the present study, the hedging manipulation required more text in the hedged articles than in the not-hedged articles. But this explanation suggests that there should be a main effect for hedging, a result not found here (for scientists or journalists).

### Beyond perceived limitation

The relationship between hedging, source attribution, and trustworthiness was explained, in part, by perceived limitation. But the present study also revealed that hedging and source attribution accounted for additional variance in trustworthiness beyond that explained by perceived limitation. Which raises the question—aside from altering perceptions about the clarity of study limitations—How are hedging and source attribution related to trustworthiness? One explanation, given the operationalization of the hedging manipulation in this study, is that increased hedging may have been confounded with increased detail. The complexity of the hedging manipulation required variation not only in scientific uncertainty but also in the amount of information concerning the design of the study. Of course, this raises questions about the nature of discourse-based hedging itself, such as: Is it possible to separate hedging from study detail when the former is situated within the latter? Researchers must also consider the distance between the potential cognitive mediators and the outcome variable of interest. For instance, the perception that a study is sufficiently detailed is very similar to several commonly used credibility measures (e.g., tells the whole story–doesn't tell the whole story). However, difficulties aside, identifying other cognitive mediators will help explain additional variance in trustworthiness as well as further explicate the relationship between hedging and credibility.

### Limitations

The present study was also limited in several ways. There is good reason to think that college students are a suitable sample for studying lay perceptions of bias and expertise in the media (Slater & Rouner, 1996); however, researchers should be sensitive to the fact that this is fundamentally a convenience sample. The results observed here may be limited to the population under study or to news coverage of cancer research. Some have argued that news coverage of cancer research is an exemplary case of streamlining (Russell, 1999), suggesting that it could be either a message category representative of the whole or an exception. The operationalization of hedging potentially played a role in the results as well. The study was designed to test how uncertainty scientists want in news articles (i.e., limitations, caveats) affects their credibility. This is only one source of scientific uncertainty inherent to the communication of science (for other examples, see Corbett & Durfee, 2004; Zehr, 1999).

### Future research on streamlining and credibility

Limitations aside, the present study provides a starting point for discussions about the effects of hedging on scientists' and journalists' credibility. To be sure, there are still many questions left unanswered. First and foremost, researchers should measure if prolonged exposure to streamlined news coverage of science affects lay perceptions of science as a whole. Research designs sensitive to long-term and/or cumulative exposure may help communication scholars better gauge the size and scope of hedging effects.

Researchers should also examine relationships between hedging and other variables. After all, credibility is just one factor out of many that could potentially shape whether research recommendations are supported by the lay public (Jensen, 2007). For example, in the present study, no measure assessed participant perception of the believability of the scientific research itself. This could be problematic because hedging might enhance scientists' trustworthiness while decreasing the believability of the research being reported. Past research has found that scientists' trustworthiness and public perception of research recommendations are positively correlated (Arora & Arora, 2006); however, future work should continue to explore if and how these variables are related.

On a similar note, another variable that deserves more attention is health skepticism. Health skepticism, defined as "global doubts regarding the ability of conventional medical care to appreciably alter health status" (Fiscella, Franks, Clancy, Doescher, & Banthin, 1999, p. 409), has been related to lack of adherence to numerous health prevention and detection behaviors (Fiscella, Franks, & Clancy, 1998). Health skepticism has even been linked to mortality (Fiscella et al., 1999). Despite a growing body of literature suggesting that health skepticism predicts many health behaviors, little research has explored factors that predict health skepticism itself. Hedging (or the lack thereof) is a logical predictor of health skepticism in that streamlined news coverage can undermine the credibility of scientific research. After all, the initial criticism by Parascandola (2000) was that insufficiently hedged news coverage facilitated cynicism (about scientists, scientific research, etc.) by encouraging contradiction.

Finally, a variable that may be related to hedging, scientists' credibility, and health skepticism is backlash. Researchers studying nutrition have observed a phenomenon they call "nutritional backlash." Nutritional backlash refers to "a broad gamut of negative feelings about dietary recommendations," including "skepticism, anger, guilt, worry, fear, and helplessness" (Patterson, Satia, Kristal, Neuhouser, & Drewnowski, 2001, p. 38). Not surprisingly, nutritional backlash has been linked to unhealthy diet and nutrition behaviors (Patterson et al., 2001). The cause of this backlash is currently unknown, but it has been suggested that nutritional backlash might be a byproduct of sensationalized and conflicting media coverage of diet and health information (Patterson et al., 2001). Researchers should investigate whether there is a relationship between hedging and nutritional backlash. In addition, other forms of backlash may exist (e.g., science backlash, exercise backlash); further research might explicate backlash as a construct and continue to search for media–backlash connections in other contexts.

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## Notes

1 Most recently, McCroskey and Teven (1999) argued that credibility has three underlying dimensions: expertise, trustworthiness, and goodwill. The latter fits with Aristotle's original conceptualization of credibility and offers a potentially more nuanced measure. However, the present study sides with the original argument by McCroskey and Young (1981) that goodwill is not a distinct factor but a component of both expertise and trustworthiness.

2 In the present study, hedging was operationalized according to intrinsic message features (i.e., how the message was manipulated) rather than message effects (i.e., the effect the message manipulation had; for a discussion of this issue, see O'Keefe, 2003; Tao & Bucy, 2007). Readers interested in viewing complete versions of all manipulated news articles should visit the author's Web site http://web.ics.purdue.edu/~jdjensen/.

3 The degrees of freedom are different in this analysis because random factors are not accounted for in a simple main effects approach.

4 Moderated mediation analysis does not currently allow for the incorporation of random factors. As a result, none of the regressions conducted for the moderated mediation analyses accounted for message replication variance.

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**Incertitude scientifique dans la couverture de presse de la recherche sur le cancer : Les effets de la nuance sur la crédibilité des scientifiques et des journalistes**

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**Résumé**

Les comptes rendus de presse de la recherche scientifique sont rarement nuancés; en d'autres termes, ces comptes rendus ne mentionnent ni mises en garde, ni limites, ni aucun autre indicateur d'incertitude scientifique. Certains ont suggéré que la nuance pourrait influencer les perceptions qu'ont les consommateurs de la crédibilité des scientifiques et des journalistes (des perception qui pourraient être liées au soutien à la recherche scientifique ou à l'adoption de recommandations scientifiques). Mais la question à savoir si la nuance a réellement un impact sur les perceptions des auditoires demeure sans réponse. Une expérience à multiples messages (N = 601) a révélé que pour cinq messages, tant les scientifiques que les journalistes étaient vus comme plus fiables a) lorsque la couverture de la recherche sur le cancer dans les actualités était nuancée (par exemple, les limites de l'étude *étaient* signalées) et b) lorsque la nuance était attribuée aux scientifiques responsables de la recherche en question (plutôt qu'à des scientifiques non affiliés à la recherche).

**La Inseguridad Científica en la Cobertura de las Noticias de la Investigación de Cáncer: Los Efectos de la Cobertura sobre la Credibilidad de los Científicos y los Periodistas**

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**Resumen**

Los reportes de noticias de investigaciones científicas son raramente cubiertos; en otras palabras, los reportes no contienen advertencias, limitaciones, u otros indicadores de la inseguridad científica. Algunos han sugerido que la cobertura puede influenciar las percepciones de los consumidores de noticias sobre la credibilidad de los científicos y los periodistas (las percepciones pueden ser relacionadas con el apoyo a la investigación científica y/ó la adopción de recomendaciones científicas). Aún no se sabe si la cobertura afecta las percepciones de la audiencia. Un experimento de mensaje múltiple (N = 601) encontró que, a través de 5 mensajes, los científicos y periodistas fuero vistos como más fidedignos (a) cuando la cobertura de noticias sobre la investigación del cáncer fue cubierta (a saber, las limitaciones del estudio fueron reportados) y (b) cuando la cobertura fue atribuida a los científicos responsables de la investigación (en oposición a científicos no afiliados con la investigación).

# 癌症研究之新闻报道的科学不确定性：

# 防备性说辞对科学家及记者可信度的效果

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科学研究的新闻报道很少用防备性说辞。换句话说，此类报道不包括防止误解的说明、研究的局限性或其他指示科学不确定性的信息。一些人认为防备性说辞可能影响新闻消费者对科学家及记者可信度的印象，这些印象可能有助于对科学研究的支持以及对科学建议的采纳。但防备性说辞是否会影响受众的印象是未知的。一个多重信息之实验表明：当癌症研究的新闻报道采用防备性说辞（即报道了研究的局限性）以及当防备性说辞来自负责进行研究的科学家（而非与研究无关的科学家）的时候，科学家和记者两者在5种信息中都被看认为更加值得信赖。

# 암 연구의 뉴스 취재에서의 과학적인 비확실성:

# 과학자들과 언론인들의 신뢰도에 대한 위험회피의 효과에 대한 연구

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요약

과학적 연구의 뉴스보도들은 위험이 잘 피해지지 않는다. 다시 말해서, 보도들은 과학적 비확실성의 위험, 제한, 그리고 다른 지적들을 포함하지 않는다. 몇몇은 위험회피는 과학자와 언론인들의 신뢰도에 대한 뉴스 소비자들의 개념에 영향을 미칠지 모른다고 주장해 왔다. 그러나 위험회피가 시청자들의 개념들에 영향을 주는가는 알려져 있지 않다. 다수 메시지 실험(N = 601)은 과학자들과 언론인 모두 5메시지에 걸쳐 1) 암연구의 뉴스보도가 회피됐을때 (예들들어 연구의 제한성들이 보도되었을때) 그리고 2) 위험회피가 연구를 위한 과학자들의 책임을 불러올때 (과학자들이 연구에 관련되지 않을때와 반대로) 더욱 신뢰할만한 것으로 나타났다.