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The Anonymity Effect: The Influence of Anonymity on Perceptions of Sources and Information on Health Websites

Stephen A. Rains

The study reported here examined the influence of anonymous sources on health websites on the perceptions and attitudes of information seekers. It was hypothesized that, despite the warnings and guidelines established by health organizations, anonymous sources would be perceived to be as credible and influential as sources that were identified. The anonymity effect, drawn from the similarity principle in attribution theory, was forwarded as a theoretical mechanism to explain responses to anonymous sources. The results indicated that anonymous sources were generally perceived by participants to be as credible and influential as identified sources, although the anonymity effect explanation was not supported. The implications of these findings for information seekers and health practitioners are considered.

Keywords: Anonymity; Anonymous Communication; Health Information Seeking; E-health; Internet; Source Credibility

One pervasive use of the Internet, and the World Wide Web in particular, is for seeking health information. Half of all adult Americans are estimated to have ventured online in 2004 with the goal of visiting one of the 70,000–100,000 sites offering medical information (Cline & Haynes, 2001; Eysenbach, Sa, & Diepgen, 1999; Fox, 2005). Information can help individuals assess their health and health behaviors (Brashers, Goldsmith, & Hsieh, 2002; Johnson & Meischke, 1993) and can serve as a key type of social support when shared with others (Braithwaite,

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Waldron, & Finn, 1999; Wright, 2002). Despite these potential benefits, scholars have registered concerns about the quality of health information online (Craigie, Loader, Burrows, & Muncer, 2002; Morahan-Martin, 2004), seekers' information-gathering abilities (Cline & Haynes, 2001; Fox & Rainie, 2002), and the collection of personal information by health websites (Cai, Gantz, Schwartz, & Wang, 2003), among other issues. In regard to information quality, in particular, Eysenbach, Powell, Kuss, and Sa (2002) conducted a meta-analysis of 79 studies that examined over 5,900 health-related websites and reported that 70% of the studies they examined found problems with the quality of medical information available on the Web.

The number of people seeking health information online, coupled with concerns about information quality and seekers' abilities, has created a plethora of challenges for researchers and practitioners. To begin to address this issue, Cline and Haynes (2001) argue: "[G]iven the potential for health websites to 'promote disease' as well as health and to disseminate fiction as well as fact . . . researchers may do well to think in terms of assessing 'effects' rather than 'effectiveness'" (p. 687). That is, it is incumbent upon researchers to understand better those factors associated with health messages and websites that may impact the perceptions and behaviors of information seekers.

One such factor is the use of anonymous sources. Most, if not all, guidelines for communicating and evaluating health information on the Web highlight the importance of clarifying the identity, and credibility, of sources (Health Insight, 1999; Health on the Net Foundation, 2004; MedlinePlus, 2004). The guidelines offered by MedlinePlus (2004, ¶ 4), in particular, suggest that information seekers "use caution" when encountering sources that "are anonymous or hard to track down ([e.g.,] 'Jane from California')." In a popular press article, one sociologist warns, "Anonymity is [a] concern because consumers who seek medical advice online have no way of checking the credentials of the person providing it" ("Web Medicine," 2000, p. 3). Despite warnings and guidelines like these, anonymous sources in testimonials and stories from those afflicted by a condition or cured by a medicine on health-related message boards and on sites offering advice may have a deleterious impact on information seekers' perceptions, attitudes, and subsequent health behaviors.

The purpose of the study reported here was to examine the impact of anonymous sources for health information on the World Wide Web. The proposition that anonymous sources are perceived to be as credible and influential as those sources who are identified was tested. Drawing from the similarity principle in attribution theory (Kelley & Michela, 1980; Shultz & Ravinsky, 1977), the anonymity effect was forwarded and tested as a mechanism to explain responses to anonymous sources. In the following sections, the potential impact of anonymity on receiver perceptions of sources and information is explored.

Source Anonymity and Health Information on the Web

Source Anonymity

In order to understand the implications of anonymity in the context of health information on the Web, it is important to provide first some background information about anonymous communication. Marx (1999) argues that we live in a culture where the norm is that one must be identified. The way in which we typically make ourselves known is through our name. Names anchor us in the social world as a “little detail in which big social meanings may reside” (p. 101). In the case of an anonymous source, however, information about the identity of the message sender is withheld and/or unavailable. Concealing this information disregards our cultural preference for identification and makes it difficult to evaluate the qualifications and credibility of the source (Hovland, Janis, & Kelley, 1953). It may also lead to questions about legitimacy, making it appear as if the message sender is not willing to stand by his or her claims (Anonymous, 1998; Williams, 1988).

Despite these potential limitations, anonymity is used in a variety of contexts. Further, there is a great deal of consistency in the reasons given for communicating anonymously. Research into whistle-blowing (Near & Miceli, 1995) and performance feedback (Westerman & Rosse, 1997) in organizations, decision-making groups (Pinsonneault & Heppel, 1997), interpersonal relationships (McKenna & Bargh, 2000), politics (Erickson & Fleuriet, 1991), journalism (Wulfemeyer, 1985; Wulfemeyer & McFadden, 1986), and health information on the Web (Cline & Haynes, 2001) all suggests that anonymity offers a measure of protection. Anonymity allows message senders to communicate an idea or information without the consequences—ranging from a face threat to personal retribution or legal action—of having the information attributed to them.¹

Perceptions of Anonymous Sources and the Similarity Principle

Contemporary models of message processing like the elaboration likelihood model (Petty & Cacioppo, 1986) and the heuristic systematic model (Chaiken, 1987) suggest that receivers respond to messages by critically evaluating message content and/or relying on peripheral cues. The latter type of response is largely dictated by heuristics, or simple decision rules that individuals use to evaluate and react to messages (Chaiken, 1987). Source characteristics are an established class of heuristic cues consisting of the attributes of message senders (O’Keefe, 2002). Anonymity may be one such source characteristic that functions as a heuristic in the context of health information online. On the Web in particular, some vocal and visual information may be unavailable or suppressed as many webpages comprise only text and static images (Kiesler, Siegel, & McGuire, 1984; Short, Williams, & Christie, 1976). Thus, the information that is available about a source—such as information about his or her identity—may be especially important as a basis for peripheral processing (Eastin, 2001; Walther, 1992). The word “anonymous,” or an obvious pseudonym

(e.g., “John Doe” or “Mr. S. in Tucson”) making it clear that the sender’s legal identity has been concealed, may serve as a cue for a particular response by receivers to the source and message. This response process can be explained by the similarity principle in attribution theory.

Attribution theory, developed by Heider (1958), assumes that people behave as naïve psychologists. In an effort to make sense of others’ actions, we make attributions about the cause(s) of their behavior. Attribution theory has been widely applied, including as a foundation to examine whether people make inferences about the source(s) of contributions within anonymous computer-mediated groups (Hayne, Pollard, & Rice, 2003; Hayne & Rice, 1997). From the framework of attribution theory, one information processing rule relevant to people’s perceptions of anonymous sources is the similarity principle (Kelley & Michela, 1980; Shultz & Ravinsky, 1977). The similarity principle posits that “properties of the cause can be assumed to be similar to properties of the observed effect, so the latter can be used to infer the former” (Kelley & Michela, p. 466). In making attributions, the magnitude of an effect is used to make inferences about a cause; an effect requires a cause of a similar magnitude.²

Receivers may apply the similarity principle when making attributions about an anonymous source. Receivers infer a reason that the source has forgone the cultural norm of identifying him or herself and use it in interpreting the message. As illustrated previously, the dominant reason why anonymity is used by message senders is for protection. The source’s fear of making his or her identity known, in turn, may be interpreted as evidence that the information is important. In other words, if a communicator would go to the trouble of making him- or herself anonymous to avoid retaliation or retribution, then the message must really be one that deserves to be heard at all costs. Consequently, receivers should find anonymous sources to be as credible and influential as those sources who are identified.

Evidence consistent with the anonymity effect can be found in the body of research examining the use of anonymous and veiled sources in the news (Adams, 1962; Esposito, 1999; Fedler & Counts, 1981; Riffe, 1980; Wulfmeyer, 1985; Wulfmeyer & McFadden, 1986). Cloaked or veiled sources referring to an institution (e.g., “the government”) or individual (e.g., “a political leader”) have consistently been rated as credible by newspaper readers when cited in the context of a news story (Adams, 1962; Riffe, 1980). Fedler and Counts (1981) found that a story with a veiled source was perceived to be as significant as the same story with an identified source, and more significant than when no source was used or when two opposing sources were quoted. Wulfmeyer (1985) offered an explanation for the preceding findings, arguing that message receivers “recognize the ‘cloaking’ of sources and accept the practice” (p. 82). The research into veiled sources in news suggests that anonymous sources are likely to be viewed as being as credible as those sources who are identified

and that the general public is aware of the reasons why one may communicate anonymously or have one's identity concealed.

Hypotheses

The impact of anonymous sources may be exceptionally troublesome in health information available on the Web. Under the guise of anonymity, well-meaning but ill-informed individuals may contribute a testimonial to a site to share their experience with a particular disease or condition. In "telling their story" they may inadvertently proffer inaccurate information about symptoms, severity, and treatments.³ Under the guidelines established by medical schools and health institutions (e.g., Health Insight, 1999; Health on the Net Foundation, 2004; MedlinePlus, 2004; Winker et al., 2000), information from anonymous sources such as these should be discounted. Despite the plethora of guidelines and warnings, however, these sources may appear credible and may be influential.

The following hypotheses are proposed to examine the impact of anonymous sources in health information on the Web. First, it is hypothesized that anonymous sources are perceived to be as influential and credible as those sources who are identified. The second hypothesis relates to the utility of the anonymity effect explanation. By supplying message receivers with information about the sender's reason for being anonymous, it is possible to test formally the anonymity effect as an explanation for responses to anonymous sources. The voluntary use of anonymity should make a sender's risk salient to message receivers. It should appear as if he or she is making a conscious attempt to conceal his or her identity, presumably to protect him- or herself and avoid retribution or embarrassment. Conversely, in those situations where anonymity is required (and not voluntary) or the sender is identified, receivers have no reason to make this type of inference. Accordingly, a sender who is voluntarily communicating anonymously should be perceived as more credible and influential than senders who are required to be anonymous or are identified.

- H1: Anonymous sources will be perceived to be *as* (a) credible and (b) influential as identified sources.
- H2: Source anonymity and volition interact to affect perceptions of source (a) credibility and (b) influence. A voluntarily anonymous source will be rated more credible and influential than a source who is required to be anonymous or is identified; there will be no difference in perceptions of source credibility and influence when the source is required to be anonymous and when the source is identified.

Method

A field experiment was conducted to test the preceding hypotheses, utilizing a website constructed for the study. The study was approved by the university's Institutional Review Board.

Participants

A total of 255 participants completed the study.⁴ The mean age of participants was approximately 35 years ($SD = 14.59$). Of those participants who identified their sex, a little more than half were female (54%). Most participants (68%) reported using the World Wide Web (not including e-mail) multiple times each day, and approximately one-third (34%) reported seeking health information on the Web at least once every two weeks. This sample is comparable to the broader population of Americans using the Web to seek health information. Rice's (2006) analysis indicates that those using the Web to search for health information are more likely to be female, have a higher level of education, and use the Internet for other activities than those who do not go online to acquire medical information.

Design

A 2×2 between-participants design was used in this study. Source identity (anonymous/identified) and volition (voluntary/required) were the independent variables.⁵

Procedure

The first page of the website constructed for this study provided a general description of the research and included a link containing a macro that randomly assigned participants to one of the experimental conditions. In each condition, participants read an informative testimonial about a health topic, ostensibly from a health website, and completed a questionnaire containing measures of the dependent variables.

Materials and Measures

Informative testimonial. Two health messages addressing bacterial meningitis and genital herpes were constructed for this study. The messages followed the form of an informative testimonial, which is common on websites containing health information (e.g., see <http://www.sexetc.org> or <http://www.shareguide.com>). The testimonials were approximately 1000 words long and defined the illness, explained how it is spread and treated, and included four personal stories/anecdotes. The factual information included in the informative testimonials was derived from the Centers for Disease Control, the National Institute of Health, and the Mayo Clinic. The testimonial portion of each message was controlled; the same personal stories/anecdotes were used in both messages. Both messages were pre-tested to ensure that they appeared realistic and believable.

The source was operationalized as the author of the article. To manipulate source identity, the story was labeled "by Anonymous" or by the gender-neutral name "Pat Thomas." To manipulate volition, readers in the voluntary condition were informed (under the byline): "The author's name was withheld/identified at their request."

In the required condition, readers were informed: “The author’s name was withheld/identified as a policy of the website.” This information was also reiterated in the body of the health message.

In addition, the dependent variables were measured: perceptual, attitudinal, and behavioral measures were used as discussed below to assess the credibility and influence of anonymous sources. Unless otherwise noted, all measures below were rated on 10-point Likert-type scales with the anchors “Strongly disagree” (1) and “Strongly agree” (10).

Source credibility. McCroskey’s (1966; McCroskey & Teven, 1999) measure was used to assess communicator credibility. Source credibility is made up of three subcomponents: competence, trustworthiness, and goodwill. Each subcomponent comprises six items rated on a 10-point semantic differential scale.

Perceptual and attitudinal measures of influence. Influence was assessed by examining the degree to which anonymity affected the perceptions, attitudes, and behaviors of message receivers. Three perceptual measures and one attitudinal measure of influence were constructed for this study. First, the believability of the information was measured by having participants rate the degree to which the information in the testimonial corresponded to six adjectives. Sample adjectives included believable and plausible. Second, participants were asked to assess the persuasiveness of the message. Participants rated the degree to which the message was persuasive and influential, for example. Third, participants rated the social importance of the health issue. For example, items here rated the degree to which participants felt that the health topic was a substantial health issue and a serious concern. To tap attitudes about each illness, participants completed a five-item measure. Participants rated their agreement with a series of statements, indicating for example that they would donate money to support research into the issue and volunteer to work for an organization that helps those suffering from the illness.

Behavioral indicator of influence. At the bottom of the webpage containing the informative testimonial, a link was included that, ostensibly, directed participants to additional information about the author. Participants had the option, “Click ‘here’ to learn more information about the author.” No explicit instructions were given to participants to follow the link; the linked page did not include any additional health information. As a measure of influence, the link assessed the degree to which anonymity makes the source’s identity salient and motivates receivers to attempt to obtain additional information about the source. Participants who did not access the link were assigned a score of 0 for the variable; participants who did follow the link were assigned a score of 1.

Manipulation checks. Measures were included to determine whether the anonymity and volition manipulations were effective. Participants were asked to indicate the degree to which they agreed with two statements asserting that the author’s name was “Anonymous” and “Pat Thomas” (this item was reflected). Participants also indicated their agreement with assertions that the author’s name was withheld at his or her

request, withheld as a policy of the website, identified at his or her request, and identified as a policy of the website. The second and fourth items were reverse-scored.

Control variable. A control variable tapping perceptions of the appropriateness of anonymous sources in health information on the Web was included in this study. Research into anonymous communication suggests that perceptions of anonymity appropriateness are variable and may have a systematic impact on participant responses (Scott & Rains, 2005). Accordingly, a six-item measure was included in this study to assess and control the impact of perceived anonymity appropriateness. Participants rated the degree to which they felt that posting health information on the Web anonymously is appropriate and preferred, for example.

Data Analysis

Tests of equivalence were used to evaluate Hypothesis 1. This procedure makes it possible to test whether two group mean scores are adequately similar to one another (Stegner, Bostrom, & Greenfield, 1996; Wellek, 2003; Westlake, 1981).⁶ Hypothesis 2 was tested using analysis of covariance (ANCOVA).

Results

Preliminary Analyses

Following Tabachnick and Fidell's (2001) recommendations, the data were first screened. Additionally, a power analysis was conducted. The significance level for all tests was set at $p = .05$. For a between-participants analysis ($N = 255$), the power to detect a small effect ($r = .10$) was approximately .35 (Kraemer & Thiemann, 1987) and the power to detect a medium effect ($r = .30$) was .99. Next, confirmatory factor analysis (CFA) was conducted for each of the measures included in the study using Equations (EQS; Bentler, 1995). The factor loadings, model chi-square test, and alternate fit indices were used to assess model fit. Hu and Bentler's (1999) dual criteria for alternate fit indices were applied—a comparative fit index (CFI) value of $\geq .96$ and a standardized root mean-square residual (SRMR) value of $\leq .10$. All measures fit adequately and were, thus, retained. Additionally, the reliability coefficients for all measures were acceptable. Refer to Table 1 for the means, correlations, and reliability coefficients of all measured variables in this study.

Manipulation checks were performed to determine whether the source identity and volition manipulations were effective. As expected, participants in the anonymity condition were more likely to report that the source was "Anonymous" ($M = 8.64$, $SD = 2.20$) than those in the identified condition ($M = 4.07$, $SD = 3.31$), $F(1, 236) = 159.94$, $p < .01$, $\eta^2 = .40$. Because the volition factor was contingent upon whether the source was anonymous or identified, manipulation checks were performed within the anonymity and identified conditions.⁷ When the source was anonymous, participants in the voluntary condition ($M = 7.90$, $SD = 2.10$) were more likely to recognize that the source chose to be anonymous than those in the

Table 1 Reliability Coefficients, Means, Standard Deviations, and Correlations for Key Variables Included in the Study

Variable	α	M	SD	1	2	3	4	5	6	7	8	9	10
1. Competence	.82	6.26	1.55										
2. Trustworthiness	.82	7.80	1.39	.59*									
3. Goodwill	.87	6.87	1.74	.60*	.74*								
4. Believability	.93	7.83	1.58	.53*	.62*	.59*							
5. Persuasiveness	.93	6.67	2.06	.58*	.57*	.70*	.67*						
6. Importance	.92	7.86	1.81	.35*	.35*	.47*	.45*	.52*					
7. Attitude	.81	5.75	2.04	.30*	.29*	.38*	.43*	.38*	.61*				
8. Link		.18	.39	-.09	-.06	.02	.02	.00	.04	.05			
9. Embarrassed	.83	6.12	2.13	.00	.14*	.16*	.05	.15*	.22*	.11	.08*		
10. Appropriateness	.94	6.73	2.34	.26*	.24*	.26*	.14*	.34*	.15*	.14*	.01	.12*	

Note. Scores for each variable, except the link measure, range from 1 to 10, with a larger mean score indicating a greater amount of the variable. Scores for the link measure range from 0 to 1.

* $p < .05$.

required condition ($M = 4.00$, $SD = 2.97$), $F(1, 126) = 72.98$, $p < .01$, $\eta^2 = .37$. Similarly, when the source was identified, participants in the voluntary condition ($M = 7.17$, $SD = 2.23$) were more likely to recognize that the source chose to be identified than those in the required condition ($M = 3.34$, $SD = 2.62$), $F(1, 112) = 70.19$, $p < .01$, $\eta^2 = .39$. The results of the checks indicated that the anonymity and volition manipulations were effective. The means and standard deviations of all dependent variables across the anonymity and volition conditions are presented in Table 2.

Hypotheses Tests

The impact of anonymity on credibility and influence. Hypothesis 1 predicted that anonymous sources will be as credible and influential as those sources who are identified. A test of equivalence was performed for each of the dependent variables following the two simultaneous, one-sided t -tests procedure detailed by Stegner et al. (1996; also see Rogers, Howard, & Vessey, 1993). The equivalence threshold, which constitutes the acceptable amount that the population mean for the treatment

Table 2 Means and Standard Deviations for Key Variables Across all Conditions

Dependent variable	Identified		Anonymous	
	Required	Voluntary	Required	Voluntary
Competence				
<i>M</i>	6.38	6.28	5.99	6.20
<i>SD</i>	1.39	1.59	1.77	1.49
Trustworthiness				
<i>M</i>	7.82	7.74	7.70	7.85
<i>SD</i>	1.41	1.38	1.52	1.38
Goodwill				
<i>M</i>	6.84	6.69	6.78	6.94
<i>SD</i>	1.76	1.82	1.82	1.76
Believability				
<i>M</i>	8.10	7.77	7.50	7.92
<i>SD</i>	1.36	1.61	1.88	1.54
Persuasiveness				
<i>M</i>	7.08	6.59	6.21	6.72
<i>SD</i>	1.78	2.01	2.33	2.09
Importance				
<i>M</i>	8.23	7.51	7.55	8.08
<i>SD</i>	1.50	1.90	2.04	1.74
Attitude				
<i>M</i>	6.14	5.32	5.67	5.88
<i>SD</i>	1.86	2.00	2.29	2.02
Link				
<i>M</i>	.24	.23	.14	.13
<i>SD</i>	.43	.42	.35	.34

condition may deviate from the reference condition, was set at 20%. Two one-sided t -tests were performed for each variable to assess whether the treatment was 20% greater or less than the control. The null hypothesis posited that the mean in the anonymity condition would exceed the mean in the identified condition; thus a significant t -value would indicate that the scores in the two conditions are equivalent.

The results of the analyses are presented in Table 3. With one exception, the results of equivalence tests were significant, indicating that the scores in the anonymity and identified conditions were equivalent. The test for the link measure was not significant; the mean in the anonymity condition was more than 20% greater than the mean in the identified condition. In summary, these findings largely support Hypotheses 1a and 1b.

Testing the anonymity effect. Hypothesis 2 predicted an interaction between source anonymity and the source's reason for being anonymous. It was expected that making the source's reason for anonymity explicit would impact perceptions of the influence and credibility of the source. When controlling for anonymity appropriateness, the interaction between source identity and volition was significant for perceptions of the believability of the message, $F(1, 240) = 4.02, p = .05, \eta^2 = .02$; persuasiveness of the message, $F(1, 241) = 5.21, p = .02, \eta^2 = .02$; importance of the health condition, $F(1, 241) = 7.54, p < .01, \eta^2 = .03$; and attitudes about the health condition, $F(1, 242) = 3.96, p = .05, \eta^2 = .02$. Contrary to predictions, the identified-required condition consistently received the highest rating (see Table 2). The interaction was not significant for the measures of competence, $F(1, 242) = .71, p = .40, \eta^2 < .01$;

Table 3 Summary of the Equivalence Tests for all Dependent Variables ($df=246$)

Independent variable	Dependent variable		t
Source identity	Competence	+	3.23*
		-	-4.85*
	Trustworthiness	+	8.77*
		-	-8.56*
	Goodwill	+	6.58*
		-	-5.42*
	Believability	+	6.75*
		-	-8.81*
	Persuasiveness	+	3.97*
		-	-6.30*
	Importance	+	6.74*
		-	-6.74*
	Attitude	+	5.04*
		-	-4.01*
	Link	+	1.11
		-	-3.00*

Note. The two one-sided t -tests indicate whether the mean in the anonymity condition is 20% greater (+) or 20% smaller (-) than the mean in the identified condition. A significant t -value indicates that the mean in the anonymity condition is *not* greater than in the identified condition, and thus that the two conditions are equivalent.

* $p < .05$.

trustworthiness, $F(1, 242) = .70$, $p = .40$, $\eta^2 < .01$; or goodwill, $F(1, 241) = .71$, $p = .40$, $\eta^2 < .01$; or the behavioral measure of influence, $F(1, 244) = 0$, $p = .99$, $\eta^2 < .01$. Hypotheses 2a and 2b were not supported.

Discussion

The information-seeking guidelines established by medical schools and health institutions (e.g., Health Insight, 1999; Health on the Net Foundation, 2004; MedlinePlus, 2004; Winker et al., 2000) make it clear that those using the Web to gather health information should be wary of anonymous sources. Despite the plethora of warnings, the results of this study suggest that anonymous sources are perceived to be as credible and influential as identified sources. Receivers recognized that the source was anonymous or identified and, with the exception of the link measure, rated the anonymous source to be as credible and influential as the identified source. The mean scores in the anonymous and identified conditions were equivalent for all but one of the dependent variables. Further, the means for the dependent variables in both conditions were above their respective midpoints, indicating that both the anonymous and identified sources were perceived to be at least fairly credible and influential.

The utility of the anonymity effect as an explanation for perceptions of anonymous sources was also formally tested in this study. However, the results were inconsistent with the anonymity effect. Although some of the two-way interactions were statistically significant, the mean scores in each of the four conditions did not conform to Hypothesis 2b. Of the four experimental conditions, the identified-required source was consistently rated as the most influential and credible. One explanation for this finding is that the legitimacy of the source's identity may have been confirmed for participants in the identified-required condition. Because the source was required by the website to make his/her identity known, participants may have felt that the source was registered with the site or that the website had previously authenticated the source's identity.

Biases in processing information related to the truth bias and narrative effects may explain receiver responses to anonymous sources on health websites. The findings from this study in regard to Hypothesis 1 might be the result of a truth bias of sorts (Levine, Park, & McCornack, 1999; McCornack & Levine, 1990). Message receivers may assume that most of what others communicate is well intentioned and, thus, fail to question the source's credibility or motivations—even when his or her identity is concealed. Source anonymity may only be important when the receivers have some motivation to question the source's intentions or merit. It also seems possible that the results regarding Hypothesis 1 are related to the use of narrative. Participants may have rated the anonymous and identified sources to be equally credible and influential because the information was presented in a narrative-like form. Participants may have become engaged in the narrative and suppressed counterarguments or questions about the source's identity (Slater, Buller, Waters,

Archibeque, & Leblanc, 2003; Slater & Rouner, 2002). As such, the use of narrative may moderate responses to source anonymity.

Implications for Practitioners and Health Information Seekers

The findings from this study have noteworthy implications for practitioners and information seekers. The results demonstrate that lapses in critical information seeking can and do occur: the anonymous source was thought to be as credible and influential as the identified source, and scores for both the credibility and influence of the anonymous source were above the midpoint. The results of this study underscore broader movements toward health literacy in mediated contexts (Payne & Schulte, 2003; Young & Cline, 2005; Zarcadoolas, Pleasant, & Greer, 2003) and, more specifically, the need to foster critical information seeking among those using the Web to gather health information.

For practitioners, in particular, the findings from this study suggest some straightforward recommendations. It is critical that practitioners recognize the importance of developing programs to help promote effective information-seeking behavior. Would-be Web users should be trained in how to locate and evaluate health information online. A central feature of such training should include reviewing and enacting specific guidelines that information seekers should use when evaluating a particular website. MedlinePlus (2004), which is a service of the National Institute of Health, the *Journal of the American Medical Association* (Winker et al., 2000), and the Health on the Net Foundation (2004), identifies a series of things that should be evaluated, including information authorship, attribution of sources, whether the information has been reviewed by a health professional or (preferably) a board of experts, time since the information was last reviewed or updated, site ownership or sponsorship, and the website's privacy policy (e.g., what types of information are collected from site visitors and how the information is used). In addition to explaining what information seekers should look for when evaluating websites, practitioners should address potential pitfalls or problems with health information on the Web. Information seekers should be informed about those instances where lapses in critical information seeking are likely to occur, such as when encountering anonymous sources or using webpages that include medical jargon (Haard, Slater, & Long, 2004). Finally, information seekers should be strongly encouraged to consult their health care provider before making decisions or taking action regarding medical information they acquire online.

Limitations

The results of this study should be considered in light of potential limitations. One noteworthy limitation is that participants did not evaluate the health messages in the act of information seeking. Participants were simply exposed to the message and asked to read it; they were not actively searching out information about herpes or bacterial meningitis. Although this issue may cause concern about the study's

ecological validity, it is a necessary artifact of the experimental method used to test the hypotheses. Further, steps were taken to make the message and setting as realistic as possible.

Directions for Future Research

Drawing from the results of this study, future research is necessary to understand the extent of anonymity's impact and how it may be best utilized in health information on the Web. One issue that is particularly pressing is to determine whether anonymous sources are perceived to be as credible and influential as a health expert, such as a medical doctor or a health care professional. Despite research into authority (Cialdini, 2001; Hofling, Brotzman, Dalrymple, Graves, & Pierce, 1966; Milgram, 1963) and contemporary guidelines for information seeking developed by medical professionals (Health Insight, 1999; Health on the Net Foundation, 2004; MedlinePlus, 2004; Winker et al., 2000), the findings from this study suggest that anonymous sources may be perceived as being as credible and influential as a health expert. Future research should explore why people perceive anonymous sources to be credible and influential. Several possible explanations were provided in the discussion of the study results.

Conclusion

The number of Americans going online to seek health information, coupled with the growing concerns of scholars and medical professionals about the quality of medical information available, creates a number of challenges for researchers. One challenge particularly relevant to communication scholars is to understand the effects of specific features of health messages and websites on information seekers' perceptions, attitudes, and behavior. To this end, this study has examined the impact of anonymity on perceptions of source credibility and influence. Only through continued research and inquiry will it be possible better to understand and address this important social problem.

Notes

- [1] The utility of anonymity for affording a measure of protection to communicators is also illustrated in the rationales for anonymity offered by Marx (1999) in his essay on the sociology of anonymity. He identifies 15 rationales for choosing to communicate anonymously, 13 of which explicitly or implicitly express a desire for safety.
- [2] Responses to the assassination of President John Kennedy, for example, have been described using the similarity principle (McCauley & Jacques, 1979). Accordingly, the enormous "effect" of his assassination requires us to think that there is a substantial "cause"; it cannot simply be a random event or an accident. We make an attribution that, for something like the assassination of a sitting president to occur, there must have been a massive conspiracy or other significant reason.
- [3] For example, SuccessfulSchizophrenia.com, designed to "help psychiatry (for its own good) . . . and to provide proof that thousands of people are right when they say they are

NOT mentally ill,” offers information and advice about schizophrenia (n.d., ¶ 2). Included on the site is a personal story from one anonymous woman who advocates *not* seeking medical treatment for the illness. She writes: “I do not think that I could have reached this kind of peace and happiness if left to the psychiatric community. Even now I refuse to ‘seek help’ from those who would tell me I’m insane” (<http://successfulschizophrenia.com/stories/anon01.html>, ¶ 4). Although her intentions appear benevolent, this information could have deleterious consequences for readers who are influenced to delay or forego medical treatment.

- [4] A snowball sampling procedure was used to recruit participants. Undergraduate students were given extra credit for soliciting respondents who, at the time of the study, were (a) at least 18 years of age, (b) not employed by the university, and (c) not currently a student at the university. To ensure the validity of the sample, an attempt was made to contact all participants once data collection was complete. Two-thirds of participants ($n = 182$) verified that they did indeed complete the study. Importantly, there were no statistically significant differences on any key variables in the study between those who indicated that they completed the study and those who did not return the follow-up e-mail.
- [5] An additional variable was assessed in the original study (making the original study a $2 \times 2 \times 2$ design), but is not reported here.
- [6] Traditional hypothesis testing using ANCOVA is not appropriate in this situation. Failing to reject a null hypothesis is not the same as finding the null hypothesis to be true. A test of equivalence makes it possible to demonstrate that two groups are similar.
- [7] In asking participants to assess the volition factor, the anonymity/identity of the source was implied. To rate whether the choice was voluntary or required, participants had to know that the choice concerned the source’s identity. Accordingly, participants rated whether the source’s identity was withheld at his or her request, identified as a policy of the website, etc. To address this issue, the volition manipulation check was conducted within the anonymity and voluntary conditions.

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