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What's in a Name? Two Studies Examining the Impact of Anonymity on Perceptions of Source Credibility and Influence

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**What's in a Name? Two Studies Examining the Impact of Anonymity
on Perceptions of Source Credibility and Influence**

by

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What's in a Name? Two Studies Examining the Impact of Anonymity on Perceptions of Source Credibility and Influence

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From the founding of the U.S. Constitution to recent scandals and terrorist attacks, anonymous communication has been an issue of longstanding social import. Although anonymity has been studied for well over a century, scholarship on anonymous communication has been fragmented and the role of message receivers has been largely overlooked. The purpose of this dissertation is to examine the effects of anonymous communication on message receiver perceptions, attitudes and behaviors. Two studies were conducted assessing the effects of anonymity in the context of health information seeking on the World Wide Web and during decision making in computer-mediated groups. In both studies, the credibility and influence of anonymous sources was examined along with the impact of required and voluntary uses of anonymity. In the study of health information on the World Wide Web, the anonymous source was rated as credible and influential as the source whose name was identified. In the study of decision making in small groups, the anonymous source was deemed less credible and influential than the

identified source. The results of the two studies are mixed in regards to the role of volition. Although volition played a key role in the health information study, it was not a factor in the study of decision making in small groups. The results across the two studies were used to identify key contextual factors that provide a foundation for theory building in regards to the effects of source anonymity. The dissertation concludes by highlighting directions for future research on anonymous communication.

Table of Contents

Acknowledgements.....	iv
List of Tables	x
List of Figures.....	xi
Chapter 1: Introduction.....	1
The Social Import of Anonymous Communication.....	1
Receiving Messages from Anonymous Sources.....	4
Dissertation Purpose and Objectives	6
Preview of Dissertation Structure	7
Chapter Summary	8
Chapter 2: Anonymity in Academic Research and the Public Sphere.....	9
Defining Anonymity	9
Anonymity in American History and Popular Culture	11
A Brief History of Research on Anonymous Communication	12
Chapter Summary	14
Chapter 3: Anonymity in Health Information on the Web	16
The Anonymity Effect: The Influence of Anonymity on Perceptions of Sources and Information on Health Websites	16
Health Information Seeking on the Internet.....	18
Perceptions of Anonymous Sources and Information	23
Hypotheses.....	29
Method.....	32
Participants.....	32
Design	34
Procedure	34
Materials	35
Dependent Variables.....	36
Control Variable.....	40
Data Analysis	41

Results.....	41
Data Screening.....	41
Confirmatory Factor Analyses (CFAs).....	42
Manipulation Checks	45
Testing the Hypotheses and Answering the Research Question.....	49
Discussion.....	62
Anonymous Sources in Health Information on the Web.....	64
Implications for Scholars and Practitioners	69
Limitations	71
Directions for Future Research.....	72
Conclusion	76
Chapter Summary	76
Chapter 4: Anonymity in Computer-Mediated Groups	77
Perceptions of Anonymous Communication in Computer-Mediated Groups: A Test of Two Competing Hypotheses.....	77
Anonymity in Computer-Mediated Group Communication.....	80
A Test of Two Hypotheses	83
Factors Influencing Anonymity Perceptions	90
Method.....	95
Participants.....	95
Design	95
Procedure	96
Materials	97
Experimental Task	99
Dependent Variables.....	100
Data Analysis	104
Results.....	105
Data Screening.....	105
Confirmatory Factor Analyses (CFAs).....	105
Manipulation Checks	108
Data Analysis	109
Discussion.....	120

Discussion of Key Findings	120
Implications for Scholars and Practitioners	126
Limitations	127
Direction for Future Research.....	128
Conclusion	130
Chapter Summary	130
Chapter 5: Conclusion.....	131
Discussion of Key Findings	131
Implications for Research and Practice.....	137
An Agenda for Future Research on Anonymous Communication	141
Chapter Summary	147
Appendix A: Sample Health Messages in the Stigmatized and Non-Stigmatized Conditions of the Health Information Study	148
Appendix B: Questionnaire Completed by Participants in Health Information Study	152
Appendix C: Strong and Weak Arguments used in Small Group Study	160
Appendix D: Case Study Used for Experimental Task in the Small Group Study	162
Appendix E: Questionnaire Completed by Participants in the Anonymity (Required or Voluntary)/Strong Argument Condition of the Small Group Study	163
References.....	173
Vita	186

List of Tables

Table 3.1:	Means, Standard Deviations and Correlations for Key Variables Included in the Study	43
Table 3.2:	Means and Standard Deviations for Key Variables Across All Experimental Conditions.	47
Table 3.3:	Summary of Anonymity Analyses for all Dependent Variables.	50
Table 3.4:	Summary of Anonymity X Volition Interaction for all Dependent Variables.	51
Table 3.5:	Summary of Anonymity X Stigma Interaction for all Dependent Variables	56
Table 3.6:	Summary of Three-Way Interaction for all Dependent Variables.	58
Table 4.1:	Means (and Standard Deviations) for All Dependent Variables as a Function of the Experimental Conditions.	98
Table 4.2:	Means, Standard Deviations and Correlations for Key Measures Included in the Study.	106
Table 4.3:	Summary of Analyses for Anonymity-Required and Identified Conditions.	112
Table 4.4:	Summary of Analyses for Anonymity, Actor and Group Effects.	113
Table 4.5:	Summary of Analyses for Anonymity X Argument Quality Interaction	119
Table 4.6:	Summary of Analyses for Voluntary-Anonymity Variable.	121

List of Figures

Figure 3.1: Mean Scores for Perceived Importance Across the Anonymity X Volition Conditions.....	53
Figure 3.2: Mean Scores for Believability Across the Anonymity X Volition Conditions.....	53
Figure 3.3: Mean Scores for Perceptions of Goodwill Across the Anonymity X Stigma Conditions.....	57
Figure 3.4: Mean Scores for Perceptions of Persuasiveness Across the Anonymity X Volition X Stigma Conditions	60
Figure 3.5: Mean Scores for Attitudes about the Health Issue Across the Anonymity X Volition X Stigma Conditions	61
Figure 3.6: Mean Scores for Negative-Irrelevant Thoughts Across the Anonymity X Volition X Stigma Conditions	63
Figure 5.1: A Tentative Model of Receiver Responses to Anonymous Communication.....	142

Chapter 1: Introduction

Chapter 1 consists of an introduction to this dissertation examining anonymous communication. The chapter begins by establishing the social import of anonymous communication. Next, research on the role of message receivers in research on anonymity is reviewed. The purpose and objectives of the dissertation are then explained. The chapter concludes with a preview of the dissertation structure.

THE SOCIAL IMPORT OF ANONYMOUS COMMUNICATION

Anonymous communication has a rich history in American politics and popular culture. Thomas Paine's famous pamphlet, *Common Sense*, which helped spark the American Revolution, was originally published under the pseudonym "An Englishman." The authors of *The Federalist Papers* relied on the pseudonym "Publius" to veil their identity and rally support for the adoption of the Constitution. "Publius," which roughly translates into "friend of the people," was used to "imply a positive, lofty intention" behind the series of articles (Furtwangler, 1984, p. 51). More recently, the pseudonymous anthrax-laced letters, ostensibly sent from an elementary school in New Jersey, have fueled concerns about terrorism. In business, Sharon Watkins's "anonymous memo" triggered the implosion of Enron and eventually led to the adoption of new legislation about reporting organizational wrongdoing (McDowell, 2004).

From the days of Thomas Paine and the authors of *The Federalist Papers* to recent scandals and terrorist attacks, anonymous communication has been an issue of longstanding social import. The act of veiling one's identity and communicating anonymously has been a critical factor in key events occurring in politics, organizations and the broader public sphere. Further, issues associated with anonymity are particularly relevant to communication scholars. Despite disagreements over its merits and limitations

(see Froomkin, 1999; Hopkins 1889, 1890), anonymity is a “fundamentally social” construct (Marx, 1999, p. 100). As noted by Marx, anonymous communication “requires an audience of at least one person” (p. 100). Additionally, the explosive diffusion of new communication technologies made available by the Internet has made it easier than ever to communicate anonymously. Re-mailers, chat-tools and web-based discussion boards make it possible to send and receive anonymous messages. Accordingly, anonymity presents an important area of research for communications scholars.

The social implications of anonymous communication have been studied across a variety of fields for over a century. LeBon, in 1896, published his book examining the psychology of “anonymous” crowd behavior. At about the same time, Hopkins (1889, 1890) conducted a survey among journalists of the utility of anonymous editorials. Over time, a growing body of research on anonymity has accumulated. Research on anonymity has been conducted in the fields of journalism (e.g., Hopkins 1889, 1890; Wulfemeyer & McFadden, 1986), literature (e.g., Rogers, 2002) sociology (e.g., Form & Stone, 1957; Freidson, 1953), social psychology (e.g., Postmes & Lea, 2000) and law (e.g., Ekstrand, 2003; Nissenbaum, 1999). Further, scholarship addressing the communicative aspects of anonymity has been completed in health (e.g., Cline & Hayes, 2001), political (e.g., Erickson & Fleuriet, 1991), legal (Scott, in press), critical/cultural (e.g., Rodriquez, & Clair, 1999), interpersonal (e.g., Joinson, 2001), small group (e.g., Scott, 1999a) and organizational (e.g., Scott & Rains, in press) contexts.

Although a fair amount of research exists, the body of studies addressing anonymous communication suffers from two important limitations. First, research on anonymity is largely fragmented. Anonymity is typically studied in a context such as group decision making, journalism, social support or whistleblowing. With the exception two noteworthy theoretical pieces (Anonymous, 1998; Marx, 1999), few attempts have

been made to identify the central features of anonymous communication. Second, a majority of the research on anonymous communication is conducted from the sender's perspective. Though there are some exceptions (e.g., Antonioni, 1994; Hayne, Pollard, & Rice, 2003; Hayne & Rice, 1997), most research examines a sender's motivation to communicate anonymously or the influence of anonymity on a sender's behavior. Little is known about receiver reactions to, and perceptions of, anonymous communication.

Given longstanding social import and interest in anonymity, the dearth of research on message receivers and studies examining the central features of anonymous communication is somewhat surprising. There are a number of potential benefits of examining receiver perceptions of anonymous communication. Through examining message receivers, it will be possible to make more informed claims about the outcomes of anonymous communication. That is, although anonymity may make message senders feel more comfortable communicating sensitive or problematic information, it may also undermine the sender's credibility or cause receivers to discount the gravity of the situation or information. Examining how individuals respond to anonymous sources and messages will also make it possible to develop a more complete understanding of anonymous communication across contexts. Identifying systematic responses to anonymous communication provides one approach to unify the disparate bodies of research addressing anonymity.

Accordingly, the general goal of this dissertation is to better understand receiver responses to anonymous message sources. In the following sections, research on receiver perceptions of anonymous communication will first be reviewed. Then, the two studies completed in fulfillment of this dissertation will be briefly explained. This chapter concludes by previewing the structure of the dissertation.

RECEIVING MESSAGES FROM ANONYMOUS SOURCES

To date, there has been a great deal of speculation about responses to anonymous communication. Anonymous sources have been deemed both more and less credible in a number of contexts (e.g., journalism, performance feedback, decision making in computer-mediated groups, etc.). At the same time, research on anonymous message senders suggests that receivers may have systematic responses to anonymous sources and messages. There are a number of consistencies in descriptions of a message sender's motivation to communicate anonymously or the benefits of anonymity. Research on whistleblowing (Near & Miceli, 1995), performance feedback (Westerman & Rosse, 1997), group decision making (Pinsonneault & Heppel, 1997), self disclosure (McKenna & Bargh, 2000), health information seeking (Cline & Haynes, 2001) and anonymity in journalism (Wulfmeyer, 1985) all suggest that anonymity provides protection—from retribution, face threats (to the sender and receiver) and embarrassment. Given this similarity in motivations for anonymous communication, it seems possible that there may also be systematic responses to anonymity among message receivers.

Throughout the corpus of research assessing anonymous communication there are two distinct situations in which receivers encounter anonymous sources. Anonymity may be perceived as voluntarily selected by a communicator or it may be viewed as a required condition of a technology or procedure. The differences in these two types of situations may have a systematic impact on multiple receiver outcomes.

In some situations in which anonymity is used, it is reasonably evident to message receivers that the sender is voluntarily communicating anonymously. It appears likely that the sender's attempt at veiling his or her identity is deliberate. Senders may employ a technology like a re-mailer, post pseudonymously to a discussion board or may simply choose not to sign their name to a written message to make themselves anonymous.

Whatever means is used, the key idea is that message senders make a conscious effort to conceal information that might enable a receiver to recognize them.

In other instances, it is clear that the sender is required to be anonymous as an artifact of a technology or procedure. Anonymity is obliged as a formal part of a procedure or technology. Some procedures for multi-rater performance feedback in organizations, for example, may require that evaluators are anonymous. Those providing performance feedback are required to omit their name from their evaluations of subordinates, co-workers and/or supervisors. In these instances the technology or procedure attempts to eliminate information that could be used to identify the sender of a message. The distinguishing characteristic of this type of situation for message receivers is that anonymity is determined by the technology or procedure. Upon entering the situation, receivers are aware that the sender is required to be anonymous.

For receivers, the distinction between these two types of situations may have substantial consequences. Receivers are likely to make different attributions and have different perceptions of anonymous message senders in these two types of situations. When anonymity is determined by a technology or procedure, communicators expect that the sender will be anonymous. They recognize that anonymity is an artifact of the technology or procedure. In situations where anonymity is voluntary, however, it can be inferred that the message sender made a conscious decision to communicate anonymously. Receivers are confronted by a source who, for whatever reason, has elected to hide his or her identity. In these instances, the use of anonymity may appear strategic. In summary, it seems plausible that these two types of situations in which anonymous message senders are encountered may have a systematic impact on receiver perceptions.

DISSERTATION PURPOSE AND OBJECTIVES

The purpose of this dissertation is to better understand responses to, and perceptions of, anonymous communication. At a general level, this dissertation seeks to address the following questions: What impact does source anonymity have on receiver perceptions of the message and source? Are anonymous sources more (or less) credible than those who are identified? Is the information communicated by anonymous sources more (or less) believable than information from an identified source? Finally, in comparison with those who are identified, are anonymous sources more (or less) influential?

A second set of question addressed in this dissertation involve examining the impact of voluntary and required anonymity. As the argument in the previous section illustrates, perceptions of anonymity may differ in those situation where anonymity is required by a procedure or technology in comparison with those situations where a communicator voluntarily elects to communicate anonymously. The following questions will be pursued to address this issue: What impact does anonymity have on receiver perceptions when it is required by a procedure or technology? What impact does anonymity have on receiver perceptions when it is voluntarily selected by a message sender? Do receiver perceptions of anonymous sources and messages differ across these two situations?

To address the previous questions, two studies will be conducted in different contexts in which anonymity is used. Study 1 examines perceptions of anonymous sources and the messages they communicate in the context of health information on the World Wide Web. In the second study, perceptions of an anonymous communicator will be investigated in the context of decision making in computer-mediated groups. Within each of these contexts—which provide substantially different arenas for anonymous

communication—the impact of required and voluntary uses of anonymity will be examined.

Together, these studies will provide a better understanding about the ways in which receivers make sense of anonymous sources and messages. The results of this research will make it possible to make more informed claims about the import and utility of anonymous communication in situations where anonymity is required by a technology or voluntarily selected by message senders. The cumulative findings from both studies will also make it possible to begin to unify the disparate bodies of research addressing anonymity. Through identifying systematic responses to anonymity across these two types of situations, it will be possible to make generalizations about the impact of anonymous communication on message receivers.

PREVIEW OF DISSERTATION STRUCTURE

The layout for this dissertation is as follows. Chapter 2 consists of background information about anonymous communication. Anonymity is first defined then research on anonymous communication as well as information about the role of anonymity in the public sphere is reviewed. Chapter 3 reports a study that examines anonymous communication in the context of health information on the World Wide Web. The study tests the proposition that anonymous sources are as credible and influential as those sources who are identified. Chapter 4 consists of a study of anonymity in the context of decision making in small groups. Two competing hypotheses are tested to explain the impact of anonymity on receiver perceptions and behaviors. A general conclusion for the dissertation is located in Chapter 5. In this chapter, special attention is paid to the implications of the findings from both studies for research on anonymous communication.

CHAPTER SUMMARY

Chapter 1 provides an introduction to this dissertation examining anonymous communication. The social import of anonymous communication is first articulated. Research focusing specifically on the role of message receivers is reviewed next. The purpose and goals of the dissertation are then articulated. The chapter concludes with a preview of the dissertation structure. Chapter 2 includes background information on anonymous communication in scholarly research and the public sphere to establish a foundation for the two studies conducted in fulfillment of this dissertation.

Chapter 2:

Anonymity in Academic Research and the Public Sphere

Chapter 2 includes background information on anonymous communication to provide a foundation for this dissertation. Anonymity is first defined and distinguished from related constructs. Then, the role of anonymity in popular culture is described. The chapter concludes by examining contemporary research on anonymous communication.

DEFINING ANONYMITY

Anonymity is defined as “the degree to which a communicator perceives the message source as unknown or unspecified” (Anonymous, 1998, p. 387). This definition is important because it conceptualizes anonymity as a continuous construct. That is, message senders are not simply completely anonymous or fully identified; it is possible to be partially anonymous. Marx (1999) lists seven types of identity information that impact one’s level of anonymity including: (a) legal name, (b) locatability, (c) pseudonyms linked to name or location, (d) pseudonyms not linked to name or location, (e) pattern knowledge, (f) social categorization and (g) symbols of eligibility/non-eligibility. A message sender is anonymous or identified to the degree each of these types of identity information is known by message receivers.

In addition to withholding one’s name, a degree of anonymity can be achieved through the use of a pseudonym. A pseudonym, according to Anonymous (1998), is an “alternative identity” that may be perceived as factual or fictitious (p. 384). Fictitious pseudonyms, such as pen names and stage names, are perceived by the audience to be untrue. Factual pseudonyms, such as used in forgeries or in using an alias, leave the message receivers unable to detect that the apparent source is not the actual source.

Although a myriad of different types of anonymity have been proposed (see Anonymous, 1998; Pinsonneault & Heppel, 1997), two in particular are relevant to this dissertation. First, technical anonymity is an artifact of a technology or procedure. Technical anonymity results when “any meaningful identifying information about others (or yourself) is removed from materials exchanged” (Pinsonneault & Heppel, p. 432). In computer-mediated groups, for example, the names of group members may be stripped from their comments. Second, social or perceived anonymity is the product of an individual’s perceptions. Social anonymity “occurs when users actually perceive others... to be unidentifiable” (Pinsonneault & Heppel, p. 432). Social anonymity is an individual’s *perception* that he or she, or another person, is anonymous. As such, one’s degree of social anonymity can range between fully identified and fully anonymous.¹

In defining anonymity it is also important to distinguish it from related constructs. Although anonymity, privacy and confidentiality invoke issues of knowledge about a message or message source, they are distinct (Anonymous, 1998). Privacy focuses on the message, whereas anonymity is concerned with the message source. Privacy involves the decision not to reveal a message or particular piece of information; anonymity, however, involves the degree to which a source can be identified. Confidentiality is distinct from both concepts in that it involves an implicit or explicit agreement between communicators not to divulge one’s identity. One’s identity is known by a message receiver, but not made available to others.

¹ It is possible to have technical anonymity, but not social anonymity. In research on electronic meetings systems, for example, participants’ names may be withheld during meeting (giving them technical anonymity), but they may not feel a high degree of social or perceived anonymity (see Postmes & Lea, 2000). It is also feasible to have social anonymity, but not technical anonymity— though this situation is less likely.

ANONYMITY IN AMERICAN HISTORY AND POPULAR CULTURE

The decision to hide one's identity and communicate anonymously has played an important role throughout American history. The founders of the United States relied on anonymity to rally popular support for the American Revolution and the adoption of the Constitution. More recently, anonymity has been a key factor in a number of national scandals and tragedies throughout the past several decades. "Deep Throat," Bob Woodward's pseudonymous source, played a fundamental role in bringing to light the Watergate Scandal (Kurtz, 1992). The identity of "Deep Throat" has been a continued source of intrigue among Americans, prompting one journalism professor and his students at the University of Illinois to conduct a comprehensive investigation in an attempt to determine his/her identity (see Lipscomb, 2003; www.deepthroatuncovered.com). The book *Primary Colors* created a memorable controversy partly because of the author's decision to publish the book anonymously (Kline, 1996; McGrath, 1996; Tabor, 1996). The book detailed a fictional presidential campaign that, some argue, closely parallels Bill Clinton's run for office in 1992. Talk shows, newspapers and newsmagazines all went to considerable effort to reveal the author's identity (the author was later identified as *Newsweek* columnist Joe Kline). Yet, for many readers, Kline's decision to publish his book as "Anonymous" afforded the extra "pleasure... derived from being kept in the dark" (McGrath, p. 35).

Today, anonymity has received attention as a tool for terrorists and an option for whistleblowers. The anthrax-laced letters sent to various political leaders and journalists were sent by a pseudonymous source(s). These letters, containing the deadly toxin and cryptic message, were written in block letters and attributed to the 4th Grade at Greendale School in Franklin Park, New Jersey. The sender's identity has been the subject of a great deal of speculation as law enforcement officials work to find the culprit(s) (Johnston,

2001; Shenon & Stolberg, 2001). Sharon Watkins's now infamous "anonymous memo" encouraging former Enron Chairman Ken Lay to look into problematic accounting issues within the company played a critical role in the scandal that followed the company's collapse. Watkins warned that swift action was necessary by Lay or "the company might 'implode in a wave of accounting scandals'" (Farrell, 2002, p. 3B). Watkins's actions raised national concerns and ultimately resulted in the federal legislation to provide protection for whistleblowers (Zellner, 2002). Portions of the Sarbanes-Oxley Act, created in the wake of Enron, compel organizations to create a channel for employees to report wrongdoing anonymously (see McDowell, 2004).

As these examples illustrate, anonymity has a rich, and occasionally maligned, history in American politics and popular culture. Anonymity offers a measure of protection and makes it possible for message senders to say things that might not be possible if they were identified. The information provided by "Deep Throat" during the Watergate scandal and Paine's *Common Sense* may have not been possible if the authors were forced to divulge their identities. At the same time, however, anonymity has substantial implications for message receivers. Beyond basic safety issues as in the case of the anthrax-laced letters, Sharon Watkins's anonymous memo and Kline's *Primary Colors* raise questions about the accountability of anonymous message senders. In Kline's case, in particular, the author's identity was critical in assessing the legitimacy of the "fictional" story.

A BRIEF HISTORY OF RESEARCH ON ANONYMOUS COMMUNICATION

Anonymity has also been a source of interest for researchers since at least the late 1800s. In his 1896 book, LeBon posited that anonymity plays a key role in the behavior of crowds. As individuals come together, each person becomes less aware of him or her self as an individual. People feel a sense of anonymity as they become deindividuated

and see themselves simply as a member of the group. At about the same time, Hopkins (1889, 1890) reported two studies of prevailing perceptions about anonymity in journalism. He interviewed 35 writers and journalists and debates the merits and limitations of anonymous editorials, reporting a potpourri of opinions on the topic. Opinions range from those who feel that anonymous editorials are “supposed to have greater authority... express[ing] the whole body of opinion of the journal itself, with all its prestige and influence” (p. 520) *and* those writers who think that “the power of the unsigned article is enormously overrated and the morality of the matter lies almost wholly upon the other side” (p. 515).

Throughout the middle of the 20th century anonymity was being studied in a variety of fields. Sociologists examined anonymity and social isolation in response to the urbanization of the United States (Form & Stone, 1957; Freidson, 1953; Hayner, 1928; Walker & Guest, 1952). The focus of this work was on exploring the decreasing sense of individualism felt by urban Americans in their work and social lives. Scholars examining research methods also began to consider the impact of granting participants anonymity in completing questionnaires for social scientific research (Ash & Abramson, 1952; Cassel & Chiu, 1968; Corey, 1937; Elinson & Haines, 1950; Laverne & Reif, 1952; Olson, 1936; Pearlin, 1961; Rosen, 1960). This body of research examined the utility of anonymity to promote more accurate responses from participants.

Scholarship on anonymity waned in the 1970s and early 1980s, prompting one scholar to call for anonymity to be “thought, taught and written about much more than... at present” (Williams, 1988, p. 67). Yet, in the past 10 years, the study of anonymity has experienced a renaissance. In addition to continued research on the role of anonymity in journalism (e.g., Zuzel, 1998) and research methods (e.g., O’Malley, Johnston, Bachman, & Schulenberg, 2000; Ong & Weiss, 2000), the growth and diffusion of new

communication technologies made available by the Internet has sparked a plethora of research on the topic. As noted previously, studies of anonymity are currently being conducted involving the use of new technologies in group decision making (e.g., Postmes & Lea, 2000; Scott, 1999a), interpersonal communication (e.g., Joinson, 2001), organizational communication (e.g., Scott & Rains, in press), gathering health information on the World Wide Web (e.g., Cline & Hayes, 2001) and legal issues associated with anonymous communication (e.g., Ekstrand, 2003; Nissenbaum, 1999). Despite the increased attention, however, few studies have examined the influence of anonymity on message receivers. As one scholar notes, the need remains for “a greater understanding of what anonymous communication entails, when and why it is used, and *how it is accepted and rejected by receivers of anonymous messages*” (Anonymous, 1998, p. 382, emphasis added).

As illustrated in the previous sections, anonymous communication has been an issue of longstanding social import and has received a fair amount of attention by scholars. Yet, despite this interest and attention, a dearth of research exists on the effects of anonymous communication on message receivers. To address this issue, two studies examining receiver perceptions of anonymous sources are addressed in the remaining chapters of this dissertation. The study reported in Chapter 3 focuses on perceptions of anonymous sources in health information on the World Wide Web. In chapter 4, a study of anonymity in computer-mediated groups is described. Together, these two studies provide an initial attempt at better understanding perceptions of, and responses to, anonymous communication.

CHAPTER SUMMARY

Chapter 2 provides background information on anonymous communication. Anonymity is defined and distinguished from related constructs. The role of anonymity in

popular culture is then examined. The chapter concludes by reviewing academic research on anonymous communication.

Chapter 3:

Anonymity in Health Information on the Web

Chapter 3 reports a study examining anonymity in the context of health information on the World Wide Web. Research examining health information on the Web and the impact of anonymous sources is first reviewed to develop study hypotheses. Next, the method is explained and the results are reported. The findings from the study and their implications for scholars and practitioners are then discussed. The chapter concludes with a brief summary and preview of Chapter 4.

THE ANONYMITY EFFECT: THE INFLUENCE OF ANONYMITY ON PERCEPTIONS OF SOURCES AND INFORMATION ON HEALTH WEBSITES

One pervasive use of the Internet, and the World Wide Web in particular, is for seeking health information. A recent study by researchers at the Pew Internet and American Life Project (PIALP) indicates that around 80% of adult Internet users have searched for health information online (Fox & Fallows, 2003). During a typical day, approximately 6 million Americans go online for health-related information (Fox & Rainie, 2002). For these information seekers, medical information is widely available. An estimated 70,000 web sites (Cline & Hayes, 2001), or around 2% of all sites on the Web (Powell & Clarke, 2002), offer some form of health-related information.

Despite the widespread use of the Web and the availability of information, scholars have recently raised questions about the quality of health information online (see Cline & Haynes, 2001). Eysenbach, Powell, Kuss, and Sa (2002) conducted a meta-analysis of 79 studies that examined the quality of over 5,900 health-related websites and reported troubling findings. Among the studies they examined, 70% found problems with the quality of health information on the Web. Only 9% of the studies in the analysis came

to a positive conclusion about information available online. For individuals seeking health information online, however, the quality and accuracy of information are essential for making informed decisions. Misleading or inaccurate information could result in a plethora of detrimental outcomes.

Given the number of people seeking health information on the Web and the problems with information quality, it is important for scholars and practitioners to better understand factors 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. The guidelines developed by the American Medical Association, for example, require that sources are clearly identified—including information about the identity, affiliation and financial interest of an author (see Winker et al., 2000). This protocol extends to individuals posting to online discussion boards or participating in chat rooms.

Despite these guidelines and warnings, there are a number of instances in which the source of information is labeled “anonymous” or given a pseudonym. Anonymity (and pseudonymity) is used in testimonials and stories from those afflicted or cured by some medicine or condition, on health-related message boards and on sites offering advice. Anonymous and pseudonymous sources are also used in hoaxes about health outbreaks or epidemics.

The impact of anonymous sources on perceptions of health information on the Web, however, is unclear. What happens when people are faced with information from an anonymous or pseudonymous source? Are anonymous sources credible and influential? What factors impact perceptions of information from anonymous or pseudonymous sources? The purpose of this study is to address the previous questions and examine the

impact of anonymous sources in health information on the World Wide Web. The proposition that anonymous sources are as credible and influential as those who are identified will be tested. Further, drawing from the similarity principle in attribution theory (Kelley & Michela, 1980; Shultz & Ravinsky, 1977), the underlying mechanism explaining responses to anonymous sources will be examined. In the following sections research addressing the state of health information on the Web and information seeking behavior will first be reviewed. Then, contemporary research on anonymity will be assessed to develop study hypotheses.

Health Information Seeking on the Internet

Use of the Internet to gather health information has steadily increased in recent years. In 2000, 53 million Americans turned to the Internet for medical information (Fox & Rainie, 2000). In 2003, 93 million Americans—half of all American adults—sought health information online (Fox & Fallows, 2003). Currently, seeking medical information is the third most popular activity online, behind sending/receiving email and collecting information about a product before purchase (Fox & Fallows).²

In their state-of-the-art research review, Cline and Haynes (2001) explain that the three primary methods people use to access health information on the Internet are search tools, participating in support groups and consulting health professionals via email. Research suggests that those who search for information do not have a specific destination in mind (Fox & Rainie, 2002; Hansen, Derry, Resnick, & Richardson, 2003). Instead, information seekers typically start at a search engine and visit between two and

² Although research from the PIALP examines the use of the Internet broadly for health information and issues (including emailing one's doctor or visiting discussion groups), their work primarily focuses on the World Wide Web as a source for information.

five websites. In terms of content, seekers go online for a variety of reasons. Some of the most frequently cited explanations include finding information about a particular condition or illness; nutrition, exercise or weight control; prescription drugs; reproductive health; human relationships; experimental medicines and treatments; or in preparation for an upcoming doctor visit (Fox & Rainie; Spink et al., 2004). Although many seek information for themselves, almost 40% of those who go online search on behalf of someone else or are parents attempting to find information concerning their children (Fox & Rainie).

Information gleaned from health searches appears to have noteworthy impact on health behaviors. Forty-four percent of participants in a PIALP study reported that the information they found influenced their decision on how to treat an illness or condition and 38% said that the information led them to ask their doctor new questions or get a second opinion (Fox & Rainie, 2002). Thirty-four percent changed their approach to maintaining their own health or the health of someone for whom they care. Although this data is based on a single study, it suggests that the consequences of any incorrect or misleading information may be substantial (Eysenbach & Jdad, 2001; Pereira & Bruera, 1998; Robinson, Patrick, Eng, & Gustafson, 1998). Robinson et al. explain that inaccurate information may result in inappropriate treatment, delays in seeking care and, ultimately, damage trust in traditional health care practices and providers.

For those seeking health information online the quality and accuracy information are essential for making informed decisions. To date, however, a plethora of studies have reported that the quality of information available on the Web is suspect at best (see Eysenbach et al., 2002). Eysenbach et al. summarize the results of their meta-analysis of 79 studies, explaining that consumers face “significant problems” locating accurate, complete and “high quality” health information sites on the Web (p. 2696). Participants

in Fox and Rainie's (2002) study reported turning away from health information for a number of reasons. Consumers abandoned sites that were too commercial or when they could not determine the source of information or the date when it was last updated. Other, less frequently cited reasons for turning away from a site are the lack of an endorsement from a trusted and independent organization, sloppy design features, or if the site contained information that the searcher knew to be wrong or was inconsistent with a doctor's advice.

Concerns about the quality of information available on the Web are exacerbated by the findings from studies examining consumer information seeking and evaluation behaviors. Research to date suggests that many Americans do not closely evaluate the credibility of information they find on the Web (Fox & Rainie, 2002; Hansen et al., 2003). Over half of those who completed Fox and Rainie's questionnaire reported rarely checking the source, privacy policy or date of health websites. These "unconcerned" seekers are also the least likely to have left a site because they could not identify the source or author (p. 21). What may be more surprising, however, is that 72% of participants felt they could believe *all or most* of the information available and 69% said they had *not* encountered any misleading or incorrect medical information on the Web.

Research also suggests that consumers may have difficulty evaluating the quality of information on the Web (Cline & Haynes, 2001; Eysenbach & Jadad, 2001; Pereira & Bruera, 1998; Sacchetti, Zvara, & Plante, 1999; Sonnenberg, 1997). Cline and Haynes summarize the four most critical problems faced by consumers. Consumers may have problems (a) recognizing if or when information is missing, (b) identifying biased information, (c) distinguishing evidence-based claims from those that lack evidence and (d) interpreting information directed at health care professionals. Ultimately, Cline and

Hays argue that seekers may “misjudge information, become information-overloaded and thereby easily confused, misinformed or misled” (p. 680).

To help consumers and practitioners avoid the pitfalls of dangerous and erroneous information, a number of guidelines have been created for assessing of the quality of medical information online (e.g., Health Insight, 1999; Health on the Net Foundation, 2004; MedlinePlus, 2004; Winker et al., 2000). Most guidelines suggest similar principles for those creating and visiting sites with health-related content. Readers are encouraged to critically examine information they encounter, determine whether or not information providers have any financial interest in the topic and evaluate the privacy policies of all health-related websites. To critically examine information, the American Medical Association guideless explain that “assessing the quality of content depends on the same factors that readers of print publication depend on: authorship of the content, attribution to the sources of content, disclosure of funding and competing interests and timeliness of the information presented” (Winker et al., p. 1600).

Throughout the guidelines offered by various researchers and health organizations, concerns about the source(s) of information on the Web are paramount. Cline and Haynes (2001) suggest looking for “evidence of authoritativeness,” which includes a clearly identified author as well as information about his or her qualifications and credentials (p. 683). In the American Medical Association guidelines, information seekers are encouraged to look for “author byline[s] or names of individual, organizational, departmental, institutional, agency, or commercial provider/producer[s]” (Winker et al., 2000, p. 1603). The Health on the Net Foundation adopts, perhaps, the most stringent guidelines for source quality. They advocate allowing only trained and qualified health professionals to provide medical advice on the Web, unless an explicit statement is included along with information indicating that it is from a non-medically

qualified source. They also recommend having HTML links to any data or references for health information presented on a webpage or site.

Although anonymity has been touted as one of the benefits for information seekers going online for health information (see Cline & Haynes, 2001), source anonymity may pose serious problem for those seeking information. In a popular press article, one sociologist warns that, “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). “Science and snake oil,” as another group of researchers put it, “may not always look that different on the Net,” and anonymity may exacerbate this problem through concealing the identity of the source (Silberg, Lundberg, & Musaccio, 1997, p. 1244). The guidelines developed by Medline Plus, which is a service of the National Institute of Health, caution readers specifically of those testimonials that are anonymous or pseudonymous. They suggest looking for contact information like an email address or telephone number to help determine the veracity of the source.

In summary, the current status of health information, and information seeking, on the Web is alarming. Despite contemporary research suggesting that the information available online is inadequate at best, a substantial number of Americans rely on the Web to gather medical information. Cline and Haynes (2001) recognize this problem and suggest that, “given 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 better understand specific message features of health information that may impact seeker perceptions and behaviors. To this end, the impact of information (or a lack of information) about a source’s identity is examined in this study. Specifically, the

influence of source anonymity on information seekers' perceptions of medical information is investigated. In the following sections, the impact of anonymity on receiver perceptions of sources and information are reviewed to develop study hypotheses.

Perceptions of Anonymous Sources and Information

The merits and limitations of anonymous communication have been a source of debate for the past century (Hopkins, 1890, 1889; Wulfmeyer, 1985; Wulfmeyer & McFadden, 1986). Among scholars studying journalism, research has also been conducted examining perceptions of, and responses to, information attributed to unnamed sources (Adams, 1962, 1964; Hale, 1984; Riffe, 1980). The results of these studies indicate that unnamed sources are typically perceived to be as credible as those who are identified. Additionally, sources with a concrete referent (e.g., “the U.S. government,” “experts,” “federal officials”) are more acceptable than those that lack such a referent (e.g., “official circles,” “indications,” “trustworthy indications”). Although these studies provide insights about the impact of those sources who are not completely identified, none examined sources who claim to be “anonymous.” To better understand this issue, it is important to first consider the nature of anonymous communication in American culture. Then, the effects of source anonymity on receiver perceptions and behavior will be addressed.

The status of anonymous communication. Marx (1999) argues that we live in a culture where the norm is that one must be identified. He contends that “the majority of interactions of any significance or duration tilt toward identification of at least some form” (p. 105). And, the way in which we typically make ourselves known is through our

name.³ Names are “the kind of little detail in which big social meanings may reside” (p. 101). Names anchor us in the social world and, presumably, make it possible to locate a particular person in a specific place and time. One’s name provides a sense of legitimacy. The act of including one’s name indicates that the communicator is accountable for his or her ideas. Names are also critical because they offer information about the communicator’s qualifications and credibility (Hovland, Janis, & Kelley, 1953).

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 source and his or her message. Without knowing who the source is, it is difficult to determine whether or not the source is competent. The act of hiding one’s identity may also lead to questions about one’s legitimacy. It may appear that the message sender is not willing to stand by his or her claims.

Yet, despite these potential limitations, anonymity is used in a variety of contexts ranging from presidential rhetoric to interpersonal communication. Further, across these contexts, there is a great deal of consistency in the reasons for communicating anonymously. Research on organizations (Near & Miceli, 1995; Westerman & Rosse, 1997), decision-making groups (Pinsonneault & Heppel, 1997), interpersonal relationships (McKenna & Bargh, 2000), politics (Erickson & Fleuriet, 1991) 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

³ As noted in Chapter 1, there are a number of different types of identity information through which one can be more or less anonymous. However, Marx notes that one’s name is the most prevalent type of identity information. That is, the most obvious ways in which one might become (at least partially) anonymous is through omitting one’s name.

without fear of the consequences of having the information attributed to them.⁴ Consequences can be in the form of a face threat to the sender or receiver, financial or personal retribution, or legal action.

As illustrated previously, anonymous sources should not be credible or influential. The inability to identify a source's identity should undermine his or her credibility and make his or her arguments appear questionable. Yet, anonymous sources may be as or, in some instances, more credible and influential than sources who are identified. Drawing from the similarity principle in attribution theory (Kelley & Michela, 1980; Shultz & Ravinsky, 1977), anonymity may effectively cue message receivers and function as a heuristic. Message receivers may assume that a source communicating anonymously is trying to genuinely protect him or her self. This knowledge could, in turn, influence message perceptions.

Perceptions of anonymous sources and the similarity principle. Attribution theory, developed by Heider (1958), assumes that people behave as naïve psychologists.

⁴ The utility of anonymity to afford a measure of protection for 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. People may choose anonymity to protect their personhood; reputation or assets; time or space; or economic interests. Anonymity may also be used to avoid persecution, shield those communicating bad news and to encourage experimentation while safe-guarding against embarrassment associated with failure. Interestingly, the only two rationales not associated with protection involve enhancing game-play or rituals and those situations (such as in a Catholic Church confessional) where anonymity is traditionally expected.

In an effort to make sense of others' actions, we make attributions about the causes of their behavior. We infer reasons and motivations to explain their actions. Kelley (1967) explains that attribution processes are prevalent in "such activities as information-seeking, communication, and persuasion" (p. 193). Attribution theory has been widely applied across an array of contexts. In terms of anonymity, attribution theory has been used as a framework to examine whether or not people make inferences about the source of contributions in anonymous computer-mediated groups (Hayne et al., 2003; Hayne & Rice, 1997).

Working from the general framework of attribution theory, one information processing rule relevant to peoples' 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). An effect requires a similar magnitude cause. The assassination of President John Kennedy, for example, has been attributed to the similarity principle (see McCauley & Jaques, 1979). Accordingly, the enormous "effect" of his assassination requires us to think that there is a substantial "cause;" it cannot simply be just a random event or an accident. We make an attribution that, for something like his assassination to occur, there must have been a massive governmental conspiracy or other significant reason.

When confronted with an anonymous source, we infer a reason that the source has forgone the cultural norm of identifying one's self and use it in interpreting the message. This anonymity effect is prompted by the word "anonymous" acting as a cue.⁵ Drawing

⁵ The anonymity effect is, in essence, the application of the similarity principle to explain cognitive responses to anonymous sources. The anonymity effect is rooted in the similarity principle—the notion of using an effect to explain a cause— and applied to the context of making sense of anonymous sources.

from the similarity principle, receivers may infer that the source fears retribution for, or the consequences of, communicating a particular piece of information. This fear, in turn, may be interpreted as evidence that the information is significant. 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. Receivers may infer that, because the sender is hiding his or her identity to avoid consequences, the information is important. This effect that occurs as people respond to anonymous source has several important implications for message receivers. The information from an anonymous source may be as influential as in situations when the source is identified. Further, anonymous sources may appear as credible as those that are identified.⁶ The effort required and reasons for communicating anonymously may function as evidence that the sender is legitimate. As a result, the source's credibility may not be questioned.

An important assumption is that the label "anonymous," or a factual pseudonym (e.g., "John Doe" or "Mr. S. in Austin"), is essential to cue the interpretation process. Information not attributed to any source would not have the same impact as when it is attributed to "anonymous" or a pseudonymous source. The word "anonymous," in effect, indicates to receivers that the sender fears the consequences of revealing his or her identity. Receivers are cued to infer that the sender is taking a risk communicating the information and, as a result, the information is privileged or special. An unsigned message or information not attributed to any source would not have the same impact because receivers have no reason to make this inference. Further, contextual factors may

⁶ The results of research on unnamed sources in journalism are consistent with this idea (Adams, 1962; Riffe, 1980). Unnamed sources in these studies were rated as credible as those that were identified.

spur the anonymity effect. In some situations, anonymous sources may be perceived as even *more* influential and credible than those who are identified. The effect of anonymity on receiver perceptions may have an especially strong impact in situations where the sender's need for anonymity appears critical to message receivers. Research about anonymity on topics ranging from presidential rhetoric to group decision making overwhelmingly suggests that the most common reason people choose to communicate anonymously is to avoid deleterious consequences of conveying a particular message. Anonymity provides a measure of protection and allows communicators to convey ideas that may be unpopular or embarrassing.

Among stigmatized topics, the impact of anonymity may be exacerbated. Stigmatized topics involve those issues that are deemed socially unacceptable or taboo (Goffman, 1963). Anonymity makes it possible to communicate about these types of topics by providing a sense of protection for message senders (Bowker & Tuffin, 2003; Cline & Hayes, 2001; McKenna & Bargh, 1998, 2000; Robinson, Patrick, Eng, & Gustafson, 1998). McKenna and Bargh (1998), for example, reported that participants in their study “used the shelter of anonymity to express those important aspects of themselves that might well be sanctioned if expressed for attribution” (p. 692). Message receivers may also be acutely aware of the utility of anonymity. The taboo nature of the topic may make the sender's “risk” more salient than with other topics. Petty, Fleming and White's (1999) research suggests that messages from stigmatized sources are more closely scrutinized than when communicated by a non-stigmatized source. Message receivers in their study—particularly those who were low in prejudice against the stigma—more closely attended to information when it was attributed to a stigmatized source.

Given the increased attention that may be afforded to stigmatized sources, the effects of source anonymity may be intensified when the topic of information is taboo. In this context, receivers may more easily recognize that the sender is taking a risk. Receivers may recognize that the sender is going to great lengths to communicate the information. This information may, in turn, make anonymous sources more credible and influential when the topic is stigmatized than in situations where the topic is not stigmatized and/or the sender is not anonymous.

Hypotheses

Returning to health information seeking on the Web, the impact of anonymous sources may be exceptionally troublesome in this context. Under the guise of anonymity, well-meaning but ill-informed individuals may contribute a testimonial to a site sharing their experience with a particular disease or condition. Yet, in “telling their story” they may inadvertently proffer inaccurate information about the symptoms, severity and treatments. 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 (¶ 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). Though her intentions appear benevolent, this information could have deleterious consequences for readers who are influenced to delay or forego medical treatment.

Using the guidelines by established 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. As the Medline Plus guidelines suggest, if sources “are anonymous or hard to track down ([e.g.,] ‘Jane from California’), use caution” (n.d., ¶ 4). Despite the plethora of guidelines and warnings, however, these sources may appear credible and be influential. Accordingly, a set of three hypotheses are proposed to examine the impact of anonymous sources in health information on the Web.

First, anonymous sources may be as influential and credible as when a source is identified. Drawing from the similarity principle, the word “anonymous” may function as a cue. Readers may assume that the anonymous source may be going to great lengths to make the story or information public. Despite possibly being humiliated or losing their job, these sources are—under the cover of anonymity—willing to share their perspective. Thus, the lack of information about the author’s identity will not undermine perceptions of his or her competence. The following hypothesis is proposed to formally test this notion:

H1: Anonymous sources will be perceived *as* (a) credible and (b) influential as identified sources.

Second, the utility of the anonymity effect explanation for perceptions of anonymous sources will be tested. Through supplying message receivers with information about the sender’s reason for being anonymous, it is possible to formally test the anonymity effect as an explanation for responses to anonymous sources. In making the sender’s decision to communicate anonymously explicit, receiver attributions about source anonymity can be manipulated. The voluntary use of anonymity should make a sender’s risk salient to message receivers. That is, it should appear as if he or she is intentionally communicating anonymously. The sender is making a conscious attempt to conceal his or her identity—presumably to 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. In situations where the sender is voluntarily communicating anonymously, in comparison with situations where anonymity is required or the sender is identified, senders should be perceived as more credible and more influential. The following hypothesis is proposed to test the interaction between anonymity and one's reason for being anonymous:

H2: Source anonymity and anonymity motivation interact to affect perceptions of source (a) credibility and (b) influence. A voluntarily anonymous source will be rated more (a) credible and (b) influential than a source who is required to be anonymous or is identified.

The joint impact of anonymity and the nature of the health topic is also examined to understand one contextual feature that might exacerbate the impact of source anonymity on perceptions of health information on the Web. When the health topic is stigmatized, the source's situation may seem especially severe and his or her reasons for communicating anonymously may be particularly salient among message receivers. Receivers may be acutely aware of the risk the source is taking and this information, in turn, could make the information more influential than if the source simply signed his or her name. In these instances, information from anonymous sources may be perceived to be more plausible and have a greater impact on attitudes and behaviors than when the source is identified. To test this notion, the following hypothesis is proposed:

H3: Source anonymity and the nature of the health topic interact to affect perceptions of the source's (a) credibility and (b) influence. An anonymous source communicating about a stigmatized topic will be rated more (a) credible and (b) influential than when the topic is non-stigmatized or the source is identified.

Finally, the three-way interaction between anonymity, one's reason for being anonymous and the nature of the health topic is examined. Given the potential impact of one's reason for being anonymous and the nature of the health topic on perceptions of anonymous sources, it is important to test the three way interaction between these variables. It seems possible that an individual who is voluntarily communicating anonymously about a stigmatized topic may be more credible and influential than someone who is required to be anonymous or communicating about a non-stigmatized health topic. To address this issue, the following research question is posed:

RQ1: What impact does the interaction between anonymity, reason for being anonymous and nature of the health topic have on source (a) credibility and (b) influence?

METHOD

A field experiment was conducted to test the preceding hypotheses and research question utilizing a website constructed by the researcher. Participants read an informative testimonial about a health topic, ostensibly from a health website, and completed a questionnaire containing measures of the dependent variables.

Participants

Given recent estimates indicating that half of all Americans have used the Internet to seek health information (Fox & Fallows, 2003), a broad sample of participants was recruited for the study. Participants were recruited by undergraduate students at a large southwestern university. 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. Students were sent a form email explaining the study and asked to forward it to potential participants. The form

email contained a link to access the study website.⁷ This procedure made it possible to gather a broader sample than is typically available on college campuses and, as a result, one that better reflects the population of individuals who use the Web to seek health information.

A total of 287 participants completed the study. The mean age of participants at the time of the study 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.

To ensure the validity of the sample, participants were asked to list their first name, contact information and the name of the student who referred them at the end of the questionnaire. 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.⁸ Importantly, there were no statistically significant differences on any key variables in the study between those who indicated they completed the study and those who did not return the follow-up email.

⁷ This procedure for recruiting participants has been used successfully in previous research by communication scholars (e.g., Scott & Timmerman, 1999).

⁸ Further, the survey tool used for this study made it possible to examine the time at which participants accessed the questionnaire, the time they completed it and their IP address. Each of these features was also reviewed to attempt to identify any “suspicious” questionnaires and none were found.

Design

A 2 X 2 X 2 between-participants design was used in this study. Source identity (“anonymous”/ identified), reason for hiding/revealing one’s identity (voluntary/required) and the health topic (stigmatized/non-stigmatized) are the independent variables. The design is fully-crossed (8 conditions), and a baseline condition is also included in the study. In the baseline condition, no name nor information about the source’s reason for concealing/revealing his or her identity was included and the topic was non-stigmatized. This baseline condition was included as a comparison point for the anonymity and identified conditions.

Procedure

Upon reading an informational email message about the study, participants were asked to click on a link directing them to the study website. The first webpage of the study provided a general description of the research and informed participants of their rights (e.g., to quit the study at any time without any penalty, that the information they provide is confidential, etc.). The first web-page also included some guidelines for completing the study. Participants were asked to set aside 20 minutes of time free from distraction and to complete the entire study in a single sitting. These guidelines were included to help standardize the environment in which participants completed the experiment. At the bottom of the page, participants were asked to click a link indicating their agreement to participate in the study. The link contained a macro that randomly assigned them to one of the nine conditions.

In each condition participants were asked to read and evaluate an article taken from a health website. Participants then completed a questionnaire containing the measures of the dependent variables and manipulation checks. It is important to note that participants were not able to go back to a previous webpage during the study; a script was

included in each webpage so that once participants left a page they could not return. Upon completing the questionnaire, participants were debriefed, asked not to talk with others about the study and thanked for their participation.

Materials

Pre-test. A pre-test was conducted to assess topic stigma and the health information messages. Participants read an information testimonial constructed for this study (described in the next section) about one of four health topics and completed a questionnaire. The health topics were selected by the researcher to ensure that perceptions of the cause, severity, consequences, and of the illness are relatively similar. The four health topics were: scabies, strep throat, bacterial meningitis, and genital herpes.

A total of 49 participants rated the degree to which each topic is stigmatized, shameful, embarrassing, disgraceful, gross, and socially acceptable (reflected). The results of the pretest indicate that there was a significant difference in the amount of stigma associated with the four topics, $F(3, 45) = 24.95, p < .01, \eta^2 = .62$. A Tukey post-hoc analysis indicated that genital herpes ($M = 8.26, SD = 1.53$) and scabies ($M = 7.06, SD = 1.67$) were both significantly more stigmatized than bacterial meningitis ($M = 4.90, SD = 2.08$) and strep throat ($M = 3.05, SD = .76$). There was no difference between genital herpes and scabies, though meningitis was rated significantly more stigmatized than strep throat. Given these results and follow-up discussions with the participants, genital herpes and bacterial meningitis were selected as the health topics to be used in the study. Herpes was rated significantly more stigmatized than meningitis and both illnesses are similar in terms of their severity and consequences. The messages were also refined based on participant responses to be more realistic. Greater detail was added to the personal stories/anecdotes used in the messages.

Informative testimonial. The health messages about the stigmatized and non-stigmatized topics were constructed for this study in the form of an informative testimonial. The testimonials contained facts and information as well as the source's personal experience with each respective condition. These types of articles are common on websites containing health information (e.g., see www.sexetc.org; www.shareguide.com).

Both articles are approximately 1000 words. Each article contains three paragraphs that define the illness and explain how it is spread and treated as well as four personal stories/anecdotes. The factual information included in the informative testimonials was derived from the Center for Disease Control, National Institute of Health and Mayo Clinic. The testimonial portion of each message was controlled; that is, the same personal stories/anecdotes were used in both messages. Also, care was taken to ensure that the valence of the information was neutral.

To manipulate source identity, the story was labeled "by Anonymous," or by the gender neutral name, "Pat Thomas." In the voluntary condition, readers were informed (under the byline) that "the author's name was withheld at their request"; in the required condition, readers were informed that "the author's name was withheld as a policy of the website." This information was also reiterated in the body of the health message. Readers were informed that the author requested/was required to be anonymous/identified and is sharing the information so that others will not have to face the same things that the author faced. In the baseline condition, no byline or additional source information was included. Refer to Appendix A for examples health messages used in the study.

Dependent Variables

Perceptual, attitudinal, cognitive and behavioral measures were used to assess the credibility and persuasiveness of anonymous sources. A series of measures was also

included to tap perceptions of the anonymous source. With the exception of the credibility scale, all measures were constructed for this study following procedures commonly used in research examining the influence of message features on perceptions and attitudes (see Cacioppo, Harkins, & Petty, 1981). A series of adjectives were rated by participants to assess the impact of the anonymous source and message on attitudes and perceptions. Finally, unless otherwise noted, all measures were rated on 10-point Likert-type scales with the anchors *strongly disagree* and *strongly agree*. See Appendix B for a sample questionnaire containing all of the measures used in the study.

Source credibility. McCroskey's (1966; also see McCroskey & Teven, 1999) measure was used to assess source credibility. Source credibility is comprised of three subscales focusing on the degree to which a source is perceived to be competent, trustworthy, and perceptions of his or her goodwill. Each subscale contains 6 items. To tap perceptions of competence, participants rated the degree to which the source appeared intelligent, trained, expert, informed, competent and bright. To assess goodwill, participants rated the degree to which the source cared about the participant, had the participants' interests at heart, was self-centered, was concerned with the participant, was sensitive and was understanding. Finally, trustworthiness was measured by having participants rate the degree to which the source appeared honest, trustworthy, honorable, moral, ethical and genuine. The reliabilities of each of the three subscales in McCroskey and Teven's recent study of credibility were acceptable, ranging from $\alpha = .85$ to $\alpha = .92$.

Perceptual and attitudinal measures of influence. Four perceptual measures and one attitudinal measures of influence were completed by participants. First, the believability of the information was measured with five items. Participants were asked to rate the degree to which the information in the testimonial was believable, plausible, accurate, truthful, reasonable and false (reflected). Second, five items were used to assess

how appealing the information was to readers. Participants rated the degree to which the information was interesting, appealing, fascinating, intriguing, boring and uninteresting (the final two items were reflected). Third, participants were asked to assess the persuasiveness of the message. Participants rated the degree to which the message was persuasive, influential, convincing, compelling and unconvincing (reflected). Finally, participants rated the perceived social importance of the health issue. Participants rated the degree to which they felt the health topic was a substantial health issue, a serious concern, a significant health issue, something to be concerned with, and an unimportant problem (the final item was reflected). To tap attitudes about each illness, participants completed a five item measure. Participants rated their agreement with a series of statements indicating that they would donate money to support research on the issue, volunteer to work for an organization that helps those suffering from the illness, vote for a bill to increase government funding for research on the issue, include education about the illness in high schools, and not donate money to support research on the issue (reflected).

Behavioral and cognitive indicators of influence. One cognitive and one behavioral measure were used to assess the effect of source anonymity. First, at the bottom of the health information page a link was included that, ostensibly, directed participants to additional information about the topic. Participants had the option to, “Click ‘here’ for more information on this topic.” No explicit instructions were given to participants to follow the link and gather additional information. The linked page did not include any additional health information. A note on the linked page stated: “Page under construction. Please click the following link to begin the questionnaire.”

Second, to assess cognitive responses to anonymous sources, participants completed a post-hoc thought-listing task (Hovland, 1951; Petty, Ostrom & Brock, 1981).

Once they read the health message, participants were asked to list all thoughts they had while reading the message. Participants were presented with a series of 10 blank boxes and asked to type each thought in a different box.

Two trained coders then rated the valence of participant thoughts as well as their relevance to the source of the message. Coders were instructed to rate thoughts relevant if they were directly relevant to the health topic or the content of the article. Thoughts about the participant or an issue unrelated to the message or health topic were rated irrelevant. Positive thoughts were those that reflect a clear positive tone. Anything that could clearly be construed as good, beneficial, or sought-after was coded as positive. Anything that could be construed as bad, detrimental, or was demonstrative or skeptical and thus reflected a negative tone was coded as negative. Thoughts that did not impose any sort of value judgment or were not clearly positive or negative were coded as neutral.

To establish intercoder reliability, two coders rated the same 13% ($n = 168$) of the thoughts in the data set. Intercoder agreement was acceptable (Scott's $\pi = .69$). All disagreements were resolved by the author. The remainder of the data set was equally divided and independently coded. Tallies were created by the author for the number of negative-relevant ($M = .81$, $SD = 1.00$), negative-irrelevant ($M = .31$, $SD = .64$), positive-relevant ($M = .26$, $SD = .59$) and positive-irrelevant ($M = .19$, $SD = .47$) thoughts reported by each participant.

Perceptions of source anonymity. Two measures were included to examine participants' perceptions of source anonymity. First, four items were included to evaluate attributions about the source's reason for being anonymous or identified. Given the context of health information on the web, the source's reason for being anonymous or identified was operationalized as embarrassment. Participants rated the degree to which they felt the author was embarrassed, ashamed, worried and fearful of what others might

think. Second, participants were asked to rate the degree to which they felt they could identify seven types of identify information about the source. The seven types of identity information are drawn from Marx's (1999) typology of key aspects of identity information and include the following: the author's name, a way to locate the author, patterns in the author's behavior, information about the social categories to which the author belongs (race, gender, etc.), unique or distinctive information possessed by the author, symbols that could be used to locate the author's true identity and symbols that could not be used to locate the author's true identity.

Manipulation check(s). Measures were included to determine whether the anonymity, volition and topic manipulations were effective. Participants were asked to indicate the degree to which they agreed with four statements asserting that the author's name was identified, unidentified, "anonymous," and unknown. Participants also indicated their agreement with the assertions that the author's name was withheld at their request, withheld as a policy of the website, identified at their request, and identified as a policy of the website. Finally, to check the topic manipulation, participants rated the degree to which each they felt the health topic is stigmatized, shameful, embarrassing, disgraceful and uncomfortable.

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 on anonymous communication suggests that perceptions of anonymity appropriateness are variable and may have a systematic impact on participant responses (Scott & Rains, in press). 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 posting health information on the Web anonymously is appropriate,

preferred, proper, acceptable, unacceptable and inappropriate (the final two items were reflected).

Data Analysis

Confirmatory factor analyses were conducted to assess the internal consistency for each of the perceptual and attitudinal measures proposed in this study as well as the measures used for the control variable manipulation checks. Analysis of covariance (ANCOVA) was used to test all hypotheses and answer the research question.⁹

RESULTS

Data Screening

Following Tabachnick and Fidell's (2001) recommendations, the data were first screened. Univariate descriptive statistics were examined for all variables to identify and correct out of range values. The data were also examined for the presence of univariate or multivariate outliers. Univariate outliers were detected in the thought listing measures of negative-relevant, negative-irrelevant and positive-relevant thoughts. Following Tabachnick and Fidell's recommendations, each outlier was reassigned a value one unit

⁹ Although multivariate analysis of covariance (MANCOVA) is typically appropriate in instances where the dependent variables are interrelated, it was not used for this study. Because the first, and primary, hypothesis predicts that there will be no differences in the credibility and influence measures between the anonymous and identified conditions, a MANCOVA does not present as rigorous of a test as multiple ANCOVAs. A non-significant value for Wilks's lambda, for example, would provide support for the first hypothesis and suggest that there are no systematic differences in the dependent measures of influence. However, accepting this omnibus test would potentially overlook important differences between the two conditions. There still may be differences for one or more of the dependent variables. Given the considerable practical import of discerning whether or not anonymous and identified sources are similar in credibility and influence, ANCOVAs were used to test the study hypotheses.

larger than the upper-bound limit of the 95% confidence interval for the variable. One multivariate outlier was also identified. The value of Mahalanobis distance for one case exceeded the limits established by Tabachnick and Fidell and was removed from the data set. Means and correlations for all measured variables in this study are presented in Table 3.1.

Confirmatory Factor Analyses (CFAs)

Next, CFAs were conducted for each of the dependent variables using Equations (EQS; Bentler, 1995). The correlation matrix for each index was analyzed using maximum likelihood estimation procedure. The model chi-square test was used as the primary indicator of model fit. However, given the relatively large sample size, alternate fit indices were also used to assess fit in situations where the model chi-square was statistically significant. Hu and Bentler's (1999) dual criteria of a comparative fit index (CFI) value $\geq .96$ and a standardized root mean-square residual (SRMR) value $\leq .10$ were used as guidelines for acceptable model fit.

The measure of credibility contains three indices (McCroskey & Teven, 1999). A CFA was performed on each scale, indicating the items in the scales assessing competence, $\chi^2 (6, N = 277) = 6.87, p = .33$, and trustworthiness, $\chi^2 (6, N = 268) = 11.92, p = .06$, form a single solutions. The chi-square test for the measure of goodwill was statistically significant, $\chi^2 (6, N = 277) = 31.95, p < .01$. However, the measure of goodwill exceeds Hu and Bentler's (1999) alternate criteria for model fit, CFI= .98, SRMR= .03. Accordingly, the full six-item measure of goodwill was retained. Means were computed for the measures of competence ($M = 6.26, SD = 1.55, \alpha = .82$), trustworthiness ($M = 7.80, SD = 1.39, \alpha = .82$), and goodwill ($M = 6.87, SD = 1.74, \alpha = .86$).

CFAs were also conducted for the perceptual and attitudinal measures of influence. For the perceptual measures of influence, the items tapping the persuasiveness

Table 3.1

Means, Standard Deviations and Correlations for Key Variables Included in the Study.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Competence	6.26	1.55															
2. Trustworthiness	7.80	1.39	.59*														
3. Goodwill	6.87	1.74	.60*	.74*													
4. Believability	7.83	1.58	.53*	.62*	.59*												
5. Appeal	6.13	2.02	.46*	.47*	.55*	.48*											
6. Persuasiveness	6.67	2.06	.58*	.57*	.70*	.67*	.67*										
7. Importance	7.86	1.81	.35*	.35*	.47*	.44*	.45*	.52*									
8. Attitude	5.75	2.04	.30*	.29*	.38*	.34*	.43*	.38*	.61*								
9. Link	.18	.39	-.09	-.06	.02	-.01	.02	.00	.04	.05							
10. Embarrassed	6.12	2.13	.00	.14*	.16*	.15*	.05	.15*	.22*	.11	.08*						
11. Appropriateness	6.73	2.34	.26*	.24*	.26*	.29*	.14*	.34*	.15*	.14*	.01	.12*					
12. Positive relevant thoughts	.26	.59	.06	.10	.09	.08	.14*	.09	.05	.08	-.02	-.15*	.05				
13. Positive irrelevant thoughts	.19	.47	.09	.07	.10	.02	.08	.06	.03	.01	.14*	-.02	.01	.07			
14. Negative relevant thoughts	.81	1.00	-.11	-.16*	-.18*	-.11*	-.21*	-.16*	-.02	-.02	-.01	.00	.07	.07	-.05		
15. Negative irrelevant thoughts	.31	.64	-.02	-.04	.00	-.11	.03	.04	.06	.03	.04	.02	-.02	-.01	-.07	.04	

* $p < .05$

of the message, $\chi^2(4, N = 281) = 4.69, p = .32$, appeal of the information to participants, $\chi^2(4, N = 275) = 8.40, p = .08$, believability of the information, $\chi^2(7, N = 279) = 12.54, p = .08$, and social import of the illness, $\chi^2(4, N = 282) = 4.98, p = .29$, form single solutions. Means were computed for the measures of influence ($M = 6.67, SD = 2.06, \alpha = .93$), appeal ($M = 6.13, SD = 2.02, \alpha = .89$), believability ($M = 7.83, SD = 1.58, \alpha = .93$) and importance ($M = 7.86, SD = 1.81, \alpha = .91$). A CFA was also performed on the measure assessing attitudes about the health condition, indicating that the items form a single solution, $\chi^2(3, N = 283) = 1.21, p = .75$. A mean was computed for this measure ($M = 5.75, SD = 2.04, \alpha = .82$).

CFAs were also performed on the two anonymity measures. The four items assessing attributions about the source's reason for being anonymous or identified (i.e., the source's level of embarrassment) form a single solution, $\chi^2(1, N = 279) = 1.10, p = .29$. A mean was computed for this index ($M = 6.12, SD = 2.13, \alpha = .83$). Additionally, a CFA was conducted on the six items assessing participant perceptions that anonymity is appropriate in health information on the Web. The chi-square test for these items was statistically significant, $\chi^2(7, N = 277) = 66.57, p < .01$. However, the alternate fit indices exceed the criteria established by Hu and Bentler (1999), CFI= .97, SRMR= .03. Thus, the original items were retained and a mean was computed for the measure of anonymity appropriateness ($M = 6.73, SD = 2.34, \alpha = .94$).

A CFA was conducted for the items comprising the stigma manipulation. One item was dropped from the seven item measure of stigma. The loading for the item "socially acceptable" was low ($< .30$) and its correlations with other items were small. The item was removed and a CFA was conducted on the remaining six items, indicating that they form a single solution, $\chi^2(4, N = 274) = 8.68, p = .07$. A mean was computed for the six items ($M = 4.67, SD = 2.48, \alpha = .89$).

Finally, because the measures for the volition and anonymity manipulation checks were only comprised of two items each, CFAs were not conducted. A mean was computed and the reliability was assessed for the measure of anonymity ($M = 6.57$, $SD = 3.46$, $\alpha = .78$). Means and reliabilities were also computed for the two item measure of volition in the anonymous ($M = 5.89$, $SD = 3.23$, $\alpha = .66$) and identified ($M = 5.25$, $SD = 3.09$, $\alpha = .45$) conditions.¹⁰

Manipulation Checks

Manipulation checks were performed to determine if the anonymity, stigma and volition manipulations were effective. One-way ANOVAs were conducted for each of the three independent variables and their respective manipulation check measures. 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 ($M = 4.07$, $SD = 3.31$), $F(1, 236) = 159.94$, $p < .01$, $\eta^2 = .40$. Participants also reported that the herpes condition ($M = 6.44$, $SD = 1.93$) was significantly more stigmatized than the bacterial meningitis condition ($M = 3.90$, $SD = 1.90$), $F(1, 243) = 107.59$, $p < .01$, $\eta^2 = .31$. Because the volition factor is contingent upon whether the source was anonymous or identified, manipulation checks were performed within the anonymity and identified

¹⁰ Although the reliabilities for the volition manipulation checks are low, they are based on two-item measures. As a result, the reliabilities are essentially correlations between the two items comprising each measure. These values are acceptable and were retained as measures of the volition manipulation. Further, despite the low reliability, the manipulation checks for the anonymity manipulations were successful.

conditions.¹¹ In the anonymity condition, participants recognized the source's choice to be anonymous ($M = 7.90$, $SD = 2.10$) as opposed to anonymity being required by the website ($M = 4.00$, $SD = 2.97$), $F(1, 126) = 72.98$, $p < .01$, $\eta^2 = .37$. Similarly, participants recognized the author's choice ($M = 7.17$, $SD = 2.23$) as opposed to the website requirement ($M = 3.34$, $SD = 2.62$) in the identified condition, $F(1, 112) = 70.19$, $p < .01$, $\eta^2 = .39$. In summary, the results of the checks indicate that the anonymity, volition and stigma manipulations are effective. The means and standard deviations for all dependent variables across the anonymity, volition and stigma conditions are presented in Table 3.2.

Control variable and baseline condition. Perceptions of the appropriateness of anonymity for health information on the Web were included as a control variable to test the hypotheses and answer the research questions. As illustrated in Table 3.1, anonymity appropriateness was positively associated with all of the dependent variables except the thought listing measures and the behavioral measure of influence. Additionally, a mean was computed for each of the dependent variables in the baseline condition as a reference point (see Table 3.2). The baseline condition included no information about the source or volition variables and addressed the non-stigmatized health topic.

11 That is, in asking participants to assess the volition factor, the anonymity/identity of the source is implied. To rate whether or not the choice was voluntary or required, it was essential to know that the choice concerned the source's identity. Accordingly, participants rated whether or not the source's identity was withheld at their 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.

Table 3.2

Means and Standard Deviations for Key Variables Across All Experimental Conditions.

Dependent variable		Identified				Anonymous				Baseline
		Required		Voluntary		Required		Voluntary		
		NS	S	NS	S	NS	S	NS	S	
Competence	<i>M</i>	6.40	6.36	5.99	6.48	5.93	6.05	6.23	6.18	6.49
	<i>SD</i>	1.22	1.55	1.14	1.89	2.04	1.54	1.56	1.44	1.55
Trustworthy	<i>M</i>	7.95	7.69	7.68	7.80	7.86	7.57	8.02	7.69	8.12
	<i>SD</i>	1.19	1.59	1.24	1.53	1.19	1.79	1.42	1.33	1.28
Goodwill	<i>M</i>	6.74	6.94	6.12	7.17	6.83	6.76	7.07	6.81	7.36
	<i>SD</i>	1.85	1.70	1.67	1.85	1.71	1.96	2.00	1.51	1.49
Believability	<i>M</i>	7.89	8.31	7.13	8.34	7.27	7.75	7.83	7.99	7.88
	<i>SD</i>	1.47	1.23	1.24	1.71	1.84	1.92	1.53	1.58	1.44
Persuasiveness	<i>M</i>	7.03	7.13	6.02	7.04	5.92	6.44	6.78	6.66	7.03
	<i>SD</i>	1.81	1.78	1.92	2.01	2.38	2.33	1.95	2.25	1.97
Appeal	<i>M</i>	6.83	6.13	5.87	5.98	6.00	5.72	6.44	5.64	6.76
	<i>SD</i>	1.82	1.84	1.97	2.01	2.18	1.58	2.44	2.17	1.73
Importance	<i>M</i>	7.97	8.49	6.55	8.34	7.14	7.97	7.58	8.56	8.16
	<i>SD</i>	1.64	1.32	1.71	1.71	1.95	2.08	1.83	1.52	7.13

(table continues)

Dependent variable		Identified				Anonymous				Baseline
		Required		Voluntary		Required		Voluntary		
		NS	S	NS	S	NS	S	NS	S	
Attitude	<i>M</i>	6.52	5.78	4.52	5.98	5.59	5.85	5.64	6.12	5.65
	<i>SD</i>	1.76	1.91	1.71	2.05	2.42	2.16	2.03	2.01	2.08
Link	<i>M</i>	.24	.23	.19	.27	.13	.15	.13	.13	
	<i>SD</i>	.44	.43	.40	.45	.35	.36	.34	.34	
Embarrassed	<i>M</i>	6.38	6.75	6.06	5.48	5.74	6.41	5.84	6.63	5.84
	<i>SD</i>	1.73	2.37	2.42	2.09	2.40	1.60	2.18	2.00	2.28
Positive relevant thoughts	<i>M</i>	.21	.22	.22	.30	.33	.28	.20	.40	.16
	<i>SD</i>	.62	.51	.58	.65	.61	.66	.66	.62	.37
Positive irrelevant thoughts	<i>M</i>	.17	.26	.19	.07	.10	.19	.30	.30	.16
	<i>SD</i>	.47	.53	.48	.25	.31	.47	.65	.60	.37
Negative relevant thoughts	<i>M</i>	.76	1.04	.77	.94	.67	.93	.72	.94	.26
	<i>SD</i>	.91	.94	1.07	1.17	.71	.98	.90	1.08	.91
Negative irrelevant thoughts	<i>M</i>	.31	.19	.15	.33	.37	.58	.40	.20	.22
	<i>SD</i>	.60	.62	.36	.66	.61	.91	.62	.55	.61

Note. Means and standard deviations are controlling for perceptions of the appropriateness of anonymity in health information on the Web. NS = Non-stigmatized; S = Stigmatized. The baseline condition included no name nor volition information and the health topic was non-stigmatized.

Testing the Hypotheses and Answering the Research Question

The impact of anonymity on credibility and influence. Hypothesis 1 predicts that anonymous sources will be as credible and influential as those sources who are identified. One-way ANCOVAs were conducted to examine the impact of anonymity on the measures of credibility and influence. Perceptions of the appropriateness of anonymous sources in health information on the Web was the control variable. The results of the analysis are presented in Table 3.3. Importantly, even when controlling for perception of anonymity appropriateness, there are no statistically significant differences at the .05 level between the anonymous and identified conditions for any of the dependent variables. Given the size of the sample—approximately 240 participants are in the anonymity and identified conditions combined—the power for these tests is adequate (Cohen, 1988). Hypotheses 1a and 1b are supported.

Testing the anonymity effect. Hypothesis two predicts an interaction between source anonymity and the source's reason for being anonymous. It is expected that making the source's reason for anonymity explicit should impact perceptions of the influence and credibility of the source. A voluntarily-anonymous source should be perceived as more credible and influential than one who is required to be anonymous or is identified. To test this hypothesis, two-way ANCOVAs were conducted with anonymity and volition as the independent variables. Perceptions of the appropriateness of anonymous sources in health information on the Web was the control variable. The results of the analyses are presented in Table 3.4.

Table 3.3

Summary of Anonymity Analyses for all Dependent Variables.

Independent Variable	Dependent variable	<i>F</i>	df	<i>p</i>	η^2
Anonymity	Competence	2.28	1	.13	.01
	Trustworthiness	.07	1	.80	<.01
	Goodwill	.03	1	.86	<.01
	Believability	2.06	1	.15	.01
	Persuasiveness	3.06	1	.08	.01
	Appeal	1.17	1	.28	<.01
	Importance	.07	1	.86	<.01
	Attitude	.00	1	.99	<.01
	Link	2.93	1	.09	.01
	Positive-relevant thoughts	.61	1	.44	<.01
	Positive-irrelevant thoughts	.77	1	.38	<.01
	Negative-relevant thoughts	.15	1	.70	<.01
	Negative-irrelevant thoughts	2.99	1	.09	.01

Table 3.4

Summary of Anonymity X Volition Interaction for all Dependent Variables.

Independent Variable(s)	Dependent variable	<i>F</i>	df	<i>p</i>	η^2
Anonymity X Volition	Competence	.71	1	.40	<.01
	Trustworthiness	.70	1	.40	<.01
	Goodwill	.71	1	.40	<.01
	Believability	4.02	1	.05*	.02
	Persuasiveness	5.21	1	.02*	.02
	Appeal	2.19	1	.14	.01
	Importance	7.54	1	<.01*	.03
	Attitude	3.96	1	.05*	.02
	Link	.00	1	.99	<.01
	Positive-relevant thoughts	.10	1	.75	<.01
	Positive-irrelevant thoughts	3.65	1	.06	.02
	Negative-relevant thoughts	.00	1	.98	<.01
	Negative-irrelevant thoughts	1.02	1	.31	<.01

* $p < .05$

When controlling for anonymity appropriateness, the interaction between the two independent variables is 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 attitude about the health condition, $F(1, 242) = 3.96, p = .05, \eta^2 = .02$. However, the three-way interactions are also significant for perceptions of persuasiveness and attitudes about the health issue. Given the presence of a higher order interaction, the results regarding persuasiveness and attitudes will be interpreting when addressing Research Question 1.

For the measures of the believability and importance of the illness, the results of the pair-wise comparisons for each of the four conditions—controlling for perceptions of anonymity appropriateness—are fairly consistent (see Figures 3.1 and 3.2). The message in the identified-required condition was rated the most believable ($M = 8.15, SD = 1.35$) and led to highest level of perceived importance ($M = 8.20, SD = 1.51$). The anonymity-voluntary condition had the second largest observed means for both believability ($M = 7.92, SD = 1.53$) and perceived import of the illness ($M = 8.08, SD = 1.74$). Importantly, the order of the observed means for both variables is largely consistent with the anonymity effect. The observed mean in anonymity-voluntary condition for the perceived importance variable is larger than the means for the anonymity-required ($M = 7.58, SD = 2.03$) or identified-voluntary conditions ($M = 7.49, SD = 1.89$). A contrast analysis was conducted, controlling for perceptions of anonymity appropriateness, comparing the anonymity-voluntary condition (assigned a weight of +2) with the anonymity-required

Figure 3.1

Mean Scores for Perceived Importance Across the Anonymity X Volition Conditions.

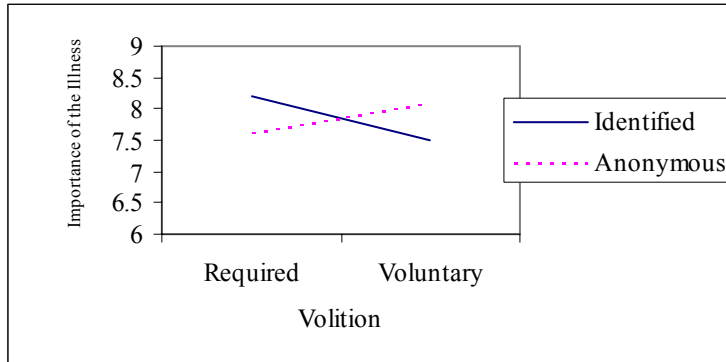
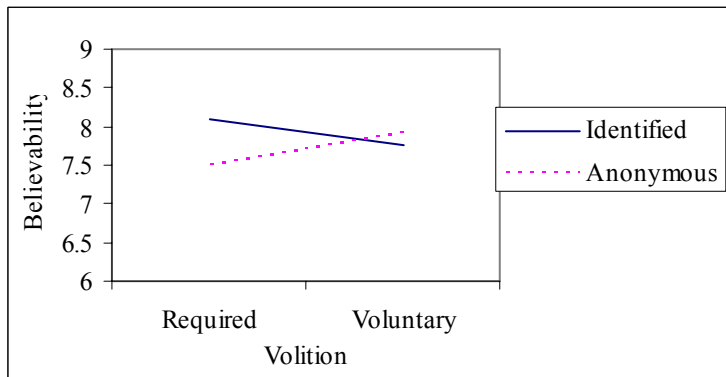


Figure 3.2

Mean Scores for Believability Across the Anonymity X Volition Conditions.



(assigned a weight of -1) and identified-voluntary (assigned a weight of -1) conditions.¹² The results indicate that the mean in the anonymity-voluntary condition is significantly larger than in the other two conditions, $F_{contrast}(1, 241) = 3.82, p = .05$. The pattern of observed means is the same for the believability measure; the observed mean for believability in the anonymity-voluntary condition was greater than in the anonymity-required ($M = 7.50, SD = 1.88$) and identified-voluntary ($M = 7.78, SD = 1.61$) conditions. Contrast analysis was conducted to compare these three conditions using the same weights as for the test of perceived importance and controlling for perceived appropriateness. However, the contrast for the believability measure was not statistically significant, $F_{contrast}(1, 240) = 1.26, p = .26$.

To summarize, there are no differences in perceptions of the three credibility variables across the anonymity and volition conditions. However, the consistencies in the findings for believability and importance measures are in line with the anonymity effect proposed in Hypothesis 2b. Although the contrast analyses was only significant for the measures of perceived importance, the significant interactions and consistency of the observed means suggests some support for the anonymity effect. Hypothesis 2a is not supported; partial support was found for Hypothesis 2b.

The impact of anonymity and stigma. Hypothesis 3 predicts a significant interaction effect between source anonymity and the nature of the health topic. It is

¹² Hypothesis 2 predicts that means in the anonymity-voluntary condition will be greater than the means in the anonymity-required or the identified conditions. Yet, a review of the observed means in Table 1 illustrate that the anonymity-required condition was consistently rated more credible and influential than the other three conditions. Accordingly, contrasts were conducted comparing the anonymity-voluntary condition with the identified-voluntary and anonymity-required conditions. The results in the identified-required condition are addressed in the discussion section.

expected that an anonymous source communicating about a stigmatized topic should be more credible and influential than when the topic is non-stigmatized or the source is identified. To test this hypothesis, two-way ANCOVAs were conducted with anonymity and health topic as the independent variables and perceived anonymity appropriateness as the control variable. The results of the analyses are presented in Table 3.5.

The interaction is statistically significant only for perceptions of source goodwill, $F(1, 241) = 4.33, p = .04, \eta^2 = .01$. The pattern of observed means illustrated in Figure 3.3, however, is not consistent with Hypothesis 3. The mean in the anonymity-stigmatized condition ($M = 6.78, SD = 1.71$) is actually smaller than the means in the identified-stigmatized ($M = 7.05, SD = 1.77$) and anonymity-non-stigmatized ($M = 6.94, SD = 1.84$) conditions. A contrast analysis was conducted controlling for perceived appropriateness and comparing the anonymity-stigmatized condition (assigned a weight of +3) with the other three conditions (each assigned weights of -1) and is not significant, $F_{contrast}(1, 241) = .93, p = .34$.

To summarize, although the interaction between anonymity and stigma is statistically significant for the goodwill factor, the means are not consistent with the prediction made in Hypothesis 3a. Further, the interactions between the anonymity and stigma variables are not significant for any of the other factors examined in this study. No support was found for Hypothesis 3a. No support was found for Hypothesis 3b.

The impact of anonymity, volition and stigma. Research Question 1 asks about the three-way interaction between anonymity, volition and the nature of the health topic on influence and credibility. Three-way ANCOVAs were conducted with anonymity, volition and health topic as the independent variables and anonymity appropriateness as the control variable. The results of these analyses are presented in Table 3.6. There are significant three-way interactions for perceptions of persuasiveness, $F(1, 237) = 4.10, p$

Table 3.5

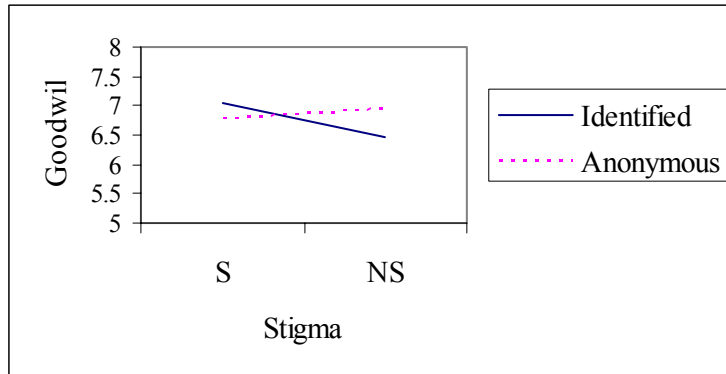
Summary of Anonymity X Stigma Interaction for all Dependent Variables.

Independent Variable	Dependent variable	<i>F</i>	df	<i>p</i>	η^2
Anonymity X Stigma	Competence	.38	1	.54	<.01
	Trustworthiness	1.07	1	.30	<.01
	Goodwill	4.33	1	.04*	.01
	Believability	2.01	1	.16	<.01
	Persuasiveness	1.09	1	.30	<.01
	Appeal	.59	1	.45	<.01
	Importance	.25	1	.62	<.01
	Attitude	.02	1	.90	<.01
	Link	.00	1	.95	<.01
	Positive-relevant thoughts	.02	1	.90	<.01
	Positive-irrelevant thoughts	.30	1	.58	<.01
	Negative-relevant thoughts	1.21	1	.27	.01
Negative-irrelevant thoughts	.01	1	.92	<.01	

 $p < .05$

Figure 3.3

Mean Scores for Perceptions of Goodwill Across the Anonymity X Stigma Conditions



Note. S = Stigmatized; NS = Non-stigmatized

Table 3.6

Summary of Three-Way Interaction for all Dependent Variables.

Independent Variable	Dependent variable	<i>F</i>	df	<i>p</i>	η^2
Anonymity X Volition X Stigma	Competence	1.33	1	.25	.01
	Trustworthiness	1.11	1	.29	<.01
	Goodwill	2.54	1	.11	<.01
	Believability	3.60	1	.06	.01
	Persuasiveness	4.10	1	.04*	.01
	Appeal	3.03	1	.08	.01
	Importance	2.53	1	.11	.01
	Attitude	4.90	1	.03*	.02
	Link	.38	1	.54	<.01
	Positive-relevant thoughts	.32	1	.57	<.01
	Positive-irrelevant thoughts	.24	1	.63	<.01
	Negative-relevant thoughts	2.18	1	.14	.01
	Negative-irrelevant thoughts	4.53	1	.03*	.02

* $p < .05$

= .04, $\eta^2 = .01$, attitudes about the health issue, $F(1, 238) = 4.90, p = .03, \eta^2 = .02$, and negative-irrelevant thoughts, $F(1, 230) = 4.53, p = .03, \eta^2 = .02$.

As illustrated in Figures 3.4 and 3.5 (and reported in Table 3.2), the outcomes in the non-stigmatized conditions for persuasiveness and attitudes are fairly consistent with the previous results of the anonymity X volition interactions. When the topic was non-stigmatized, participants rated the source who was required to be identified to be the most persuasive and this source also had the greatest impact on their attitude. The voluntarily anonymous source is second in both respects. Importantly, the observed mean for the measure of influence is greater in the anonymity-voluntary condition than in the identified-voluntary and anonymity-required conditions. A contrast analysis was conducted, controlling for perceived appropriateness, comparing the anonymity-voluntary condition (assigned a weight of +2) with the anonymity-required (assigned a weight of -1) and identified-voluntary (assigned a weight of -1) conditions. The result of the contrast for the measure of influence is significant, $F_{contrast}(1, 114) = 4.51, p < .05$. A contrast analysis was also conducted, controlling for appropriateness, to compare the anonymity-voluntary condition with the other two conditions for the measure of attitude toward the illness. The result of the contrast is not significant, $F_{contrast}(1, 114) = 1.88, p = .17$. However, the mean in the anonymity-voluntary condition is significantly larger than in the identified-voluntary condition, $F_{contrast}(1, 114) = 4.03, p < .05$.

When the topic is stigmatized, however, there are minimal differences between the anonymity and volition conditions. The means for both variables are not consistent with the anonymity effect. Accordingly, contrast analyses were not conducted for the measures of influence and attitudes. Given the nature of the research question, it is important to try to identify any differences between the four conditions. To this end,

Figure 3.4

Mean Scores for Perceptions of Persuasiveness Across the Anonymity X Volition X Stigma Conditions

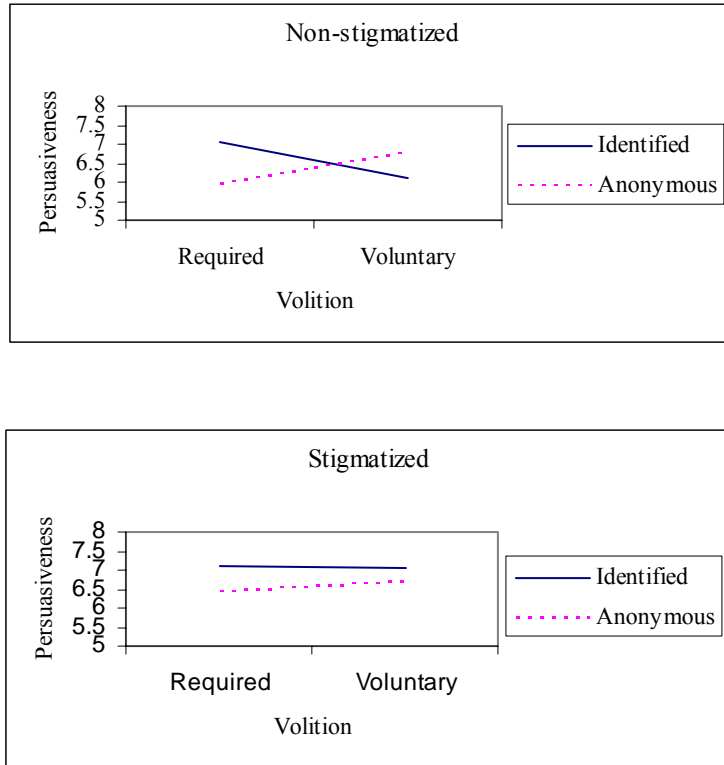
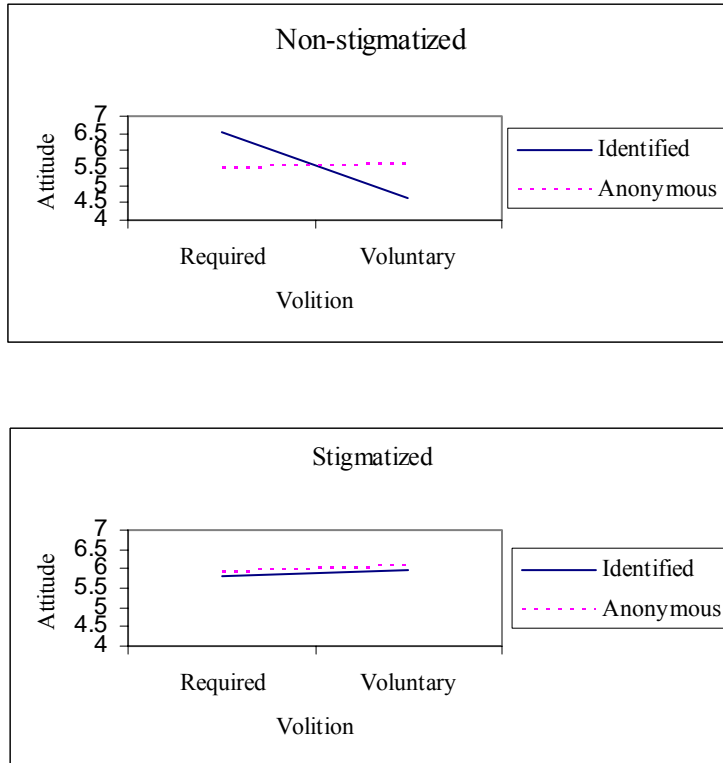


Figure 3.5

Mean Scores for Attitudes about the Health Issue Across the Anonymity X Volition X Stigma Conditions



pair-wise comparisons were conducted. There were no statistically significant differences when the topic was stigmatized for the measure of influence and attitudes ($p > .10$). As these findings illustrate, the anonymity and volition factors had little impact when the topic was stigmatized.

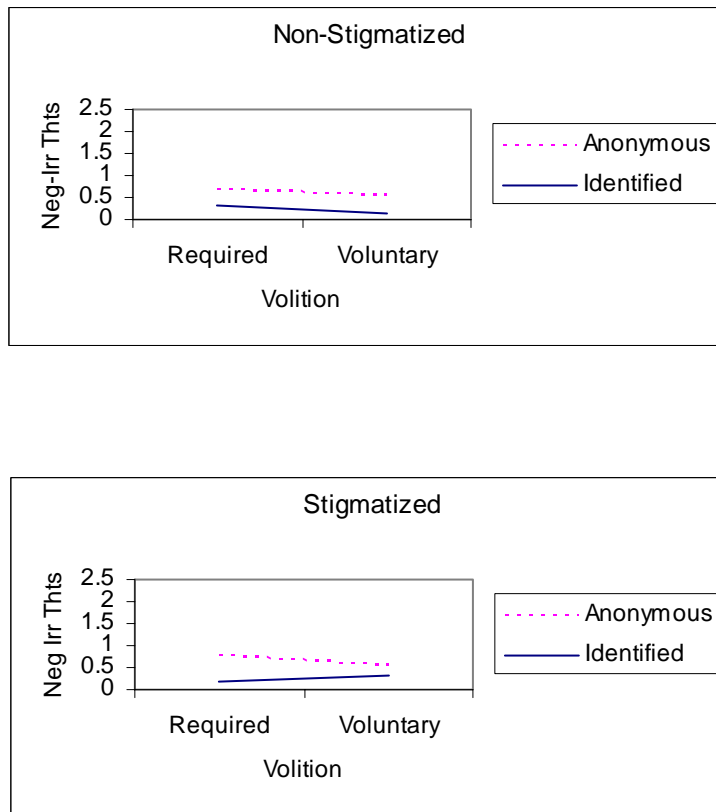
The results of three-way interaction for negative-irrelevant thoughts are largely inconsistent with the findings from the other significant two- and three-way interactions (see Figure 3.6 and Table 3.2). In the non-stigmatized condition, pair-wise comparisons of the four anonymity and volition conditions did not reveal any significant differences ($p > .09$). In the stigmatized condition, the observed means indicate that the most negative-irrelevant thoughts were listed in the anonymity-required condition. Pair-wise tests indicate that significantly fewer negative-irrelevant thoughts were reported in the anonymity-voluntary and identified-required conditions than in the anonymity-required condition ($p < .05$).

DISCUSSION

Despite contemporary research suggesting that the information available online is inadequate at best, a substantial number of Americans rely on the Web to gather medical information. In response, calls have been made for increased research focusing on the impact of specific message features of health information that may influence seeker perceptions and behaviors (see Cline & Haynes, 2001). This study examines one such feature and focuses on anonymous sources in health information on the Web. In the following sections, the results of the study will be discussed, implications of the findings will be examined, limitations identified and directions for future research offered.

Figure 3.6

Mean Scores for Negative-Irrelevant Thoughts Across the Anonymity X Volition X Stigma Conditions



Note. Neg Irr Thts = Negative irrelevant thoughts.

Anonymous Sources in Health Information on the Web

The information-seeking guidelines by established 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. Without any information about the source's identity, it is virtually impossible to verify the legitimacy of the source or the source's credentials. As such, information seekers should assume that anonymous sources are neither trustworthy nor credible. Further, anonymous sources should not influence an information seeker's perceptions, attitudes or behaviors.

Anonymity credibility and influence. Despite the plethora of warnings, the results of this study suggest that anonymous sources are perceived as credible and influential as identified sources. Even when controlling for perceptions of the appropriateness of anonymity in health information on the Web, there were no significant differences in the anonymous and identified conditions for any of the dependent variables. The anonymous source was rated as credible and influential as the source who was identified. Further, the means for all of the dependent variables in both conditions were above their respective midpoint, indicating that both the anonymous and identified sources were perceived to be at least fairly credible and influential.

One explanation for these findings, drawn from the similarity principle (Kelley & Michela, 1980; Shultz & Ravinsky, 1977) in attribution theory, is the anonymity effect. The word "anonymous" may function as a cue. Receivers may infer a reason that the source is anonymous—presumably because he or she fears the consequences of communicating the information—and use it interpreting the message. Given the fact that the sender is going through the trouble to conceal his or her identity, the information is important. As a result, receivers do not question the sender and the sender is perceived as

credible as an identified source and has the same impact on the receiver's attitude and behaviors.

Testing the anonymity effect. The utility of the anonymity effect as an explanation for perceptions of anonymous sources was also formally tested in this study. Participant attributions about source anonymity were manipulated through supplying them with the source's reason for being anonymous or identified. Participants were informed that the source voluntarily elected to be anonymous/identified or was required by the website to be anonymous/identified. The results of the two-way interactions between the anonymity and volition variables and the three-way interactions provide some support for the anonymity effect explanation.

The interaction between the anonymity and volition factors was statistically significant for perceptions of the believability of the information and importance of the health condition. The three-way interaction between anonymity, volition and the nature of the health topic was also significant for perceptions of the persuasiveness of message and the participant's attitude about the illness. Further, there is a great deal of consistency in the observed mean scores for the anonymity X volition interaction and the three-way interactions in the non-stigmatized condition. The anonymity-voluntary conditions was consistently rated as more influential than the anonymity-required or identified voluntary conditions. The contrast analyses indicated that the mean in the anonymity-voluntary condition was significantly greater than the other two conditions for perceived importance of the illness as well as for the persuasiveness of the message when the topic was not stigmatized. Additionally, the anonymity-voluntary condition had a significantly greater impact on participant attitudes than did the identified-voluntary condition. Together, these findings indicate that making the sender's reason for communicating anonymously explicit had a systematic impact on participant perceptions and attitudes.

Though the results are not overwhelming, the voluntarily anonymous source was consistently rated as more influential than the anonymity-required and identified-voluntary conditions. Further, there is some evidence that this act may have been perceived as an attempt to avoid some of the negative consequences of having the source's name revealed. The observed mean scores for the measure assessing perceptions of the source's reason for being anonymous (i.e., the degree to which the source was embarrassed) are consistent with the previous measures of influence (see Table 2) and the results of the interaction between the anonymity and volition factors is suggestive, $F(1, 247) = 3.57, p = .06, \eta^2 = .01$.

Accordingly, the results of this research offer some support for the anonymity effect. Through making anonymity a requirement of the website or a choice on the part of the source, it was possible to manipulate participant attributions. When the source's volition was removed and they were required to be anonymous (or they volunteered to include their name), the use of anonymity could no longer appear intentional or strategic. As such, participants no longer had any reason to make the assumption that the source had a particular motivation for concealing his or her identity—anonymity was compelled by the website (or the source chose to include their name). In these conditions, the source was consistently rated as less influential than when he or she chose to be anonymous. Although the number of differences is relatively small, their consistency provides some evidence for the anonymity effect. When confronted with an anonymous source, participants appeared to infer a reason that the source was communicating anonymously and used it interpreting the message. In the context of health information on the Web, concealing one's identity implies a fear of negative consequences and, in turn, appears to have made the information more influential.

There are two additional noteworthy findings in regards to the anonymity/volition interaction. First, the anonymity by volition interaction was not statistically significant for any of the three variables assessing source credibility. One explanation for this finding is that participants did not have any reason to doubt the source's trustworthiness, goodwill or competence. The source was not attempting to sell a product nor persuade readers to take a specific action, but simply telling his or her story. Accordingly, participants in all conditions may have given the source the benefit of the doubt. In a situation where the source's credibility was more critical—such as in selling a product or advocating for behavior change—participants may be more motivated to evaluate source credibility. A second explanation for this finding is that the anonymity effect may not extend to qualities of the source. The idea that the source intentionally concealed his or her identity in order to communicate the information may make the information influential—but it does not necessarily make the source credible.

The second noteworthy finding is that, of the four experimental conditions in the anonymity by volition interaction, the identified-required source was consistently rated as the most influential. One explanation for this finding is that participants may have felt that, because the source was required by the website to list their name, the website could verify his or her identity. Participants may have felt that the source was registered with the site or the website had previously authenticated the source's identity. As such, the website may have affirmed the legitimacy of the source's identity for participants. This finding is encouraging because it suggests that receivers look for clues to assess the legitimacy of health information sources on the Web.

Anonymity and stigma. Given the utility of anonymity reported in previous research for those communicating about stigmatized topics (Bowker & Tuffin, 2003; Cline & Hayes, 2001; McKenna & Bargh, 1998, 2000; Robinson et al., 1998), the joint

impact between anonymity and the nature of the health topic was examined. It was proposed that a stigmatized health topic should make the source's reason for communicating anonymously obvious to message receivers. The taboo nature of the topic should make the sender's risk salient. In turn, this information should make anonymous sources appear more credible and influential than if the topic was not stigmatized or the source was identified.

The significant two-way interaction for source goodwill and the three-way interactions for influence and attitudes about the health conditions provide mixed support for this idea. The differences in the anonymity and identified conditions when the topic was stigmatized are negligible. Participants felt that the anonymous and identified sources had similar levels of goodwill and persuasiveness and they had approximately the same impact on attitudes. When the topic was non-stigmatized, however, there are important differences between the anonymity and volition conditions. The implications of these differences are discussed in the previous section addressing the anonymity and volition interaction.

The findings in regards to the nature of the health topic are somewhat surprising. Source anonymity did not have an impact when the topic was stigmatized. One explanation for this finding is that participants may have expected a source addressing a taboo topic to be anonymous. When the source was identified participants may have felt that they had a good reason for sharing their name. Consistent with the similarity principle (Kelley & Michela, 1980; Shultz & Ravinsky, 1977), participants may have inferred that the source was very concerned or felt adamant enough about the taboo topic to actually have the name attached to the message. As a result, identified sources were rated as credible and influential as those who were anonymous. A second explanation is that the social stigma attached to the health topic may have overpowered any effects

stemming from anonymity. The fact that the topic was stigmatized was more important than the identity of the source. In summary, it appears that anonymity neither enhances nor mitigates a source's credibility and influence when the health topic is stigmatized.

Implications for Scholars and Practitioners

The World Wide Web offers information seekers a plethora of opportunities to learn about health topics. Yet, the quality of information and seeking behavior has been a major concern for scholars and practitioners. One feature of health information on the Web that may be particularly problematic is the use of anonymous sources. Despite a number of guidelines and warnings about accepting information from anonymous sources (Health Insight, 1999; Health on the Net Foundation, 2004; MedlinePlus, 2004; Winker et al., 2000), the findings from this study suggest that anonymous sources are as credible and influential as those that are identified. There were no differences in perceptions of source credibility nor the influence of a health message when the source was anonymous vs. identified. As such, the findings from this study provide evidence that anonymous sources should be a concern for both scholars and practitioners alike.

One issue particularly relevant to scholars is the notion of what it means to be anonymous in the context of health information on the Web. A baseline condition was included in this study with no name nor identity information about the author. The mean ratings for the dependent variables in the baseline condition are largely similar to both the

identified and anonymous conditions.¹³ Further, participants were asked to rate the degree to which they felt they could identify seven different classes of identity information about the source (Marx, 1999). There were only two differences between participants in the identified and anonymous conditions. Participants in the identified condition felt significantly more able identify the legal name of author as well as information about the author's location, though responses to all of the identity information items were well below the midpoint.

These findings suggest that the word “anonymous” is more critical than the actual identity of the source. For message receivers, there is not much difference in the amount we feel we know about “anonymous” sources and those who identify their name. Indeed, the issue of whether or not we feel we know someone may be less important than the fact that a source had adopted the marker or been labeled “anonymous.” Through claiming anonymity, the sources privilege their circumstance—their fear of negative consequences for making their identity known—over any other information about themselves. In the context of health information on the Web, the results of this study suggests that what is implied in the act of concealing one's identity is more important than information about who the source actually is.

¹³ An ANCOVA was conducted comparing the baseline condition with the equivalent anonymous and identified conditions (i.e., the anonymity and identified conditions when the topic was non-stigmatized). Controlling for perceptions of anonymity appropriateness, there was only one significant difference in the three groups. The source in the baseline condition was rated highest in goodwill ($M = 7.36$) followed by the anonymous ($M = 6.95$) and identified sources ($M = 6.45$). However, this difference must be considered speculative at best given the disparity in sample size between the conditions; there were approximately 60 individuals in the identified and anonymous conditions and only 31 in the baseline condition.

The results of this study also suggest some recommendations for information seekers and those developing guidelines for evaluating medical information on the Web. First, those going online to find information about a health topic should be made aware of the potential impact of anonymous sources. Both the anonymous and identified sources were rated above the midpoint in terms of their credibility and influence. Would-be information seekers should be encouraged to be critical of those sources who do not list their name and credentials. Second, it is essential to explain *why* people might be persuaded by an anonymous source. Web users should be informed that people may feel there is a good reason the source is anonymous. This information, in turn, makes the information from the anonymous source appear acceptable. Through knowing how this lapse in critical information seeking occurs, it may be possible for it to be prevented. Together, these two recommendations should help promote more effective information seeking.

Limitations

There are two key limitations of this study that warrant consideration. First, artifacts of the experimental method may have undermined some of the study's ecological validity. Although the study focuses on the role of anonymity in seeking health information on the Web, 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. Participants were not actively searching out information about herpes or bacterial meningitis. Additionally, the study does not examine any of the behavioral consequences associated with reading the health information. Beyond examining whether or not participants clicked the link embedded in the health message for more information about the author, the study does not examine participant health behaviors resulting from being exposed to the message.

Although these issues do undermine the ecological validity of the study, they are a necessary artifact of the experimental method used to test the hypotheses. In order to test the anonymity effect explanation for reactions to anonymous source, it was essential to manipulate anonymity and the source's reason for being anonymous. This was only possible through constructing a health message for the purpose of this study. Further, steps were taken to make the message and setting as realistic as possible. The messages read by participants are similar to those one may find on a health website and were pre-tested to ensure they were believable. Additionally, though conducting the study online, participants were able to access and complete the study in the same environment in which they would engage in information seeking behavior (presumably in their home at their own computer).

A second limitation of the study involves the thought listing task used as a cognitive measure of credibility and influence. Participants were asked to list those thoughts they had in response to reading the health message. However, a number of the participants simply listed fragments of thoughts like "informed," "concern" or "fear." This created a substantial problems for coders to classify the thoughts as positive/negative and relevant/irrelevant. A majority of the thoughts were not clearly positive or negative and were thus coded as neutral. This also may explain the significant interaction regarding negative-irrelevant thoughts that is inconsistent with all of the other findings in the study.

Directions for Future Research

Drawing from the findings for this study, there are three key directions for future research. First, scope conditions for the impact of anonymous sources in health information on the Web should be examined. It is necessary to first assess the extent to which the quality of actual health information on the Web from anonymous sources

differs from identified sources. It would be beneficial to scholars and information seekers to have a better understanding of the extent to which anonymity is a problem. Additionally, it is important to examine the extent to which anonymous sources are perceived as credible and influential. One issue that is particularly pressing is to determine if anonymous sources are perceived as credible and influential as a health expert, such as a medical doctor or a health care professional. Despite research on 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 credible and influential as both. It would also be worthwhile to know whether or not it is possible to capitalize on anonymity with credibility. In those instances where anonymity is essential, is it possible to offer the author's credentials to ensure that they are perceived as credible? 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.

Other contextual features that may influence perceptions of source anonymity include the nature of the website on which the information is posted. Metzger, Flanagin, Eyal, Lemus, and McCann (2003) note that a number of features can impact perceptions of website credibility—and these features may extend to perceptions of anonymous sources. The format of the site (e.g., series of articles or an interactive discussion board), site ownership (e.g., government-sponsored or a pharmaceutical company's website) or a third-party endorsement (e.g., Health on the Net Foundation accreditation) could impact perceptions of the anonymous source. Additionally, features of the health message itself could also affect receiver perceptions. The structure of the health information (e.g.,

narrative or statistical evidence), qualities of language (e.g., language intensity) and use of different types of appeals (e.g., emotion-based or rational) all seem to be useful avenues to explore scope conditions. Given the practical implications for health information seekers, future research should examine potential boundary conditions in which anonymous sources are no longer perceived as credible and persuasive.

A second direction for future research is to examine factors that may exacerbate or mitigate the anonymity effect. That is, research should be conducted on those factors that impact the inferences, and attendant perceptions and behavior, made about anonymous sources. One factor that seems particularly important is perceptions of the appropriateness for anonymity in health information on the Web. Anonymity appropriateness may have a systematic impact on perceptions of information from anonymous sources. As indicated by zero-order correlations in Table 1, perceived anonymity appropriateness was positively related to most of the dependent variables in this study. Further, a post-hoc comparison was conducted examining those in the anonymity condition who are one standard deviation above ($n= 27$) and below ($n= 14$) the mean for perceived appropriateness and it revealed a number of differences. In the anonymity condition, those who felt anonymity was highly appropriate rated the source as having significantly more competence, trustworthiness and goodwill than those who felt anonymity was not appropriate. Further, the high appropriateness group found the information for the anonymous source significantly more believable, persuasive, and important and it had a larger impact on their attitude than among those who felt anonymity is inappropriate.

Though tentative, these post-hoc findings illustrate the potential impact the perceived appropriateness of anonymity may have on responses to anonymous sources. The perceived appropriateness of anonymity may intensify or mitigate the anonymity

effect. Those who feel anonymity is inappropriate may feel that the source is using anonymity because he or she is duplicitous and, as a result, perceived the source as lacking credibility and influence. In contrast, those who feel anonymity is highly appropriate may perceive the source to have a good reason for being anonymous and, consequently, feel that he or she is highly credible and influential. Accordingly, future research should address this issue as one potential factor that may influence the anonymity effect.

A final direction for future research is to examine the broader attitudinal and behavioral consequences of being exposed to information from anonymous sources. Future research is necessary to explain the systematic impact the anonymity effect has on receiver cognitions and commensurate attitudes and behaviors. Building on the results of this study, it would be useful to model the cognitive, attitudinal and behavioral outcomes of being exposed to an anonymous source. Additionally, it would be worthwhile to examine the influence of anonymous sources over time on receiver's message comprehension and recall. As with the sleeper effect (Hovland, Lumsdaine, & Sheffield, 1949; Pratkanis, Greenwald, Leippe, & Baumgardner, 1988), the fact that the source was anonymous may be soon forgotten by receivers and the potentially problematic information may have detrimental long-term consequences. It also seems possible that source anonymity may stand out as different or unique and be recalled over time. Further, it would be valuable to determine if perceptions of anonymous sources are systematically related to attitudes toward traditional health care or any specific health behaviors. It seems possible, for example, that those individuals more willing to accept health information from an anonymous source may also be more likely to have negative attitudes about traditional health care procedures and providers. Through exploring these

issues it will be possible to gain a better understanding of the implications of source anonymity in health information on the Web.

Conclusion

The number of Americans going online to seek health information coupled with growing concerns by scholars and medical professional about the quality of medical information available creates a number of challenges for researchers. One particularly relevant to communication scholars is to explore the impact of specific features of messages that may impact perceptions and subsequent health behaviors. As such, this study has focused on the impact of anonymous sources. Through continued research on other message features associated with health information on the web, it will be possible to develop a better understand this important social problem.

Chapter Summary

Chapter 3 is comprised of a single study examining anonymity in the context of health information available on the World Wide Web. The results of the study suggest that anonymous sources are as credible and influential as those that are identified. Further, there is some evidence to support the anonymity effect as an explanation for the influence of source anonymity on receiver perceptions. The implications of these findings along with directions for future research are also addressed in the chapter. Chapter 4 contains a study of anonymity in the context of decision making in computer-mediated groups.

Chapter 4:

Anonymity in Computer-Mediated Groups

In this chapter, the impact of anonymous sources in computer-mediated groups is examined. Research on the role of anonymity in computer-mediated group is first reviewed to develop two competing hypotheses about perceptions of anonymous sources during decision making. Next, the method used to test the hypotheses is described and the results are reported. The findings from the study and their implications for scholars and practitioners are then discussed. The chapter concludes with a brief summary and preview of Chapter 5.

PERCEPTIONS OF ANONYMOUS COMMUNICATION IN COMPUTER-MEDIATED GROUPS: A TEST OF TWO COMPETING HYPOTHESES

Contemporary organizational members, especially managers, spend a considerable amount of their time in meetings. Estimates of the number of meetings held in the United States alone during a typical work day range from 11 million (Hanke, 1998) to upwards of 25 million meetings (Sauer, 2004). Despite the plethora of meetings held each day, the time spent in meetings is often perceived to be unproductive (Clawson & Bostrom, 1996; Romano & Nunamaker, 2001). Romano and Nunamaker report that getting off the subject, lacking a goal, taking too much time, poor preparation, disorganization and ineffective leadership are some of the most common problems faced by organizational members. To aid meeting efficiency and effectiveness, electronic meeting systems were developed in the early 1980s. Electronic meeting systems are a broad class of computer-based technologies that support meeting functions such as decision making, idea generation and problems solving (Scott, 1999a). Briggs, Nunamaker, and Sprague (1998) note that by the end of the 1990s, these systems had

been used by millions of organizational members and were a “key resource” in over 1,500 organizations (p. 8).

Anonymity plays a critical role in most contemporary electronic meeting systems. Pinsonneault and Heppel (1998) refer to anonymity as a “fundamental” concept (p. 89), Postmes and Lea (2000) call it a “key tool” (p. 1252) and McLeod (1997) describes anonymity as a “cardinal benefit” (p. 223) of these types of meeting systems. Anonymity is proposed to mitigate status differences, liberate team members from a fear of retribution and make it easier for members to resist group pressure (Hayne & Rice, 1997; McLeod; Nunamaker, Briggs, Mittleman, Vogel, & Balthazard, 1996; Pinsonneault & Heppel; Postmes & Lea). These effects are critical for an egalitarian communication environment that promotes effective discussions and decision making.

Implicit in the previous claims about anonymity is a focus on message senders. That is, the benefits of anonymity primarily extend to those sending a message or performing a behavior. Anonymity makes it possible for one to comfortably express dissent for another member’s proposal or to feel less pressure to conform to the recommendations of an overbearing member. Despite the benefits for message senders, however, the impact of anonymity on message receivers may undermine effective discussion and decision making processes. Although message senders may feel more comfortable, receivers may perceive an anonymous source as less competent or credible than if he or she were identified. Receivers may feel, because senders are anonymous, they are not willing to be held accountable for their contributions (Dennis, 1996; El-Shinnawy & Vinze, 1997).

To date, however, little research has examined receiver perceptions of anonymity in computer-mediated groups. Although there is evidence that group members make attributions about the nature of anonymous message senders in computer-mediated

groups (Hayne et al., 2003; Hayne & Rice, 1997), little is known about the impact of anonymity on a message receiver's perceptions of arguments and information.¹⁴ Consequently, a number of important questions remain to be answered, including: How do receivers perceive anonymous message senders? What factors influence perceptions of anonymous message senders and their arguments? How do the previous issues relate to decision-making processes and outcomes?

The purpose of this study is to examine perceptions of anonymous sources in computer-mediated decision-making groups in an effort to answer the previous questions. Drawn from adaptive structuration theory (AST; DeSanctis & Poole, 1994; Poole & DeSanctis, 1990), two competing hypotheses are tested to explain the impact of anonymity on perceptions of sources and messages. The *discounting hypothesis* predicts that anonymity will undermine perceptions of group member contributions, while the *benevolence hypothesis* predicts that anonymity will have a slightly positive impact on receiver perceptions. In the following sections, the role of anonymity in computer-mediated group communication will be examined and the two competing hypotheses will be described to develop study hypotheses and research questions.

¹⁴ Hayne and his colleagues' (Hayne et al., 2003; Hayne & Rice, 1997) work demonstrate that members in anonymous computer-mediated groups do indeed make attributions about the source of comments. Although most attributions made by group members across their two studies were incorrect, the evaluative tone of comments and the amount of prior communication among group members were positively related to attribution accuracy. At a broader level, the results of their research indicate that individuals are concerned about the source of anonymous comments in computer-mediated groups and suggest that attributions about anonymous sources may influence perceptions of information exchanged.

Anonymity in Computer-Mediated Group Communication

Before explaining the benevolence and discounting hypotheses, it is first necessary to provide some background on anonymity and computer-mediated groups. In the following paragraphs, adaptive structuration theory will be briefly reviewed along with research on anonymity in group communication—focusing on studies that have examined the receiver’s perspective. Then, issues unique to anonymity in the context of computer-mediated groups will be addressed.

Contemporary research on anonymity. AST was developed to explain how groups use and are impacted by new technologies (DeSanctis & Poole, 1994; Poole & DeSanctis, 1990).¹⁵ Within this framework, anonymity is considered a structural feature used to aid group collaboration and decision making. Anonymity is a resource that helps facilitate what Poole and DeSanctis refer to as a “spirit” or the intended purpose of electronic meeting systems. Anonymity is proposed to create opportunities for all members to participate in discussions (Scott et al., 1999).

Most research to date on this topic examines the effects of anonymity from the message sender’s perspective, focusing on anonymity’s impact on member participation, influence or decision outcomes. A meta-analysis of 12 studies by Postmes and Lea (2000) suggests that anonymity leads to more communication (i.e., a greater number of sentences written or spoken) and more critical remarks. Anonymity alone, however, does not lead to better decision quality, greater satisfaction, greater effectiveness or a larger number of original solutions. In a more recent meta-analysis, Baltes, Dickson, Sherman, Bauer and Laganke (2002) reported that anonymity was a significant moderator in the

¹⁵ Poole and DeSanctis (1990) note that AST is a useful tool to explain the appropriation of new technologies at different levels of analysis. Most relevant to this study, AST can be used to explain appropriation “as it occurs in the give-and-take of micro-level interaction” (p. 184).

body of research assessing member satisfaction, effectiveness and task completion time in computer-mediated groups. Anonymous groups were more effective, but less satisfied and took longer to make decisions than those groups that were identified.

Although most research on anonymity in computer-mediated group communication focuses on the influence of anonymity on sender behavior and group outcomes, there are noteworthy exceptions. A few scholars have examined the impact of anonymity on receiver perceptions and reached similar conclusions (Hayne et al., 2003; Hayne & Rice, 1997; Scott, Sage, Timmerman, & Quinn, 1997). Drawing from attribution theory (Heider, 1958), the premise of Hayne and his colleagues' work is that (a) people may make attributions about the source of statements in anonymous computer-mediated meetings, (b) their attributions about the sender's identity may be inaccurate and (c) these misattributions may have an impact on subsequent perceptions and judgments.

Hayne and his colleagues devised two experiments to examine factors influencing the accuracy of attribution in anonymous computer-mediated groups. Across both studies, their results indicate that participants did indeed make attributions about the identity of anonymous members' comments. Participants in Hayne and Rice's (1997) study made attributions for as few as 9% and as many as 70% percent of the contributions, while those in Hayne et al.'s (2003) study made attributions for between 9% and 100% of comments. Participants in Hayne and Rice's study, however, were rarely accurate (only 12% of the time). Members of Hayne et al.'s study were more successful, with just over half of the participants making correct attributions. In terms of factors contributing to attribution accuracy, the duration of group membership was the only significant predictor in Hayne and Rice's study. The amount of prior communication among group members

and the evaluative tone of comments were predictors of accuracy in Hayne et al.'s experiment.

Scott et al. (1997) conducted a longitudinal study of perceptions of anonymity and receiver attributions about anonymous sources and report findings consistent with Hayne and his colleagues' work (Hayne & Rice, 1997; Hayne et al., 2003). Participants in their study perceived other group members to be significantly less anonymous over the three measurement periods. Further, although participants felt significantly more confident in their attributions about other member's identity across the three measurement periods, there was no difference in their actual accuracy. Together, the findings from Hayne and his colleagues and Scott et al.'s work demonstrate that members of anonymous computer-mediated groups are concerned with the source of contributions during meetings.

Key issues associated with anonymity in computer-mediated groups. To better understand contemporary research on anonymity, it is important to consider the circumstances in which it is used. In the context of computer-mediated decision-making groups, team members are typically (a) engaging in extended, goal-directed interactions where each person is both sender and receiver of messages, (b) must depend on one another to succeed and (c) have some shared history consisting, in most cases, of face-to-face interaction with a relatively small number of other known individuals. This type of situation is considerably different from most other instances in which an anonymous communicator may be encountered, such as seeking health information on the World Wide Web. The group's interdependence and history together create a unique set of expectations and will likely have a distinct impact on perceptions of anonymous communicators and their messages.

Beyond the unique characteristics of small groups, there are also some features of anonymity that, in this context, warrant consideration. In many electronic meeting

systems, anonymity is the “default” situation imposed by the technology. Even in systems that provide options as to whether comments are made anonymously, the standard is typically anonymous interaction. Although there are things group members can do to make themselves more or less anonymous, such as signing their name after a contribution, all members initially face the same situation. Hayne and Rice (1997) refer to this type of anonymity as technical anonymity because “any meaningful identifying information... is removed from materials exchanged” (p. 432). In computer-mediated groups, technical anonymity is imposed by stripping member names from their comments (or using a pseudonym for each member). Members are “technically” anonymous as the typical thing (i.e., one’s name) we use to identify ourselves and others is ostensibly removed from the interaction.

As alluded to in the previous paragraph, there is a considerable distinction between technical anonymity and what Hayne and Rice (1997) refer to as social or perceived anonymity. Social anonymity “occurs when users actually perceive others... to be unidentifiable” (p. 432). Social anonymity is a member’s *perception* that he or she, or another group member, is anonymous. It is also important to note that social anonymity is a matter of degree. A member’s level of anonymity can range between fully identified and fully anonymous. The implications of the unique characteristics of computer-mediated small groups and these two types of anonymity are further considered in developing study hypotheses.

A Test of Two Hypotheses

Hayne and his colleagues’ work (Hayne et al., 2003; Hayne & Rice, 1997) makes it evident that those groups with technical anonymity make attributions about the source(s) of comments. The nature and ultimate impact of these attributions on perceptions of sources and messages, however, is unclear. To examine the potential

impact of anonymity on receiver perceptions and decision making outcomes, AST is used as a guiding framework (DeSanctis & Poole, 1994; Poole & DeSanctis, 1990). AST proposes two types of ways in which structures like anonymity may be appropriated in teams (Scott et al., 1998). Consistent with the spirit or intended function of electronic meeting systems, anonymity may be faithfully appropriated. Conversely, groups may make ironic appropriations of the technology and violate the intended use/spirit of the tool. In the following sections, two competing hypotheses—drawn from the notion of faithful and ironic appropriations—are proposed to explain perceptions of sources in computer-mediated groups with technical anonymity. Each hypothesis presents a distinct orientation toward anonymous communicators and messages in computer-mediated groups.

The discounting hypothesis. Although there are a plethora of benefits for message senders in anonymous computer-mediated groups, they may be offset by the negative implications for message receivers. Technical anonymity may, in this context, undermine the spirit of the technology and lead to ironic uses and outcomes. According to the discounting hypothesis, receivers may discount information contributed by sources who have technical anonymity.

As noted previously, computer-mediated small groups are distinct in that they must depend on one another to succeed and most groups have a history of face-to-face interaction. When engaging in anonymous computer-mediated decision making, these two factors may influence member perceptions and decision outcomes. Because the group's decision is dependent upon all other members and the team typically meets face-to-face, team members may desire and expect that others are accountable for their contributions. For this to occur, members must be able to identify the source of contributions made during meetings. The findings from Hayne and his colleagues' studies

(Hayne et al., 2003; Hayne & Rice, 1997) provide some evidence in support of this notion. A substantial number of participants in their studies made attributions about the identity of other members during anonymous discussions. These findings indicate that group members are indeed concerned about sources of information in computer-mediated groups that have technical anonymity.

When group members are anonymous, however, it may not be possible to specify the source of a particular contribution. This may undermine the effectiveness of the source and his or her arguments. In offering explanation for faulty information processing and decision making in computer-mediated groups, Dennis and his associate (Dennis, 1996; Dennis, Hilmer, & Taylor, 1997; Dennis & Terry, 1996) make an argument consistent with this proposition. Anonymity, according to Dennis, may make the information communicated during discussions “suspect because it [is] difficult to verify the source’s credibility” (p. 450). El-Shinnawy and Vinze (1997) make a similar argument about perceptions of anonymous communication in attempting to explain decision shifts in computer-mediated groups. They suggest that technical anonymity results in the perception that individuals are not accountable for their contributions and thus may undermine the validity of member arguments.

To date, a fair amount of research exists that is consistent with the discounting hypothesis. In two studies, Dennis and his colleagues (Dennis, 1996; Dennis et al., 1997) reported that teams using an anonymous electronic meeting system rated information contributed during the group’s discussion as significantly less credible than did those teams meeting face-to-face. Credibility was defined in these studies as a message feature, as opposed to a characteristic of a communicator, and focused on perceptions of the accuracy and believability of the information. Additionally, there is evidence that anonymous groups are less satisfied or feel that their team’s decisions are less effective

than teams meeting face-to-face (Reinig & Mejias, 2003; Valacich, Dennis & Nunamaker, 1992).¹⁶ Together, these findings provide support for the discounting hypotheses and suggest that technical anonymity may undermine effective group discussion and decision-making processes.

Drawing from the previous arguments, the discounting hypothesis predicts that technical anonymity will have a negative impact on receiver perceptions of messages and sources in computer-mediated groups. Given the history of face-to-face interaction and interdependent nature of teams, members may desire to know the source of contributions. Knowing the source fosters a sense of accountability and makes it possible for receivers to evaluate the contributor's credibility. As such, technical anonymity may effectively undermine the spirit of the technology and lead to an ironic appropriation of the tool by message receivers. Those in anonymous groups may judge others to be less credible and find arguments less influential than those participating in fully-identified teams. Further, members of computer-mediated groups with technical anonymity may report less

¹⁶Research on anonymity in upward performance feedback, where anonymity is imposed as a part of the feedback procedure, also suggests that message receivers view anonymity far less positively than message senders (Antonioni, 1994, 1996). Antonioni (1994) conducted a field experiment in which he randomly assigned members of an insurance company to complete an anonymous or identified performance evaluation of their immediate supervisor. Participants in the identified condition signed their name at the bottom of the evaluation, while those in the anonymity condition left their name off the evaluation. As expected, subordinates in the anonymity condition felt more positive about the process than those in the identified condition. Managers, on the other hand, felt more negatively about receiving anonymous feedback than when the sender was identified. One explanation for the managers' responses, relevant to computer-mediated groups, is that managers were concerned that anonymous sources may act less responsibly—holding grudges or attempting to advance their personal agenda. Managers, according to Antonioni, “may assume that subordinates will be more objective if they know the manager can identify individual subordinate appraisals” (p. 350).

satisfaction and feel that the team's discussion is less effective than those in identified teams.

H1: Individuals in computer-mediated teams with technical anonymity will find their group members (a) less credible and (b) less influential than those in identified computer-mediated teams.

H2: Individuals in computer-mediated teams with technical anonymity will (a) be less satisfied and (b) feel that their group is less effective than those in identified computer-mediated teams.

The benevolence hypothesis. The benevolence hypothesis stems from arguments about the utility of anonymity for group discussions and decisions articulated in what is commonly called the equalization hypothesis (DeSanctis & Gallupe, 1987; Dubrovsky, Kiesler, & Sethna, 1991; Hollingshead, 1996; Siegel, Dubrovsky, Kiesler, & McGuire, 1986). Technical anonymity, from this perspective, is faithfully appropriated as a useful tool for fostering effective discussions and decision-making. The benevolence hypothesis predicts that technical anonymity will lead message receivers to focus on the merits of ideas—as opposed to the person contributing the idea. Consequently, technical anonymity will have a slightly positive impact on member perceptions.

According to the equalization hypothesis, electronic meeting systems are proposed to reduce inequalities between group members and create greater opportunities for participation and influence (DeSanctis & Gallupe, 1987; Dubrovsky et al., 1991; Hollingshead, 1996; Rains, 2005; Siegel et al., 1986). These effects, in turn, lead to a more egalitarian communication environment where group members are free to express their ideas and opinions. Technical anonymity is proposed to play an integral role in this process. Anonymity liberates team members from a fear of retribution or evaluation and makes it easier for members to resist group pressure (Connolly, Jessup, & Valacich,

1990; Hayne & Rice, 1997; McLeod, 1997; Nunamaker et al., 1996; Postmes & Lea, 2000; Scott, 1999b).

The benevolence hypothesis suggests that group members will accept the spirit of technical anonymity as a means to foster more effective decision-making processes and appropriate the technology faithfully. Technical anonymity mitigates the impact of the source of an idea or argument (Sia et al., 2002); thus, things that may undermine perceptions of the sender, such as his or her rank in the group or the quality of previous interactions, should not have a negative affect on receivers. Instead, the information presented by an anonymous member should become more salient as group members focus on the content of the contribution. “Ideas,” as Kelsey (2000) explains, “should become the focus of discussion rather than the people proposing the ideas” (p. 65). Group members should accept the intended spirit of the technology and give those who are anonymous the benefit of the doubt in regards to their motivations and intentions. The impact of technical anonymity should also extend to perceptions of the decision-making process. Through removing concerns about the identity of the message sender and allowing a greater focus on ideas and arguments, group members should find the discussion to be more effective and be more satisfied with the process and final decision than if the group was identified.

There is some evidence relevant to message receivers consistent with the benevolence hypothesis. Teams using anonymous electronic meeting systems have reported significantly less dominance by other members (Lim, Raman & Wei 1994; Reinig & Mejias, 2003), reduced normative influence (Dennis et al., 1998; Huang & Wei, 2000) and fewer worries about others’ feelings about them (Massey & Clapper, 1995) than those groups meeting face-to-face. Further, a number of scholars have reported equivalent or greater amounts of satisfaction with decision or perceptions of decision

quality in anonymous teams using an electronic meeting system (Connolly et al., 1990; Dennis et al., 1997; George, Easton, Nunamaker & Northcraft, 1990; Mejias et al., 1996; Tan, Raman & Wei, 1994; Valacich & Schwenk 1995). Although these studies do not specifically test the impact of anonymity, they do provide some evidence in support of the benevolence hypothesis. Individuals in teams using an anonymous meeting system were less impacted by their team members than those meeting face-to-face. As a whole, these findings suggest that technical anonymity may allow individual members to focus on the content of discussions, as opposed to the individual contributing the idea.

Drawing from the equalization hypothesis, the benevolence hypothesis predicts that group members will engage in faithful appropriation of technical anonymity. Technical anonymity will have a positive impact on receiver perceptions of messages and sources. Members of anonymous computer-mediated groups will focus on the merit of the ideas instead of the source. Group members will give the source the benefit of the doubt. Through focusing on the sender's ideas, those in technically anonymous groups may judge others to be more credible and arguments to be more influential than those participating in fully-identified teams. In terms of group outcomes, members in groups with technical anonymity may report a greater level of satisfaction and report that the team's discussion was more effective than groups without anonymity.

H3: Individuals in computer-mediated teams with technical anonymity will find their group members more (a) credible and (b) influential than those in identified computer-mediated teams.

H4: Individuals in computer-mediated teams with technical anonymity will (a) be more satisfied and (b) feel that their group more effective than those in identified computer-mediated teams.

In summary, drawing from AST, the discounting and benevolence hypotheses offer competing explanations for perceptions of communicators and messages in computer-mediated groups with technical anonymity. The discounting hypothesis predicts that technical anonymity will undermine perceptions of communicators and arguments, while the benevolence hypothesis predicts that technical anonymity will have positive impact on perceptions of the communicator and his or her message. In the following section, three variables that may impact the influence of technical anonymity in computer-mediated groups are examined.

Factors Influencing Anonymity Perceptions

DeSanctis and Poole (1994) explain that a number of factors may potentially impact the appropriation of structures such as anonymity in computer-mediated groups ranging from the member's style of interacting to the degree of knowledge and experience with the structure. Existing literature on anonymity in electronic meetings systems and decision making in small groups suggests three factors may affect the appropriation of technical anonymity by message receivers. Perceptions of the degree to which a source is anonymous, the quality of argument advocated by group members and whether technical anonymity is pre-determined by the technology or voluntarily selected by the message sender all may shape receiver perceptions. These three possibilities are addressed in the following paragraphs to develop study research questions.

Perceived anonymity. One factor that may affect the influence of anonymity is the degree to which message receivers perceive the sender to be anonymous. As noted previously, there is a considerable distinction between technical and perceived (or social) anonymity for those working in teams (Hayne & Rice, 1997). Although an electronic meeting system may strip one's name from one's contributions (offering technical anonymity), members may not perceive one another to be completely anonymous.

“People,” as Hayne and Rice explain, “are seldom unidentified in every way” (p. 431). In two studies, Scott and his colleagues (Scott et al., 1997; Scott et al., 1999) provide evidence for this claim. They reported that increased familiarity among group members and carry-over from face-to-face meetings reduced perceptions of member anonymity in computer-mediated groups.

In the context of anonymous computer-mediated groups, perceptions of source anonymity may have a positive or negative impact on receiver responses. Receivers who do not find a source to be anonymous may have a positive response. Receivers may desire to know the identity of the source and, because they feel they can, may be confident in evaluating his or her contribution. Receivers may feel more positively because they can determine the source of the message. On the other hand, a lack of perceived anonymity may also have negative implications for receiver responses. Receivers may feel that the technically anonymous group member is engaging in objectionable behavior—he or she is not willing to take responsibility for his or her contribution. Receivers may also, to some degree, blame the source for the lack of anonymity afforded by the technology. It may appear that the sender is incompetent and cannot effectively make him or her self anonymous. The effect of perceived anonymity on an individual member is likely to be also dependent upon the rest of team’s perceptions and may extend to perceptions of the group’s effectiveness and satisfaction with the team’s process and decision. The following research questions are proposed to examine this issue:

RQ1: In groups with technical anonymity, how does perceived anonymity impact (a) communicator credibility and (b) influence?

RQ2: In groups with technical anonymity, how does perceived anonymity impact (a) group effectiveness and (b) satisfaction?

Argument quality. The discounting and benevolence hypotheses are concerned with a group member's orientation toward technical anonymity and commensurate perceptions of anonymous communicators. The focus of both hypotheses is largely on responses to technical anonymity. Yet, it seems likely that the messages advanced during discussions may also influence member perceptions and group outcomes. To date, the quality of arguments made by group members has been demonstrated to play an important role in decision-making groups (Garlick & Mongeau, 1992, 1993; Gordijn, De Vries, & De Dreu, 2009; Kerr, 2002; Limon & Boster, 2001).

In the context of anonymous computer-mediated groups, argument quality may have a particularly strong impact. With the reduced social cues in computer-mediated groups, members are likely to pay greater attention to the information contributed during discussion as a basis for their perceptions and decisions. The reduction in vocal and visual cues may make the content of contributions especially salient. Consequently, the quality of the arguments presented during discussions should influence member perceptions and, ultimately, discussion outcomes.

The effect of argument quality, however, is unclear. On one hand, technical anonymity may undermine perceptions of arguments. Without being able to identify the source, receivers may question the credibility of the message sender. Although the argument may contain specific facts and credible evidence, receivers may not feel confident about the message because they are unable to determine the source. On the other hand, the inability to identify the source may improve perceptions of arguments. With little else to go by, members must rely heavily on one's arguments. Group members may use a quality argument as evidence that the group member is informed and competent. This information, in turn, may fuel positive perceptions of the argument and the presumed source. The implications of argument quality may also extend to

perceptions of group outcomes. Group members may feel more or less satisfied with the group's decision-making process and find the outcome more or less effective depending on the quality of arguments communicated. To explore the impact of argument quality, the following research questions are proposed:

RQ3: How does argument strength impact the relationship between technical anonymity and perceptions of (a) communicator credibility and (b) influence?

RQ4: How does argument strength impact the relationship between technical anonymity and perceptions of (a) group effectiveness and (b) satisfaction?

Voluntary vs. required technical anonymity. A final factor important to consider is whether anonymity is imposed as a default for all participants or voluntarily selected during the team's discussion. Technical anonymity, as noted previously, is imposed by a technology and typically consists of removing all names from contributions during computer-mediated discussions. Although anonymity is typically pre-determined by the researcher or meeting organizer and required for all participants by the electronic meeting system, it is possible that anonymity might be an option for some participants. That is, the default for meetings could be for participants to be identified and all members could have the option to contribute a comment or suggestion anonymously.

Situations in which anonymity is voluntary versus required may have different impacts on receiver perceptions. In instances where anonymity is voluntary, a member's decision to communicate anonymously may appear strategic. Because the default condition is for all participants to be identified, a group member's use of anonymity would likely be perceived as a deliberate attempt to hide his or her identity. Indeed, contemporary models of anonymous communication imply that senders consciously choose to conceal their identity (Anonymous, 1998). The implications of this deliberate behavior play an important part in receiver perceptions and reactions. In situations where

anonymity is required, on the other hand, it is likely to be viewed simply as an artifact of the technology; there is no “decision” to communicate anonymously as all participants are required a priori to be anonymous.

The effect of voluntary anonymity, however, is uncertain. The use of voluntary anonymity in computer-mediated groups may be perceived positively or negatively. Because of the team’s history of meeting face-to-face and the dependence on one another to be successful, the act of voluntarily hiding one’s identity in this context may appear negative. A communicator who elects to hide his or her identity during a group meeting may be perceived to be afraid or unwilling to be accountable for his or her ideas. On the other hand, through electing to contribute an idea anonymously, a group member may be perceived as acting on behalf of the group. That is, it may be perceived that the member is hiding his or her identity because he or she does not want to take credit for the idea. In this instance, the idea is intended to be a product of the group—as opposed to a specific group member. The implications of voluntary anonymity may also influence perceptions of group outcomes such as satisfaction and the effectiveness of the team’s final solution. Given the distinct motivations that may be attributed to members in each of these situations, it is difficult to make specific predictions about the impact of voluntary anonymity. Accordingly, the following research questions are proposed:

RQ5: In comparison with required anonymity, how does the voluntary use of anonymity impact perceptions of (a) communicator credibility and (b) influence?

RQ6: In comparison with required anonymity, how does the voluntary use of anonymity impact perceptions of (a) group effectiveness and (b) satisfaction?

METHOD

Participants

Participants for Study 2 consisted of 117 members of intact project teams from multiple sections of an undergraduate course in small group communication. In the course, students are placed in semester-long teams and complete a series of assignments. Twenty-five teams, each comprised of 4-7 students, completed the experiment. At the time of the experiment, teams had been working together for between 4 and 14 weeks. All teams were previously trained to use the electronic meeting system and had completed a previous meeting using the tool.

The use of intact student-teams in this study is appropriate and provides a number of benefits. First, a common critique of research on small groups is the use of zero-history teams in laboratory experiments (e.g., Frey, 1994; Gouran, 1999; Propp & Kreps, 1994). This study overcomes that limitation by using student teams who have been working with one another for between 4 and 14 weeks. Furthermore, they were not assembled just for the research study and disbanded afterward; instead, they were an ongoing group with actual course assignments to complete together. A second benefit of this sample is that the students have experience with the electronic meeting system. Students have been trained and previously conducted a meeting with the technology. Finally, given the argument made in the literature review about the potential impact of a team's history of face-to-face interaction on perceptions of anonymity (Scott et al., 1997, 1999), it is important that the sample for this study consists of intact teams.

Design

A 3 X 2 between-participants design was used for this study. Anonymity (anonymous-required/ anonymous-voluntary/ identified) and argument quality (strong/ weak) are the independent variables.

Procedure

Students in the small group communication course signed-up as a team for a 90-minute time slot to participate in the study. All meetings took place during the evening and followed the same procedure: Once participants arrived at the meeting site, the purpose of the experiment was explained and team members completed informed-consent documents. Teams were informed that the purpose of the meeting was to get hands-on experience using an electronic meeting system—a tool they will likely encounter upon entering the workforce—and test a decision-making activity that will be integrated into the course during the following semester. Then, each team participated in a brief training exercise to re-familiarize themselves with the meeting software. Next, groups were informed about the purpose of the experimental task (explained below) and sent to separate rooms to complete the experiment. Groups were given 4 minutes to read through the problem and make their initial selection of what they felt was the most appropriate solution. Groups then had 15 minutes to discuss the topic and reach a conclusion. Teams used a voting tool to arrive at the group's final decision. Once everyone was able to see the group's solution, each individual was given a questionnaire containing measures of the dependent variables. Finally, all participants were fully-debriefed, instructed not to discuss the study with their classmates and thanked for their participation.

Prior to the meeting, teams were randomly assigned to one of six conditions corresponding to the anonymity and argument quality manipulations. Participants in the anonymity-required conditions had discursive technical anonymity. They were identified during meetings only by a user number (i.e., User 55, User 30, etc.). Participants in the anonymity-voluntary conditions had the opportunity at the beginning of the meeting to select a pseudonym or remain identified. In offering the opportunity to use a pseudonym, participants were asked to use the word "User" followed by two numbers to be consistent

with the anonymity-required condition. Once selected, participants retained their pseudonym or were identified throughout the course of the entire meeting. In the identified conditions, each participant's first name was posted next to his or her contributions.

To manipulate argument quality, a trained confederate participated in each group in place of one team member. One member of each group was randomly selected and, when the team was sent to their separate rooms, asked not to participate. This individual was given full extra-credit and fully-debriefed. The confederate took his or her place in the study and acted on his or her behalf (i.e., the confederate pretended to be the group member). The trained confederate was provided with a word processing document with either strong or weak arguments. During the meeting, she cut-and-pasted the appropriate argument directly into the group's discussion at 2 minute intervals. This procedure helped ensure that the content of the strong/weak messages was controlled for throughout the experiment. The strong and weak argument conditions were included for each level of the anonymity variable; Table 1 illustrates the study design and lists the respective sample size for each of the six conditions.

Materials

Prior to the experiment the strong and weak arguments were pre-tested. Following Johnson (1991), the strong messages contained credible sources (in the context of this study) and specific information and facts; the weak message contained specious information and less credible sources. To develop the arguments used in the study, the author first constructed a set of strong and weak arguments. Thirty-eight students, not enrolled in the small group communication course, were randomly assigned to read one of the arguments and rate its strength on a scale developed for this study. Students rated the degree to which they felt the argument was smart, compelling, well supported,

Table 4.1

Means (and Standard Deviations) for All Dependent Variables as a Function of the Experimental Conditions.

	Identified		Anonymity-required		Anonymity-voluntary	
	Weak <i>n</i> = 18	Strong <i>n</i> = 20	Weak <i>n</i> = 17	Strong <i>n</i> = 19	Weak <i>n</i> = 20	Strong <i>n</i> = 15
Decision shift	.61 (1.50)	.70 (1.17)	.47 (.87)	.32 (.75)	.80 (1.47)	.67 (1.23)
Decision quality	7.47 (2.02)	8.35 (1.52)	8.06 (1.53)	8.19 (1.35)	8.32 (1.43)	7.49 (2.16)
Process satisfaction	7.17 (2.33)	7.96 (1.65)	7.98 (1.84)	7.66 (1.78)	7.99 (1.47)	7.63 (1.79)
Decision satisfaction	9.51 (.76)	9.15 (1.26)	9.00 (1.99)	8.16 (2.96)	9.20 (1.51)	8.03 (2.59)
Competence	7.50 (1.61)	7.45 (2.14)	7.23 (1.37)	6.94 (1.63)	6.94 (1.67)	7.02 (1.99)
Goodwill	6.59 (1.42)	5.94 (2.44)	6.10 (1.62)	5.22 (1.90)	5.88 (1.54)	5.22 (1.99)
Trustworthiness	7.10 (1.71)	7.03 (2.16)	6.55 (2.09)	6.11 (1.47)	6.36 (2.08)	6.53 (1.71)
Persuasiveness	5.30 (2.51)	5.61 (2.96)	5.41 (2.22)	5.38 (2.66)	4.72 (2.41)	5.81 (2.72)
Impact	4.38 (2.76)	3.86 (2.67)	4.79 (2.14)	4.67 (2.40)	3.91 (1.94)	4.57 (2.84)
Positive-relevant thoughts	1.27 (1.10)	2.26 (1.48)	1.53 (1.37)	2.00 (1.29)	2.05 (1.32)	1.40 (1.24)
Positive-irrelevant thoughts	.33 (.62)	.26 (.56)	.47 (.72)	.26 (.56)	.01 (.45)	.40 (.63)
Negative-relevant thoughts	1.07 (1.03)	.53 (.77)	.94 (1.14)	.89 (.81)	.85 (.99)	1.33 (1.59)
Negative-irrelevant thoughts	.33 (.49)	.26 (.56)	.12 (.33)	.47 (.90)	.90 (1.29)	.20 (.56)

Note. Larger scores on each of the measures indicate a greater amount of the variable.

effective, informative, detailed and weak (reflected) on a 10-point Likert-type scale with the anchors *strongly disagree* and *strongly agree*. Although the means are in the expected direction, the difference between the strong ($M = 6.77, SD = 1.50$) and weak message condition ($M = 6.62, SD = 1.50$) is not statistically significant, $F(1, 36) = .10, p = .76, \eta^2 = .003$.

Two measures were taken to address this issue. First, additional facts were included in the strong argument condition and the weak arguments were made more specious. The final arguments used in the study each contain seven unique entries and both are a total of 287 words. Second, the items included in the manipulation check were also refined to focus more on specific features of the argument. In the main study, participants were asked to rate the degree to which they felt the argument contained specific facts, cited sources, listed concrete information, included detailed information, did not include specific facts and contained vague information. Both of these measures were effective as indicated by the manipulation check for the main study. Refer to Appendix C for the final strong and weak arguments used in the study.

Experimental Task

All groups completed a preference type task (McGrath, 1984). The Manager in a Bind task, based on a case study by Eckel (1968), asks groups to make an ethical decision. Although there is no objective correct solution for the task, participants were presented with four possible options to debate and choose for their group. This task has been used in previous research on electronic meeting systems (Yellen, Winniford, & Sanford, 1995). The task is appropriate for this experiment for two reasons. First, because most of the students in the course are members of the organizational communication track in the Communication Studies Department, the task is relevant to student's academic and professional interests. Thus, students were likely to take the task seriously.

Second, the ethical nature of the task makes it possible for the confederate to introduce a strong/weak argument and generate discussion. The groups were asked to consider the merits and limitations of the confederate's argument without the guide of any objective, external standards. The confederate in this study advocated for a solution that would not be considered the most ethical. This made was done to encourage participants to engage in an honest debate, instead of simply acquiescing to the confederate's or other members' arguments. Appendix D includes a copy of the case study provided to participants.

Dependent Variables

Dependent variables for Study 2 consist of measures of communicator credibility, influence, perceived anonymity, group effectiveness and satisfaction. Participants were asked to rate the credibility, influence and perceived anonymity of the person ostensibly communicating the strong/weak argument (i.e., the person whom the confederate is pretending to be). Unless otherwise noted, all measures were rated on 10-point Likert-type scales with the anchors *strongly disagree* and *strongly agree*. Appendix E contains a copy of the questionnaire containing all measures included in the study.

Communicator credibility. McCroskey's (1966) measure was used to assess communicator credibility. Source credibility is comprised of three subscales focusing on the degree to which a source is perceived to be competent, trustworthy, and perceptions of his or her goodwill. Each subscale contains 6 items and is measured on a 10-point semantic differential scale. To tap perceptions of competence, participants rated the degree to which the source appears intelligent, trained, expert, informed, competent and bright. To assess goodwill, participants rated the degree to which the source cares about the participant, has the participants' interests at heart, is self-centered, is concerned with the participant, is sensitive and understanding. Finally, goodwill is measured by having participants rate the degree to which the source appears honest, trustworthy, honorable,

moral, ethical, and genuine. The reliabilities for competence, trustworthiness and goodwill were acceptable in McCroskey and Teven's (1999) recent re-examination of credibility, ranging from .85 to .92.

Influence. Perceptual, behavioral and cognitive measures of influence were completed by participants. In terms of perceptual measures, participants completed a scale examining whether or not information contributed by the confederate impacted their decision (Dennis, 1996). Participants rated the degree to which the confederate's argument caused them to re-evaluate their choice (even if they did not change it), made them take a second look at their selection (whether or not they changed it), impacted their decision and affected their decision. The reliability for this scale was acceptable in Dennis's study ($\alpha = .81$). Participants also scored the persuasiveness of the confederate's arguments on a scale created for this study. Participants rated the degree to which the message communicated by the confederate was persuasive, influential, convincing, compelling and unconvincing (this item was reflected).

As a behavioral measure of influence, the amount of shift in the participant's decision resulting from the meeting was assessed. Participants ranked the four solutions prior to the group's discussion and then once again at the conclusion of the meeting. The difference between the rankings at the beginning and end of the meeting was computed by the researcher and used as a quantitative measure of decision shift. This measure provides a general indicator that participants were influenced by their team's interaction.

An assisted thought-listing procedure (Hovland, 1951; Petty et al., 1981) was also included to better understand how the anonymity and argument strength variables affected participant perceptions of source influence and credibility. Thought-listing provides a supplementary measure to assess the cognitive processes underlying participant perceptions. Once they completed the meeting, participants were asked to list

all thoughts they had in response to the confederate's arguments. Participants were presented with the statements made by the confederate along with a series of blank lines. Participants were asked to list the thoughts they had, if any, in response to each of the confederate's statements. After listing their thoughts, participants were asked to go back through their list and identify whether each thought was positive or negative. Finally, participants were asked to read back through their thoughts one final time and indicate whether each thought was relevant to the confederate's argument or irrelevant. Tallies were created for combinations of negative-relevant ($M = .91$, $SD = 1.07$), negative-irrelevant ($M = .40$, $SD = .82$), positive-relevant ($M = 1.79$, $SD = 1.34$) and positive irrelevant ($M = .30$, $SD = .59$) thoughts.

Although this approach does not tap participant thoughts during the actual meeting, it does help to identify those thoughts that were most salient. In listing the thoughts they recall having, it is presumed that participants are recalling those thoughts that were most important in influencing perceptions of the source's credibility and influence. Additionally, Cacioppo, Harkins and Petty (1981) note the participant-as-coder technique produces results highly similar to outside coder ratings, while overcoming problems with low intercoder reliability and rater misinterpretation of participant responses.

Group outcomes. Participants' perceptions of the group's effectiveness and their satisfaction were examined as outcome variables. Although there is no single correct solution to the task, participants completed a scale assessing the quality of the group's decision (Gouran, Brown & Henry, 1978). Participants completed a series of semantic differential items rating the degree to which they felt the decision was effective, good, satisfactory, carefully developed and constructive. The reliability of this scale has been demonstrated to be acceptable ($\alpha = .87$) in recent small-group research (Niederman &

DeSanctis, 1995). To assess satisfaction, participants completed two measures assessing their satisfaction with (a) the team's discussion and (b) the final solution selected by the group (Reinig, 2003). Participants completed a series of semantic differential items to assess satisfaction with both the process and decision. Participants rated the degree to which they felt the group's decision-making process was efficient, coordinated, fair, understandable and satisfying. To tap satisfaction with the final decision, participants rated the degree to which they were satisfied with their groups solution, the extent to which the solution reflects their input, the degree to which they feel committed to the decision, their confidence in the solution, and the degree to which they are dissatisfied with the solution (item reflected). The reliabilities for the measures of satisfaction with the process ($\alpha = .79$) and decision ($\alpha = .76$) were acceptable in Reinig's study.

Perceived anonymity. To assess participant perceptions of the relative anonymity of others during the meeting, participants twice completed a six-item measure developed for this study. Participants completed the measure the first time in regards to general perceptions about the anonymity of others in the group. Participants rated the extent to which other group members seemed anonymous, unknown, unidentified and identified (this item was reflected). Participants also rated the degree to which the identity of other group members was concealed and unknown. The second time they completed the measure, participants were asked to focus specifically on the group member making the strong/weak argument. In this instance, the scale represents the degree to which the confederate was anonymous.

Manipulation check(s). Measures were also included to examine the effectiveness of the anonymity and argument quality manipulations. Both measures were constructed for the purpose of this study. To determine if the anonymity manipulation was effective, participants indicated their agreement with the statements that other group

members' real names were posted during the discussion, were not posted the discussion, were hidden and were identified (the first and fourth items were reflected). Participants also reported whether or not they had the option to use a pseudonym during the meeting. Argument quality was measured with seven items. Participants rated the degree to which the confederate's argument contained specific facts, cited sources, listed concrete information, included detailed information, did not include specific facts and contained vague information. The final two items were reflected

Data Analysis

Confirmatory factor analyses were conducted to assess the internal consistency for each of the measures proposed in this study. To address the hypotheses and answer the research questions, data was analyzed using multilevel modeling and incorporating the actor partner interdependence model (APIM; Kashy & Kenny, 2000; Kenny, Kashy, & Bolger, 1998; Kenny, Mannetti, Pierro, Livi, & Kashi, 2002). Multilevel modeling is a procedure for analyzing data nested in a hierarchal structure—such as individuals nested in teams. Incorporating the APIM makes it possible to examine the impact of the individual's perceptions and behaviors (the actor effect) as well as the impact of the group on the individual (the group effect).¹⁷

This approach addresses three unique features of data from small groups (Kashy & Kenny, 2000; Kenny et al., 1998; Kenny et al., 2002). First, this approach makes it possible to account for nonindependence between group members—and thus avoid violating the independence assumption in ANOVA and regression techniques. Nonindependence is created by the mutual influence that occurs and the members of each team interaction. Second, this approach makes is possible to analyze mixed variables (as

¹⁷The actor effect consists of the impact an individuals score on a predictor variable has on their score on an outcome variable. The group effect is the impact of the team's mean score on the predictor—with the actor's score removed—on the actor's outcome.

opposed to variables that are strictly between or within groups). Mixed variables, such as perceptions of anonymity, vary both between and within groups. A final feature of this approach is that it makes it possible to examine how both an individual and the group impact the individual's outcomes. Through incorporating the APIM it is possible to gain a better understanding of the effect the group's perception of anonymity has on individual team members.

RESULTS

Data Screening

Data were first screened using the guidelines recommended by Tabachnick and Fidell (2001). Univariate descriptive statistics were inspected for all variables to identify and correct out of range values. Outliers were also examined. Two outliers were identified for the decision shift measure and both were addressed following Tabachnick and Fidell's recommendations. The outliers were reassigned a value of 5, which is approximately one unit greater than the upper-bound limit of the 95% confidence interval. Means and correlations for all variables in this study are presented in Table 4.2.

Confirmatory Factor Analyses (CFAs)

Next, CFAs were conducted for each of the scales using Equations (EQS; Bentler, 1995). The correlation matrix for each index was analyzed using the maximum likelihood estimation procedure. The model chi-square was examined as the primary indicator of model fit. In two instances, alternate fit indices were used to assess fit.

The measure of credibility contains three indices (McCroskey & Teven, 1999). A confirmatory factor analysis was performed on each scale, indicating the items in the scale for competence, $\chi^2 (8, N = 111) = 10.97, p = .20$, trustworthiness, $\chi^2 (7, N = 112) = 4.98, p = .66$, and goodwill, $\chi^2 (5, N = 112) = 10.04, p = .07$, form single solutions. Means were computed for the measures of competence ($M = 7.19, SD = 1.72, \alpha = .84$),

Table 4.2

Means, Standard Deviations and Correlations for Key Measures Included in the Study.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Decision shift	.59	1.18											
2. Quality	8.02	1.67	-.03										
3. Process satisfaction	7.74	1.82	.04	.66**									
4. Decision satisfaction	8.84	2.03	-.04	.44**	.35**								
5. Competence	7.19	1.72	.10	.08	.20*	.14							
6. Goodwill	5.83	1.91	.11	.04	.19*	.10	.70**						
7. Trustworthiness	6.64	1.89	.06	-.05	.14	.08	.74**	.75**					
8. Persuasiveness	5.36	2.55	.05	-.06	-.06	.02	.51**	.37**	.47**				
9. Impact	4.36	2.41	.18	-.10	-.01	-.07	.36**	.27*	.33*	.66**			
10. Actor effect	4.90	3.36	-.13	.08	.14	-.10	-.12	-.08	-.07	-.01	.09		
11. Group effect	4.85	2.75	-.07	-.03	.04	-.20*	-.16	-.12	-.13	-.08	.10	.66**	

Note. Quality refers to participant’s perception that the group’s decision was effective. The actor effect variable represents the participant’s perception of the confederate’s level of anonymity. The group effect represents the mean group perception of confederate anonymity, with the participant’s rating removed.

* $p < .05$ ** $p < .01$

trustworthiness ($M = 6.64$, $SD = 1.89$, $\alpha = .83$), and goodwill ($M = 5.83$, $SD = 1.91$, $\alpha = .85$).

Two indices were included to assess the degree to which participants were persuasive. The five items examining the persuasiveness of the confederate's argument form a single solution, $\chi^2(5, N = 111) = 2.30$, $p = .81$. A mean was computed for these five items ($M = 5.36$, $SD = 2.55$, $\alpha = .95$). A CFA was also performed on the measure developed by Dennis (1996) of the impact of confederate's argument, indicating that the five items form a single solution, $\chi^2(1, N = 111) = 3.91$, $p = .14$. A mean was computed for these items ($M = 4.36$, $SD = 2.41$, $\alpha = .89$).

Three indices were included in the study to examine group outcomes. The five items developed by Gouran et al. (1978) to assess perceptions of decision quality form a single solution, $\chi^2(5, N = 111) = 8.04$, $p = .15$. A mean was computed for these five items ($M = 8.02$, $SD = 1.67$, $\alpha = .78$). Similarly, the five items developed by Reinig (2003) to measure satisfaction with the decision making process form a single solution $\chi^2(3, N = 112) = 4.87$, $p = .18$. A mean was computed for this measure ($M = 7.74$, $SD = 1.82$, $\alpha = .86$). However, one of the items from the measure of satisfaction with the decision outcome was removed. The item, "I am unsatisfied with the group's solution" was removed, and a CFA was conducted on the remaining four items. The chi-square test was statistically significant, $\chi^2(1, N = 113) = 18.28$, $p < .01$. As alternate fit criteria, Hu and Bentler (1999) suggest that the comparative fit index (CFI) should be $\geq .96$ and the standardized root mean-square residual (SRMR) should be $\leq .10$. The measure of satisfaction with the solution exceeds these criteria, CFI = .97, SRMR = .02. Accordingly, a mean was computed for the revised four-item measure ($M = 8.84$, $SD = 2.03$, $\alpha = .96$).

Two six-item indices were used to assess perceptions of anonymity. The CFA indicates that the items assessing the participants' perceptions that the confederate was

anonymous form a single solution, $\chi^2(7, N = 109) = 6.58, p = .47$. A mean was computed for this index ($M = 4.90, SD = 3.36, \alpha = .97$). The chi-square test for the items tapping perceptions that others in the group were anonymous was statistically significant, $\chi^2(9, N = 113) = 50.84, p < .01$. However, the measure of group-level anonymity exceeds the alternate fit criteria (CFI= .97; SRMR= .01). Thus, a mean was computed for the six items ($M = 4.31, SD = 3.19, \alpha = .86$).

Finally, CFAs were conducted for the items comprising the manipulation checks. The four items addressing the anonymity manipulation form a single solution, $\chi^2(1, N = 113) = 3.17, p = .08$, and a mean was computed ($M = 5.62, SD = 3.92, \alpha = .97$). The four items addressing the voluntary use of anonymity also form a single solution, $\chi^2(1, N = 110) = .83, p = .36$, and a mean was computed ($M = 6.66, SD = 3.47, \alpha = .90$). Finally, a CFA indicated that the six items addressing argument quality form a single solution, $\chi^2(9, N = 94) = 11.48, p = .24$, and a mean was computed for this index ($M = 6.40, SD = 2.40, \alpha = .91$).

Manipulation Checks

Manipulation checks were performed to determine if the anonymity and argument strength manipulations were effective. Planned comparisons were conducted to assess the anonymity manipulation. The anonymity-required and anonymity-voluntary conditions were each assigned a weight of +1 and the identified condition was assigned a weight of -2. As expected, participants reported that member names were more concealed in the voluntary ($M = 6.63, SD = 2.82$) and required ($M = 9.39, SD = 1.25$) anonymity conditions, in comparison with the identified condition ($M = 1.00, SD = 0.00$), $t(1, 110) = -15.33, p < .01, \eta^2 = .76$. To test whether or not participants perceived the use of anonymity to be voluntary, participants in the voluntary condition were assigned a weight of +1 and participants in the identified condition were assigned a weight of -1. The results

indicate that those in the anonymity-voluntary condition ($M = 8.29$, $SD = 2.44$) had greater perceptions that they had the option to use a name other than their own than those in the identified condition ($M = 3.41$, $SD = 2.96$), $t(1, 109) = 8.12$, $p < .01$, $\eta^2 = .31$. Finally, a one-way ANOVA was conducted to examine the argument quality manipulation. The result of the analysis indicate that participants in the strong argument condition perceived the argument to be more effective ($M = 7.64$, $SD = 1.95$) than in the weak argument condition ($M = 5.22$, $SD = 2.21$), $F(1, 94) = 28.81$, $p < .01$, $\eta^2 = .23$. In summary, the results of the manipulation checks indicate that the manipulations were effective.

Data Analysis

Multilevel modeling was used to formally test the hypotheses and answer the research questions. Following the procedure outlined by Kenny, Kashy and their colleagues (Campbell & Kashy, 2002; Kenny et al., 2002) the APIM was incorporated into multilevel modeling using the PROC MIXED procedure in SAS. Each individual's score was treated as a repeated measure within their respective group and compound symmetry was implied (REPEATED/TYPE = CS). As such, the degree of nonindependence between group members is considered equal and nonindependence is estimated as a correlation as opposed to a variance. Group was specified as the classification variable, and the default restricted likelihood estimation procedure was used. The Satterthwaite approximation was used to calculate the degrees of freedom.

Given the nature of the hypotheses and research questions, two dichotomous variables were created from the three levels of the anonymity variable. First, a dichotomous variable (anonymity) was constructed that compares the identified condition (coded as 0) and anonymity-required conditions (coded as 1). This variable makes it possible to exclude the anonymity-voluntary condition and test the hypotheses and first

four research questions. A second variable (voluntary-anonymity) was constructed to test the final two research questions addressing the effect of voluntary anonymity. This variable compares the anonymity-required (coded as 0) and anonymity-voluntary (coded as 1) conditions.

To assess perceived anonymity, actor (actor effect) and group effects (group effect) were computed for the variable measuring perceptions of the confederate's level of anonymity. The actor effect represents the relationship between each individual's perception of anonymity and his/her score on the dependent variable of interest. The partner or group effect is the relationship between the mean score for remaining members of the group (excluding the actor) and the actor's score on the dependent measure. The actor and group effects were centered around their respective grand means to aid interpretation of interaction effects (Aiken & West, 1991; Campell & Kashy, 2002).

Data analysis proceeded in four steps. In the first step the anonymity-required and identified conditions were compared for all of the dependent variables to address Hypotheses 1-4. In the second through fourth steps, the factors influencing responses to anonymity were examined to address the six Research Questions. The means and standard deviations for each dependent variable as a function of the experimental conditions are available in Table 4.1.

Hypotheses 1-4: The benevolence and discounting hypotheses. Hypotheses 1-4 make predictions about the impact of technical anonymity in computer-mediated groups. To address these hypotheses, the anonymity variable, comparing the anonymity-required and identified conditions, was the only predictor included in the model. The results of the analyses for each of the outcome variables are presented in Table 4.3. To summarize, none of the differences between the anonymity-required and identified conditions for any of the dependent variables are statistically significant at the .05 level. However, before

drawing any conclusions about which of the hypotheses were supported, the results must be considered in light of potential moderating factors addressed in the following paragraphs.

Research Questions 1 and 2: The impact of perceptions of anonymity. The first research question asks about the effect of perceived anonymity in computer-mediated groups. In addressing this question, the individual member's perception that the confederate was anonymous was assessed along with the impact of the perception of other group members. The actor and group effects were included along with the anonymity variable (which compares the identified and anonymity-required conditions) as criterion variables and the main effect of each factor was examined. Table 4.4 includes a summary of the tests of the main and two-way interaction effects.¹⁸

The results of the main effects indicate that, when controlling for the participant and group's perception of confederate anonymity, there were significant differences in perceptions of the confederate's trustworthiness, $t(13.5) = -2.54, p = .01$, goodwill, $t(13.8) = -3.06, p = .02$, and persuasiveness, $t(13.5) = -2.13, p = .04$, as well as the number of negative-irrelevant thoughts, $t(8.09) = 2.85, p = .02$ reported by participants.¹⁹ Further, the difference in the number of negative-relevant thoughts was suggestive, $t(9.86) = 2.13, p = .059$. In comparison with the identified condition, participants in the anonymity-required condition perceived the confederate to be less trustworthy, less

¹⁸ Three-way interactions between the anonymity manipulation, actor and group effects were not examined to reduce the number of statistical tests performed in this study and due to the difficulty in deriving meaningful interpretations of the results.

¹⁹ The decimals in the degrees of freedom are a result of using the Satterthwaite approximation. This approach for computing degrees of freedom in multi-level modeling is recommended by Kenny, Kashy and their colleagues (Campbell & Kashy, 2002; Kenny et al., 2002).

Table 4.3

Summary of Analyses for Anonymity-Required and Identified Conditions.

Predictor	Criterion	β	SE	df	t	p
Anonymity	Decision shift	-.25	.21	10	-1.21	.26
	Decision quality	.19	.44	13.2	.43	.68
	Process satisfaction	.21	.47	14.8	.43	.67
	Decision satisfaction	-.75	.52	14.4	-1.43	.17
	Confederate competence	-.40	.36	13.5	-1.09	.29
	Confederate goodwill	-.60	.53	14.9	-1.13	.28
	Confederate trustworthiness	-.74	.40	14.2	-1.83	.09
	Confederate persuasiveness	.03	.44	12.8	.08	.94
	Confederate impact	.83	.38	7.42	2.16	.07
	Positive-relevant thoughts	-.06	.36	12.5	-.17	.87
	Positive-irrelevant thoughts	.07	.13	13.8	.49	.63
	Negative-relevant thoughts	.17	.25	11.5	.67	.52
	Negative-irrelevant thoughts	.01	.15	13.8	.06	.95

Note. For the anonymity variable, the identified condition was coded as 0 and the anonymity-required as 1. β coefficients are unstandardized.

Table 4.4

Summary of Analyses for Anonymity, Actor and Group Effects.

Predictor	Criterion	β	<i>SE</i>	df	<i>t</i>	<i>p</i>
Anonymity	Decision shift	.18	.54	9.7	.33	.74
	Decision effectiveness	.48	1.16	12.4	.41	.69
	Process satisfaction	-.48	1.23	13.8	-.39	.70
	Decision quality	.93	1.29	13.3	.72	.48
	Confederate competence	-1.55	.88	12.9	-1.76	.10
	Confederate goodwill	-3.06	1.17	13.8	-2.61	.02*
	Confederate trustworthiness	-2.54	.91	13.5	-2.80	.01*
	Confederate persuasiveness	-2.13	.95	13.5	-2.25	.04*
	Confederate impact	-.78	.90	11.4	-.86	.41
	Positive-relevant thoughts	-.93	.92	10.9	-1.01	.33
	Positive-irrelevant thoughts	.15	.35	11.9	.44	.67
	Negative-relevant thoughts	1.20	.56	9.9	2.13	.06
	Negative-irrelevant thoughts	.81	.28	8.1	2.85	.02*

(table continues)

Predictor	Criterion	β	<i>SE</i>	df	<i>t</i>	<i>p</i>
Actor effect	Decision shift	-.02	.07	67.5	-.38	.71
	Decision quality	.05	.09	68.6	.54	.59
	Process satisfaction	.19	.10	69.8	1.79	.08
	Decision satisfaction	-.08	.11	69.5	-.72	.47
	Confederate competence	.10	.09	68.8	1.07	.29
	Confederate goodwill	.16	.10	70	1.57	.12
	Confederate trustworthiness	.23	.10	68.6	2.30	.02*
	Confederate persuasiveness	.15	.14	65.1	1.06	.29
	Confederate impact	.10	.14	63.7	.72	.47
	Positive-relevant thoughts	.11	.08	65.6	1.49	.14
	Positive-irrelevant thoughts	-.03	.03	65.6	-.84	.41
	Negative-relevant thoughts	-.04	.05	65.9	-.71	.48
	Negative-irrelevant thoughts	.01	.03	62.9	.41	.69
Group effect	Decision shift	-.05	.09	26.5	-.61	.55
	Decision quality	-.10	.17	19.8	-.60	.55
	Process satisfaction	-.06	.18	23.6	-.35	.73
	Decision satisfaction	-.22	.19	22.3	-1.19	.24
	Confederate competence	.11	.14	30	.75	.46
	Confederate goodwill	.28	.18	24.7	1.58	.13
	Confederate trustworthiness	.10	.15	32	.64	.53
	Confederate persuasiveness	.25	.18	48.2	1.35	.18
	Confederate impact	.19	.18	46.7	1.10	.28
	Positive-relevant thoughts	.05	.14	18.8	.33	.74
	Positive-irrelevant thoughts	.01	.05	25.3	.24	.81
	Negative-relevant thoughts	-.15	.09	19.8	-1.75	.09
	Negative-irrelevant thoughts	-.15	.05	25.2	-3.16	.01*

(table continues)

Predictor	Criterion	β	<i>SE</i>	df	<i>t</i>	<i>p</i>
Anonymity X	Decision shift	-.43	.21	55.8	-2.07	.04*
Actor effect	Decision quality	-.05	.34	62.7	-.15	.88
	Process satisfaction	-.30	.40	62.1	-.76	.45
	Decision satisfaction	.24	.41	63.6	.60	.55
	Confederate competence	-.68	.34	61.8	-2.02	.05*
	Confederate goodwill	.37	.37	62	1.00	.32
	Confederate trustworthiness	.08	.36	61.1	.23	.82
	Confederate persuasiveness	-.34	.49	55.6	-.70	.49
	Confederate impact	-.89	.47	55.6	-1.89	.06
	Positive-relevant thoughts	-.46	.29	59.7	-1.60	.11
	Positive-irrelevant thoughts	-.08	.13	57.6	-.66	.51
	Negative-relevant thoughts	.33	.19	57.6	1.75	.09
	Negative-irrelevant thoughts	.09	.11	39.9	.87	.39
	Anonymity X Group effect	Decision shift	-.05	.29	24.7	-.19
Decision quality		-.93	.55	24.9	-1.69	.10
Process satisfaction		-.57	.61	27.1	-.94	.36
Decision satisfaction		.11	.67	28.1	.17	.87
Confederate competence		-.11	.49	32.6	-.22	.82
Confederate goodwill		1.02	.54	34.3	1.89	.07
Confederate trustworthiness		.17	.51	35	.34	.73
Confederate persuasiveness		.23	.64	27.9	.35	.73
Confederate impact		.12	.08	42.6	1.51	.14
Positive-relevant thoughts		-.54	.49	25.3	-1.10	.28
Positive-irrelevant thoughts		-.08	.19	30.5	-.40	.69
Negative-relevant thoughts		.51	.30	27.6	1.71	.10
Negative-irrelevant thoughts		-.18	.15	17.3	-1.25	.23

(table continues)

Predictor	Criterion	β	SE	df	t	p
Actor effect X	Decision shift	.00	.03	46.3	.09	.93
Group effect	Decision quality	.04	.06	65.7	.65	.52
	Process satisfaction	.03	.07	63	.45	.65
	Decision satisfaction	-.04	.07	66.1	-.57	.57
	Confederate competence	.12	.06	59.4	2.06	.04*
	Confederate goodwill	-.01	.06	59.1	-.22	.83
	Confederate trustworthiness	.04	.06	56	.71	.48
	Confederate persuasiveness	-.01	.08	42	-.19	.85
	Confederate impact	.12	.08	42.6	1.51	.14
	Positive-relevant thoughts	.07	.05	62.5	1.40	.17
	Positive-irrelevant thoughts	-.01	.02	54.9	-.24	.81
	Negative-relevant thoughts	-.04	.03	56.4	-1.39	.17
	Negative-irrelevant thoughts	-.03	.02	21.1	-1.49	.15

Note. For the anonymity variable, the identified condition was coded as 0 and the anonymity-required as 1. The actor effect variable represents the participant's perception of source anonymity. The group effect variable measures the rest of the group's mean perception that the source was anonymous (with the participant's score removed). β coefficients are unstandardized.

* $p \leq .05$

persuasive and to have less goodwill toward the group. Additionally, those in the anonymity-required condition reported having more negative-irrelevant thoughts and marginally more negative-relevant thoughts about the confederate's argument than those in the identified condition.

There was also one statistically significant actor effect and group effect. When controlling for the anonymity manipulation and the group effect, the participants' perception of confederate anonymity is positively related to perceptions of confederate trustworthiness, $t(68.6) = 2.30, p = .02$. When controlling for the anonymity manipulation and the actor effect, the group's perception of confederate anonymity was negatively related to the number of negative-irrelevant thoughts reported by participants, $t(25.2) = -3.16, p < .01$. When the rest of the team felt the confederate was anonymous, participants recalled having fewer negative-irrelevant thoughts.

Next, two-way interactions between the anonymity variable and the actor and group effects variables were examined. All of the main effects were included in the model and the interactions were entered. The results indicate significant interactions for three of the dependent variables. The interaction between the anonymity manipulation and the actor effect were significant for both decision shifts, $t(55.8) = -2.07, p = .04$, and perceptions of confederate competence, $t(61.8) = -2.02, p = .05$. To interpret these interactions, separate coefficients were computed for the anonymity-required and identified conditions (Hardy, 1993). In the identified condition, perceived anonymity was positively associated with the magnitude of decision shifts ($\beta = .27$) and perceptions of the confederate's competence ($\beta = .53$). In contrast, the relationships between perceived anonymity and both decision shifts ($\beta = -.16$) and confederate competence ($\beta = -.15$) were negative in the anonymity-required condition. Finally, the interaction between the actor and group effect on perceptions of source competence is also statistically significant, t

(59.4) = .12, $p = .04$. Following Aiken and West's (1991) recommendations for interpreting interactions with continuous variables, coefficients were computed for the relationship between the actor's level of perceived anonymity and confederate competence at 1 standard deviation above and below the mean of the group effect variable. When the group perceived a high level of confederate anonymity, the relationship between the actor's level of perceived anonymity and the competence of the confederate was positive ($\beta = .90$). When the group effect was low, the relationship between the actor effect and competence was positive but notably smaller ($\beta = .16$).

Research Questions 3 and 4: The impact of argument strength. The second research question inquires about the effect of anonymity and argument quality. To answer this question, anonymity (comparing the anonymity-required and identified conditions) and argument strength (with a weak argument coded as 0 and a strong argument coded as 1) were entered into the model along with the interaction term. There were no significant main effects for the argument strength manipulation. The interaction between the two factors was not significant for any of the dependent measures. The results of the multilevel model for the interaction term are presented in Table 4.5.

Research Questions 5 and 6: The impact of voluntary anonymity. The third research question asks about the impact of voluntary anonymity. In the study, participants in the anonymity-voluntary condition were given the opportunity prior to the group's discussion to be anonymous or identified during the decision-making task. Of the 46 participants (from 9 groups) in the anonymity-voluntary condition, 36 selected to be anonymous and 10 opted to be identified. In all but two teams in this condition, at least two-thirds of the members chose to be anonymous.

To address these research questions, the voluntary-anonymity variable, comparing the anonymity-required and anonymity-voluntary conditions, was input as the

Table 4.5

Summary of Analyses for Anonymity X Argument Quality Interaction.

Predictor	Criterion	β	<i>SE</i>	df	<i>t</i>	<i>p</i>
Anonymity X Argument quality	Decision shift	-.22	.47	9.5	-.47	.65
	Decision quality	-.76	.88	11.4	-.86	.41
	Process satisfaction	-1.08	.95	11.8	-1.14	.28
	Decision satisfaction	-.50	1.07	12.6	-.47	.65
	Confederate competence	-.24	.78	11.9	-.31	.77
	Confederate goodwill	-.25	1.05	12.8	-.23	.82
	Confederate trustworthiness	-.37	.84	11.9	-.45	.66
	Confederate persuasiveness	-.47	.94	10.6	-.50	.63
	Confederate impact	.41	.81	6.57	.51	.63
	Positive-relevant thoughts	-.52	.66	12.3	-.79	.45
	Positive-irrelevant thoughts	-.15	.27	10.9	-.57	.58
	Negative-relevant thoughts	.47	.49	9.17	.96	.36
Negative-irrelevant thoughts	.43	.30	12.9	1.41	.18	

Note. For the anonymity variable, the identified condition was coded as 0 and the anonymity-required as 1. For argument quality, the weak argument was coded as 0 and the strong argument was coded as 1. β coefficients are unstandardized. Models for each dependent variable were tested hierarchically; main effects were first entered into the model, followed by the two-way interaction (reported here).

criterion variable. There were no statistically significant differences at the .05 level between the anonymity-required and anonymity-voluntary conditions for any of the dependent measures. The results of this analysis are presented in Table 4.6.

To summarize, the six research questions asked about the impact of perceived anonymity, argument strength and voluntary anonymity on the ways in which technical anonymity is appropriated in computer-mediated groups. The results suggest that perceived anonymity plays a noteworthy role in perceptions of communicator credibility and influence. Argument strength and voluntary anonymity, however, did not impact participant perceptions of source credibility or influence.

DISCUSSION

As scholars and practitioners have endeavored to develop computer-based tools for effective communication and collaboration in groups, anonymity has played a key role. Anonymity is proposed to minimize status differences, liberate team members from a fear of retribution and make members feel more comfortable contributing to discussions. Yet, these benefits may be outweighed by the impact of anonymity on receiver perceptions and behaviors. Although anonymity may create greater opportunities for participation, it also may undermine perceptions of one's contributions. The purpose of this study has been to test two competing hypotheses about the effects of anonymity on source credibility and influence during computer-mediated meetings. In the following sections, the results of the study are reviewed, the implications of the findings for scholars and practitioners are considered, limitations are identified and directions for future research are offered.

Discussion of Key Findings

The discounting and benevolence hypotheses. Drawing from adaptive structuration theory (DeSanctis & Poole, 1994; Poole & DeSanctis, 1990), the

Table 4.6

Summary of Analyses for Voluntary-Anonymity Variable.

Predictor	Criterion	β	SE	df	t	p
Voluntary-anonymity	Decision shift	.32	.28	14.7	1.17	.26
	Decision quality	-.13	.38	14.5	-.36	.73
	Process satisfaction	.00	.35	14	.01	.99
	Decision satisfaction	.02	.66	14.8	.03	.98
	Confederate competence	-.04	.45	13.9	-.09	.93
	Confederate goodwill	-.08	.64	15	-.12	.90
	Confederate trustworthiness	.21	.48	14.8	.45	.66
	Confederate persuasiveness	-.14	.70	15.6	-.20	.84
	Confederate impact	-.47	.52	16.1	-.90	.38
	Positive-relevant thoughts	-.01	.31	14.2	-.03	.98
	Positive-irrelevant thoughts	-.13	.13	16	-1.00	.33
	Negative-relevant thoughts	.15	.22	12	.69	.51
	Negative-irrelevant thoughts	.29	.24	15.6	1.19	.25

Note. For the voluntary-anonymity variable, the anonymity-required condition was coded as 0 and the anonymity-voluntary condition was coded as 1. β coefficients are unstandardized.

discounting and benevolence hypotheses offer competing predictions about the effect of anonymity on source credibility and influence during decision making in computer-mediated groups. Consistent with a faithful appropriation of anonymity, the benevolence hypothesis predicts that anonymous sources will be more credible and influential as identified sources. The discounting hypothesis, consistent with the notion of ironic appropriation, predicts that anonymous sources in computer-mediated groups will be less credible and influential than identified sources. Perceived anonymity, the quality of the source's argument, and the source's decision to be anonymous are proposed to impact the effect of anonymity.

The initial analysis of the anonymity-required and identified conditions revealed no differences for any of the dependent variables. The source in the anonymity-required condition was perceived to be as credible and influential as in the identified condition. Yet, when controlling for the individual and group's perception of source anonymity, a number of significant differences emerged consistent with the discounting hypothesis. The anonymous confederate was perceived to be less trustworthy, less persuasive and have less goodwill toward the group. Anonymity also had a systematic impact on participant cognitions. Participants reported a greater number of negative-irrelevant thoughts in the anonymity condition and the difference in negative-relevant thoughts approached the criterion for statistical significance. The two-way interactions between the actor effect and an anonymity condition offer further support for the discounting hypothesis. In the required-anonymity condition, perceived anonymity of the confederate was negatively related with both decision shifts and perceptions of the confederate's competence. Anonymity, however, did not affect perceptions of quality of the decision making process nor satisfaction with the decision.

The constellation of significant findings—once the actor and group effects for perceptions of anonymity were controlled—provide a fair amount of evidence in support of the discounting hypothesis. In the context of decision making in small groups, sharing one’s ideas anonymously (even though anonymity is a required feature of the technology) may seem duplicitous. Given the fact that team members know one another and have been working together in the past, sharing ideas anonymously may appear as if one has something to hide or is unwilling to be accountable for one’s contributions (El-Shinnawy & Vinze, 1997). In this study, the source in the anonymity-required condition was rated less trustworthy and as having less goodwill toward the team. Further, Dennis and his associates (Dennis, 1996; Dennis, et al., 1997; Dennis & Terry, 1996) contend that the inability to identify the source makes it difficult to evaluate his or her credibility. Consistent with this idea, the results of this study also indicate that, in the anonymity condition, perceived anonymity was negatively associated with perceptions of competence. Questions about the source’s motives and competence, in turn, appear to undermine the anonymous sources ability to influence his or her team members. Participants in the study reported a greater number of negative-relevant thoughts about the anonymous source’s argument, felt the anonymous source was less influential and a greater amount of perceived anonymity led to reduced decision shifts in the anonymity condition.

Although anonymity is proposed to mitigate status differences, remove fears of retribution and make it easier to resist group pressure (Hayne & Rice, 1997; McLeod, 1997; Nunamaker et al., 1996; Pinsonneult & Heppel, 1998; Postmes & Lea, 2000), its impact on message receivers may outweigh these benefits. Requiring team members to be anonymous appears to undermine their credibility and influence. The results of this study

suggest that participants discount the contributions of anonymous communicators in computer-mediated groups.

Perceived anonymity. Despite the previous findings, the implication of source anonymity may not all be negative. Indeed, a few of the findings illustrate the benefits of perceived anonymity. After controlling for the anonymity manipulation and the group effect, the actor effect for perceived anonymity was positively associated with source trustworthiness. The sources perceived to be more anonymous were also rated as more trustworthy. Further, the significant two-way interaction between the anonymity manipulation and the actor effect provide additional evidence of the benefits of perceived anonymity. In the identified conditions, perceived anonymity was positively related to perception of source competence and decision shifts.

Although the findings that perceived anonymity may lead to greater trustworthiness and decision shifts in groups that are identified may, at first, seem counterintuitive, they are understandable in light of the anonymity manipulation. In the identified condition, participant names were listed next to each of their contributions, but they were still physically separated (as were all participants) as might be the case in virtual team interactions (and to avoid revealing the role of the confederate). All interaction was restricted to reading and typing thoughts to the discussion forum. Accordingly, the reduced social cues may have led some participants to perceive others to have some degree of anonymity; that is, others were not fully present in the interaction in the same way one might be when communicating face-to-face. The reduced social cues coupled with the fact that the participant could be identified by name—and presumably held accountable for their contributions—may have positively affected participants' perceptions of the confederate and his/her argument. The reduced cues may have made the confederate, who was clearly advocating for a particular solution, appear less abrasive

or argumentative. Further, participants may have felt the source was willing to be accountable and the limited cues may have prompted participants to focus on the actual arguments made by the confederate.

Voluntary anonymity and argument quality. Voluntary anonymity and argument quality were proposed as two factors that might influence the ways in which anonymity is appropriated in computer-mediated small groups. However, there were no differences in the voluntary-anonymity and required-anonymity conditions and none of the anonymity and argument strength interactions were statistically significant. One explanation for the lack of findings regarding the anonymity-voluntary variable involves the nature of the anonymity manipulation. This issue is discussed further in the section addressing study limitations.

In regards to the argument strength, an explanation for the lack of findings is the number of claims made in the argument manipulation. In both the weak and strong argument condition, the position advocated by the confederate contained 7 distinct posts totaling 287 words. Although the strong argument clearly contained more specific details and evidence than the weak argument, the sheer number of posts in the weak argument condition may have affected receiver perceptions. That is, even though the quality of the content was weak, the number of posts may have functioned as a heuristic and made the argument appear to be effective. However, it was essential to control the length of the argument and number of posts made by the confederate. An intellectual task with a clear, correct solution may be more useful approach in future studies to help overcome this limitation. This type of task may make the discrepancy between the quality of arguments more evident to participants.

Implications for Scholars and Practitioners

The results of this research suggest some clear implications for scholars and practitioners interested in anonymity and decision making in computer-mediated groups. The findings consistent with the discounting hypothesis should serve to caution scholars studying anonymity in group decision making. The plethora of benefits anonymity is proposed to offer to message senders might be offset by the detrimental impact anonymity has on receiver perceptions and behaviors. Technical anonymity imposed by the meeting system led participants in this study to rate the confederate as less credible and influential than in the identified condition. Although anonymity may make senders feel more comfortable contributing, the results of this study suggest it also undermines perceptions of their contributions. Yet, the deleterious effects of anonymity were limited to perceptions of the individual team member and did not extend to the quality of the team's decision or the effectiveness of the group. Accordingly, it is imperative that researchers further explore the role of message receivers in developing and testing theories to explain interaction in computer-mediated groups. Specific directions for scholarship will be proposed in the following section of the manuscript.

For practitioners, the results of this study suggest a few key recommendations for implementing and using anonymity. Given the number of findings consistent with the discounting hypothesis, practitioners should be wary of simply imposing anonymity on members of intact teams. Participants in this study reported that sources required to be anonymous were less credible and influential than those who were identified. Although anonymity may have some clear advantages for message senders, the adverse effects of anonymity on receiver perceptions and behaviors may mitigate these benefits. At the very least, practitioners should discuss the use of anonymity with the team prior to the meeting. The use of anonymity should be a consensual decision made by the entire team.

If the team supports its use, they will be more likely to appropriate anonymity faithfully. If not, receiver perceptions could undermine many of the benefits anonymity affords to communicators in computer-mediated groups. Practitioners should also train members to use anonymity effectively. Training should include explaining the intended purpose of anonymity in electronic meeting systems, and the team should complete a practice task anonymously. The purpose of training is to set member expectations about anonymity to ensure that it is faithfully appropriated.

Limitations

There are two key limitations of this study that warrant consideration. The first limitation, noted previously, involves the manipulation used in the anonymity-voluntary condition. Voluntary anonymity was operationalized by having participants choose prior to the decision-making task whether they would like to be anonymous or identified. Once they made their selection, participants were required to remain anonymous or identified for the remainder of the task. Participants could not choose to be anonymous or identified during the course of the actual meeting. This is a limitation in that the use of anonymity may not have appeared especially strategic. However, the meeting system used for this study did not allow participants to control the presence/absence of technical anonymity during the meeting (nor do any of the popular meeting systems available today). Accordingly, the only possibility for operationalizing the volition variable was through having participants choose to be identified or anonymous prior to the task.

A second limitation of the study involves the nature of the sample. The participants in this study were all undergraduate students completing a decision-making task in which they had no official stake in the outcome. As such, the nature of the sample may present a threat to the ecological validity of the study. However, a number of steps were taken to mitigate this potential problem. Participants were all members of project

team that had been intact between 4 and 15 weeks. Teams were comprised of between four and seven members, which is more realistic than the three-person teams so commonly found in the literature on the topic. The task selected for the study was one that would be relevant to the team as students majoring in Communication Studies. Finally, participants had previous experience using the electronic meeting systems. These precautions were taken to balance the rigor and ecological validity of the study.

Direction for Future Research

Drawing from the key findings from this study, three issues should be explored in future research on anonymity in computer-mediated groups. First, the findings from this study demonstrate a disconnect between technical and perceived anonymity. For example, when controlling for the anonymity manipulation and the group effect, perceived anonymity was positively associated with perceptions of confederate trustworthiness. Perceived anonymity led to greater perceptions of trustworthiness. Yet, when controlling for the actor and group effect for perceived anonymity, the confederate in the anonymity-required condition was rated significantly less trustworthy than in the identified condition. As these findings suggest, removing someone's name from their contribution or putting team members in separate rooms does not ensure that they will be perceived to be anonymous (Anonymous, 1998; Hayne & Rice, 1997). Accordingly, it is important to identify those factors—beyond offering a pseudonym or locating team member in different rooms—that may foster perceptions of anonymity. Marx's (1999) typology provides a useful foundation to begin such an analysis, yet additional research is necessary to identify the key factors that determine one's level of anonymity in the context of computer-mediated groups.

Second, despite several re-conceptualizations of anonymity as a dynamic phenomenon based on peoples' perceptions (Anonymous, 1998; Hayne & Rice, 1997;

Pinsonneault & Heppel, 1998), a majority of the research on the topic examines anonymity from the perspective of an individual group member. Studies examine the impact of anonymity on the perceptions or behavior of single individual member, overlooking the potential influence of the team. Yet, as illustrated by some of the findings from this study, the team may play an important role in shaping an individual's perceptions and behavior. One notable finding is the interaction between the team (or group effect) and individual's perception of confederate anonymity on perceptions of the confederate's competence. When the group's perception of anonymity was high, the relationship between the individual's perception of anonymity and competence is strong. When the group's perception is low, however, the relationship wanes. Future research should continue to examine the effect of the group on the perceptions and behaviors of individual members. The team is likely to play an integral role in the amount of anonymity perceived and the way it is appropriated by each individual. Through using approaches like the APIM or social relations model (for a review of these approaches, see Bonito, 2002; Kenny et al., 2002; Kashy & Kenny, 2000), it will be possible to better understand the dynamic and socially constructed nature of anonymity in computer-mediated groups.

Finally, given that the findings in this study were largely consistent with the discounting hypothesis and an ironic appropriation of anonymity, it is important to (a) identify *why* people engage in ironic appropriation of anonymity and (b) identify strategies for fostering faithful appropriation. Considering the benefits of anonymity for message senders, identifying strategies to ensure faithful appropriation of anonymity by receivers would be a useful endeavor. To this end, a first step would be to explore the reasons for discounting the contributions when members are required to be anonymous. Drawing from these findings, a second step is to develop message strategies to promote faithful appropriation. One possibility is to attempt to actively persuade electronic

meeting system users of the merits and intended purpose of anonymity prior to the meeting. Through delivering a persuasive message about the merits of anonymity, meeting facilitators may be able to influence users to appropriate the feature faithfully.

Conclusion

If the past is any guide, anonymity is likely to play an important role in the continuing development of computer-based tools to support group communication and collaboration. Yet, as the findings from this study suggest, the consequences of anonymity may not be what the systems designers intend. Although anonymity may make one more comfortable participating in the group's discussion, it may also undermine perceptions of one's contributions. As such, the results of this study present a challenge and opportunity for scholars and practitioners. Through continued research it will be possible to better understand the social implications of anonymous communication in computer-mediated groups.

Chapter Summary

Chapter 4 reports a study of anonymous sources in computer-mediated groups. Research on anonymity was first reviewed to develop hypotheses and research question. The method used in the study was then explained and the results were reported. The key findings were discussed and directions for future research were offered. The next chapter in the dissertation, Chapter 5, includes of a summary of the two studies completed in fulfillment of the dissertation. Key findings from the studies will be discussed and a research agenda for future scholarship on anonymity will be articulated.

Chapter 5:

Conclusion

Chapter 5 is comprised of the conclusion for the dissertation. The key findings from the studies reported in Chapters 3 and 4 will be reviewed. The implications of the two studies will then be discussed and an agenda for future scholarship on anonymous communication will be established. The chapter closes with a brief review of this section of the dissertation.

DISCUSSION OF KEY FINDINGS

Although scholars have expressed interest in anonymity for over a century, research on anonymous communication has been fragmented and the impact of anonymity on message receivers has been largely overlooked. Accordingly, the goal of this dissertation has been to examine the effects of anonymous communication on message receiver perceptions, attitudes and behaviors. Two studies were conducted assessing the effects of anonymity in the context of health information on the World Wide Web and during decision making in computer-mediated groups. In both studies the credibility and influence of anonymous sources was examined along with the impact of required and voluntary uses of anonymity. In this section of the chapter, I return to the questions guiding the dissertation and discuss the key findings across the two studies.

The credibility and influence of anonymous sources. The primary questions guiding this dissertation concern the credibility and influence of anonymous sources. That is, are anonymous sources as credible, believable, and influential as those sources who are identified? Across the two studies conducted to address this question, the answer appears to depend on features of the context. In the study of health information on the

World Wide Web, the anonymous source was rated as credible and influential as the source whose name was identified. In the study of decision making in small groups, the anonymous source was deemed less credible and influential than the identified source.

There are a number of elements that may have led to the inconsistent findings across the two studies. Four that appear particularly important are the receiver's relationship and history of face-to-face interaction with the sender, type of encounter facilitated by the technology, the purpose of the interaction and perceptions of the appropriateness of anonymity. These four differences may help explain some of the inconsistent results from the two studies and, more importantly, lend insight into key features impacting responses to anonymous sources across communication contexts. Each of these features and their implications for anonymous communication will be discussed in the following paragraphs.

One key distinction between the studies involves the participants' relationship and previous history with the source. Participants in the small group study were part of intact project teams. They had been working together for between 4 and 15 weeks and had developed interpersonal relationships as well as an established practice of face-to-face interaction. In the Web health study, participants had no prior interaction nor a relationship with the source of the message. Accordingly, the anonymity required of some participants in the small group study may have been inconsistent with the basic principles under which the team operated. The established practice of face-to-face interaction may have created certain expectations for the team's interactions. Team members could expect to know who was responsible for a particular idea and were able to judge the merit of the idea in light of their past experience with the author. During the study, however, this was impossible. Participants were generally aware of who was engaging in the interaction, but could not presumably link an idea with a particular

individual. As such, anonymity may have been inconsistent with the team's traditional procedure and mode of interaction—thus creating problems. In the study of health information, it is fair to assume that neither of these factors played a role in participant perceptions.

A second distinction between the two contexts is the type of encounter facilitated by the technology. Those in the small group study used an electronic meeting system to engage in an extended, synchronous interaction with the source. As a communication technology, the electronic meeting system allowed participants to question and respond to the ideas presented by the source. The source was a real, live person with whom they could interact. In contrast, participants in the Web health study were passive. Although the Web can foster synchronous interaction, it was used in this study as a non-interactive information technology. Participants read a health message, presumably from a source labeled “anonymous,” and did not have the opportunity to engage the source. As such, participants in the health study may not have been motivated or able to question the source. The Web, as an information technology, did not allow any avenues for participants to further inquire about the source's identity as is possible during an interaction. Consequently, participants may have simply accepted the source's anonymity at face value. Through using a communication technology and engaging in an extended interaction in the small group study, participants may have had more of an interest in and opportunity to question the source's identity. The type of encounter facilitated by the technology may be an important factor in explaining responses to anonymous sources.

A third distinction between the contexts is the purpose for the interaction. The small groups study focused on decision making, whereas the health information study examined perceptions of a health message. A key feature of the small group study is that the team was required to collaborate with one another to achieve consensus. As such,

participants were compelled to evaluate the claims made by others in the group and attempt to come to an agreeable decision. In the health information study, participants were isolated individuals asked to read a health message posted on the Web. There was no expectation that they needed to learn anything or act on the information. The reliance on one's team members required by the decision making task may have made source characteristics more critical and the team more wary. The interdependent nature of the outcome may have forced the group members to more rigorously evaluate the claims made by the source. In the health information study, both the identified and anonymous sources were rated as fairly unknown. That is, participants did not feel like they had much information about either author's identity. Indeed, the actual identity of the source seemed irrelevant to participant responses. The findings from this study indicate that the fact that the source concealed his or her identity and communicated as "anonymous" was more important than his or her actual identity.

A fourth factor that may shape responses to anonymity is perceptions of the appropriateness of anonymity in the communication context. In the health information study, perceptions of appropriateness played an important role as a control variable. The zero-order correlations in Table 3.1 indicate that perceptions of anonymity appropriateness were positively associated with the credibility and influence of the source. Further, the post-hoc analysis of those who viewed anonymity as highly appropriate for communicating health information on the Web perceived the source to be significantly more credible and influential than those who felt anonymity was highly inappropriate. Although appropriateness was not measured in the small group study, the negative responses to anonymity suggest that it may be perceived inappropriate in that context. Accordingly, perceptions of anonymity appropriateness should be considered as key factor that may explain systematic responses to anonymous communication.

Together, these four key factors may explain the differing results across the two studies. The receiver's relationship and history of face-to-face interaction with the sender, type of encounter facilitated by the technology, the purpose of the interaction and perceptions of appropriateness may also explain systematic responses to source anonymity across other communication contexts. As such, these four factors present a useful avenue for theory-building attempts to predict and explain responses to anonymous communication. The issue of theory building will be discussed further in the section addressing directions for future research.

Anonymity and volition. A secondary set of questions guiding this dissertation focused on the joint impact of anonymity and volition. It was proposed that whether an individual was compelled to be anonymous or chose to be anonymous could impact receiver perceptions, attitudes and behaviors. In the context of the health study, volition was operationalized as a means to test the anonymity effect. The source was required by the website to be anonymous/identified or chose to be anonymous/identified. In the small groups study, participants in one condition had the opportunity to be anonymous or identified during their team's meeting. Participants in this study made their selection prior to the meeting and were required to be anonymous/identified throughout the course of the session.

The results of the two studies are mixed. In the health information study the volition factor played an important role. Although it was used to test the anonymity effect, the results suggest that knowing whether a source is voluntarily anonymous or identified made a difference in the findings. The source required to be identified and the voluntarily anonymous source were consistently rated more influential than the source required to be anonymous and the source who chose to be identified. Voluntary anonymity did not make a difference in the small group study; there were no differences

between the voluntary and required anonymity conditions for any of the dependent measures. However, as noted in the section addressing the limitations of the small group study, the lack of findings may be an artifact of the way in which volition was operationalized. Participants were required prior to the group meeting to choose whether or not they wanted to be anonymous or identified and they were required to be anonymous or identified throughout the entire decision-making task. Voluntary-anonymity may have appeared less strategic than in the health information experiment and could explain the differing results across the two studies.

Although the volition factor only played a role in the findings from the web health study, it is nonetheless important to evaluate this issue further in future research. Through making one's choice to become anonymous explicit, the use of anonymity may appear strategic. This information, in turn, may have a systematic impact on receiver perceptions. As such, this factor provides an additional contextual feature that warrants examination in future theory-building attempts. Source volition is another potentially important factor to consider in constructing a theory regarding the effects of anonymous communication.

Two caveats need to be added to the discussion of volition. The conceptualization and operationalization of volition in the two studies is limited. First, it is assumed that knowing the identity of the message source is important to message receivers. Anonymity is conceived as a deviation from our default state of knowing the identity of those with whom we interact. Yet, there are instances, such as with a "secret Santa" gift or in conducting evaluations (e.g., when grading student papers), where a receiver may not want to know the identity of the source and may actively seek to make the source more anonymous. Second, anonymity is assumed to be either imposed by a technology or selected by the author. However, there are other possible reasons why an individual may

be anonymous. Although an individual may desire to be identified, the technology may require a message to be communicated anonymously. The intention of the author may or may not be consistent with the technology. Further, it is possible that a third party, such as a law or organizational mandate, may be the reason for anonymity. Accordingly, these two caveats should be considered when evaluating the findings regarding the role of volition in anonymous communication.

IMPLICATIONS FOR RESEARCH AND PRACTICE

In addition to discussing the key findings of the two studies, it is also important to consider their implications for research and practice. In the following section, the implications of this dissertation for research on anonymous communication will be examined. Special attention will be paid to the role of message receivers.

One clear implication from this study is a better understanding of the unique circumstance in which those individuals facing an anonymous communicator are placed. Message receivers are left with the information that someone is attempting to communicate with them but, for whatever reason, does not want to or cannot reveal his or her identity. The only information one has about the communicator is that his or her identity is concealed. This circumstance creates both challenges and opportunities for message receivers. Receivers are not constrained by any of the cues, such as status markers or indicators of competence, that typically impact our perceptions of others. At the same time, receivers cannot rely on these cues when engaging in the interaction or interpreting the message. Receivers are left with the words that comprise the respective message and the fact that the other person's identity is concealed.

Two important caveats must be added about the nature of anonymity. First, pseudonymous sources are likely to have a similar impact on receivers as ones that are labeled "anonymous." This assumes, of course, that receivers recognize that the sender is

using a pseudonym. A factual pseudonym implies the same thing to message receivers as when a source claims to be “anonymous.” However, pseudonymous and anonymous sources may not have the same impact as when no name is listed. Receivers are not likely to make the same kinds of attributions about the source when no name is listed in comparison with those situations when the marker “anonymous” or a pseudonym is used. Second, just because the source is labeled “anonymous” or contains some other pseudonym, receivers may not perceive that the source has full anonymity. As noted previously, anonymity is ultimately rooted in the perceptions of the actors involved (Anonymous, 1998; Marx, 1999). Accordingly, receivers may feel they have an idea who the source is or make faulty attribution about the source’s identity (Hayne et al., 2003; Hayne & Rice, 1997; Scott et al., 1997). The importance of this caveat, however, is likely to vary with the specific context of the interaction. In interpersonal encounters with an individual who is previously known (such as in decision making groups) perceived anonymity is likely to be a more important factor. In situations where the receiver is not likely to personally know the source (such as seeking health information on the Web), perceived anonymity may be a less important factor in determining the receiver’s behavior.

A second implication is that studying anonymous communication—and receiver responses in particular—can help inform what we know about human communication more generally. Anonymity has been touted as an important element in fostering democratic participation and fits several notions of the ideal speech state (Scott, in press). Anonymity makes it possible for all parties to speak without fear of retribution, thus allowing communicative freedom and participation. Yet, from a receiver’s perspective, sender anonymity seems to be inconsistent with some of the basic assumptions we hold upon entering an interaction. Grice’s (1975) cooperative principle, for example, suggests

those engaging in interaction operate under a few key assumptions about what we can expect from others. Although Grice is primarily concerned with the content of one's contribution, the assumptions he identifies are informative of the expectations held by individuals engaging in interaction. Of the four conversational maxims identified by Grice, anonymity seems to be inconsistent with the maxims of quantity and manner. Through concealing his or her identity, an anonymous speaker is clearly withholding identity information that may be informative and is not as direct or straightforward as he or she could be. At a very basic level, the anonymous individual seems to be violating or operating in a manner inconsistent with these assumptions. As such, an anonymous source may be fundamentally problematic for message receivers. Anonymity challenges those basic assumptions we hold when engaging in interaction. For scholars, studying anonymity presents an important opportunity for insights into fundamental aspects of human interaction.

Another implication for research concerns the importance of communication technologies in anonymous communication. Indeed, anonymous communication is likely impossible without the aid of a technology. Even an unsigned note left on a scrap of paper requires a pencil and paper— two, albeit older, technologies. As the tools that make anonymity possible, new technologies are a common theme throughout the distinct contexts in which anonymity is used and studied. The technologies themselves are one common thread that is woven throughout research on anonymity. The features of communication technologies that constrain and enable degrees of anonymity are an important avenue for research. Remailers and caller identification blocking, for example, strip one's name and other identifying information from an email message and telephone call, while preserving other features such as unique information only known by the sender that may make the sender identifiable (see Dutton, 1992). Features of

communication technologies like their interactivity, synchronicity and capacity (e.g., text vs. multimedia) may have a systematic impact on receiver perceptions of source anonymity and commensurate behaviors. Studying those features that transcend any one communication technology will make it possible to explain and predict responses to anonymous communication across both technologies and contexts. Accordingly, the study of anonymity must proceed by developing a better understanding of the interrelationship between anonymity and the tools that make it possible.

A final implication of the two studies conducted in this dissertation involves the utility of anonymity in practice. A staple of scholarship on anonymity across communication contexts ranging from politics to organizations involves touting the merits of anonymous communication (Cline & Haynes, 2001; Erickson & Fleuriet, 1991; McKenna & Bargh, 2000; Near & Miceli, 1995; Pinsonneault & Heppel, 1997; Scott & Rains, in press; Westerman & Rosse, 1997). Anonymity helps people communicating things for which they fear some form of retribution. Yet, the results of these two studies suggest that anonymity may also have some clear limitations that extend to both senders and receivers. As the results from the study of anonymity in small groups indicate, anonymity may undermine the credibility and influence of message senders in some instances. Further, the findings from the health information study suggest that anonymity may make it possible for information seekers to be duped by inaccurate or misleading information. Health information seekers may give duplicitous sources the benefit of the doubt and fail to closely scrutinize their credibility simply because they are anonymous. Accordingly, the findings from these two studies suggest that practitioners should take a balanced approach in regards to anonymity. Although anonymity may make it possible to communicate in the face of retribution, the ultimate impact may not make it worthwhile. Practitioners across a range of contexts should consider the limitations of anonymity

when advising about its use. Along with recognizing the merits of anonymity, it is important for practitioners to weigh the potential detriments for both senders and receivers.

AN AGENDA FOR FUTURE RESEARCH ON ANONYMOUS COMMUNICATION

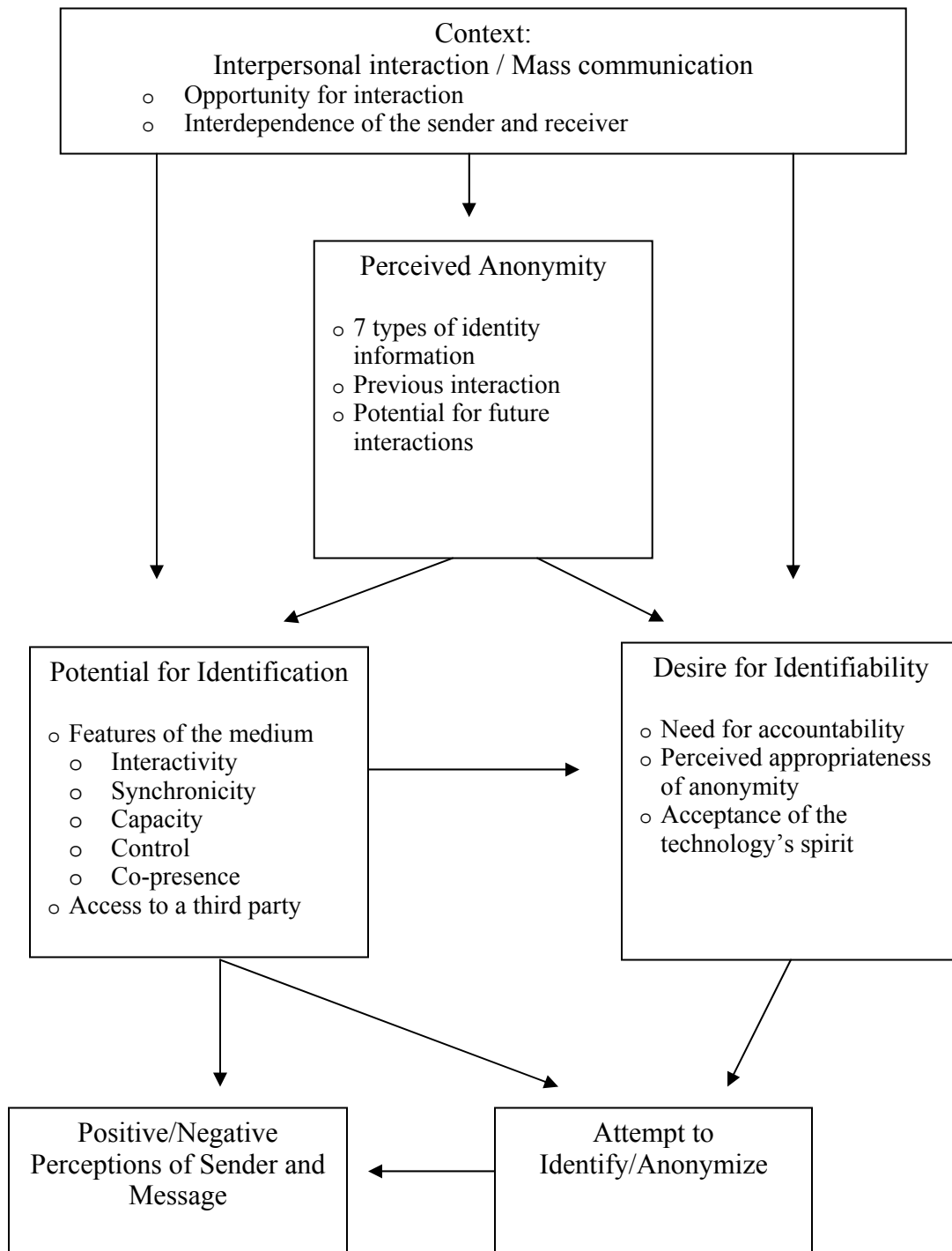
Given the increased development of communication technologies that make at least some degree of anonymity possible, post 9/11 concerns with identifiability and accountability (Johnston, 2001; Shenon & Stolberg, 2001) and the growing interest in legal issues surrounding anonymity in organizations (McDowell, 2004; Scott & Rains, in press) and the public sphere (Bowman, 2001; Scott, in press), research on the receiver's perspective of anonymous communication is likely to be critical in the future. Accordingly, it is important to examine some of the key areas for future scholarly endeavors. In this final section of the chapter, four key goals for research will be described to provide a foundation for future scholarship on anonymous communication.

First and foremost, it is critical to develop a theoretical framework to explain responses to anonymous sources across communication contexts. As noted in the previous section, research on anonymous communication is largely fragmented and few efforts have been made to draw linkages across the disparate areas in which anonymity is studied. Further, the theorizing that has been conducted focuses on a sender's reason for, and the consequences of, communicating anonymously. Message receivers are largely overlooked.

The results of the two studies conducted in fulfillment of this dissertation provide a foundation for attempts at building a model to explain receiver responses to anonymous sources. One potential model, integrating some of the key findings from this dissertation discussed previously in this chapter, is illustrated in Figure 5.1. In the model, some of the

Figure 5.1

A Tentative Model of Receiver Responses to Anonymous Communication.



features that distinguish the two studies are arranged into two broad classes of situations in which anonymity is encountered. Receivers may encounter an anonymous source in an interpersonal situation or in a mass communication context. Features of the context such as the interdependence of the sender and receiver and the opportunity for interaction may exert a systematic impact on the key components of the model. In essence, the two contexts may set different default levels of the degree to which receivers perceive the source to be anonymous, the receiver's desire to identify the source and the receiver's potential to identify the source. Receiver perceptions of the degree to which the source is anonymous, then, may predict their desire and potential to identify the source. These factors, in turn, may explain actual attempts to identify (or anonymize) the source as well as positive/negative perceptions of the source, message and communication channel.

The results of this dissertation also directly and indirectly inform the three key components of the model. The degree of anonymity perceived by message receivers is likely a function the receiver's relationship with the sender—in the form of previous interactions and the potential for future interactions—along with the presence/absence of seven types of identity information identified by Marx (1999). The desire for identifiability is likely a result of the perceived appropriateness of anonymity as well as the receiver's need to hold the sender accountable and acceptance of the technology's spirit. Finally, the receiver's potential for identifying the sender is influenced by access to a third party (such as an Internet Service Provider or an ombudsmen) who may know the identity of the source and the nature of the communication medium. Although they were not directly examined in this dissertation, it seems possible that features of the medium

such as its interactivity, synchronicity and capacity impact the amount of information about the sender's identity that may be gleaned by receivers.

The degree of anonymity perceived by a receiver along with his or her ability and desire to identify the source also, directly or indirectly, predict a receiver's behavior. Certain combinations of the previous factors should have a greater likelihood of leading to attempts at anonymizing or identifying the source. For example, in a situation where perceived anonymity is high, desire for identifiability is high and ability to identify is low, a receiver may attempt (unsuccessfully) to identify the source. Similarly, some combinations of the previous factors may be more/less likely to lead the receiver to hold positive or negative perceptions of the sender, message and channel. For example, when a receiver wants to know the identity of an anonymous source, but is not able to identify him or her, the receiver's response would likely be negative. The receiver's inability to satisfy his or her desire to identify the source might frustrate the receiver and lead him or her to derogate the source, message and/or communication medium. If, however, a receiver wants the source to be anonymous and he or she actually is (as in a secret Santa gift exchange) the response to the sender and message may be positive.

Although this model only provides a general sketch, it is a first step in developing a theory of responses to anonymity. Developing and testing a model such as this one could have considerable social importance. Being able to predict the ways in which individuals respond to anonymous communication could play a critical role in informing the evolving legislation and policy making regarding the use of anonymity in organizations, journalism, and the broader public sphere. Through knowing the effects of anonymity on message receivers it will be possible to identify those situations where it

may be particularly problematic or beneficial and strike an adequate balance between the merits and potential limitations of anonymous communication.

A second, and related, direction is to further examine the reasons people believe anonymous sources. This issue is not explicitly addressed by the previous model and warrants consideration. The first study reported in this dissertation examining anonymity in the context of health information seeking offers one explanation in the anonymity effect. The anonymity effect predicts that receivers infer a reason that the source is anonymous—presumably because the source fears the consequences of communicating the information—and use it in interpreting the message. Although some support was found for this explanation, the results were not overwhelmingly supportive. It seems possible that there may be other reasons or factors that might also explain why people believe anonymous sources. One possibility is that receiver responses are moderated by their level of involvement in the topic/message. Receivers may only attend to anonymous sources when the information is personally relevant. In instances where the subject matter is not relevant, the source—regardless of qualifications or use of anonymity—is simply not a factor. In those situations where the information is personally relevant to receivers, the anonymity effect may effectively explain their responses.

A third direction for future scholarship is to conduct increased research in those situations where receiver perceptions and concomitant behavior are critical. In whistleblowing in contemporary organizations, for example, it is important to know how organizational members respond to someone who blows the whistle anonymously. In health contexts, research is essential to better understand the impact of anonymous and pseudonymous email scams and hoaxes. In political communication, it would be

worthwhile to study impact of anonymous sources on receiver attitudes, and in turn, voting behavior. In legal communication, additional research on the effects of anonymity is essential to inform evolving legislation regarding anonymous free speech. As each of these examples illustrate, anonymous communication has substantial implications for message receivers across a variety of contexts. As such, future research is necessary in those instances where anonymity is particularly critical. Such efforts would, in turn, also inform attempts at building theories to predict responses to anonymous communication across contexts.

A fourth direction for future reach on anonymity is to examine the socially constructed nature of anonymous communication. As Marx (1999) notes, anonymity is fundamentally social. As such, it is important for future research to examine how anonymity is negotiated in interactions and the implications it has for perceptions, behaviors and relationships. To this end, a variety of techniques should be used to better understand anonymity. Techniques like the actor partner interdependence model and the social relations model (Kenny et al., 2002; Kashy & Kenny, 2000) are useful tools to begin to see how the perceptions of one's communication partner(s) shape one's responses to anonymity. This approach makes it possible to begin to see how individuals mutually influence one another to experience anonymity and how that experience, in turn, influences a variety of communication outcomes.

A final key direction for future research that seems warranted is to conduct critical/cultural analyses of the experience and function of anonymity. In providing protection to say things for which one might fear retribution, anonymity seems particularly ripe for research from a critical perspective. For receivers, anonymity may actually be used a means to continue marginalization. In organizations, for example, a pseudonymous memo from "management" decreeing changes may mitigate any protest

by organizational members. Because there is no single individual that could be identified and held accountable as “management,” pseudonymity could further the marginalization of workers. Research from a critical/cultural perspective would also help inform theory-building efforts by adding a new perspective on the ways anonymity is used and functions.

As illustrated throughout this dissertation, future research on anonymity—especially focusing on message receivers—is essential. Given its long history and recent events ranging from post 9/11 concerns with accountability (Johnston, 2001; Shenon & Stolberg, 2001) to the Sarbanes-Oxley Act (McDowell, 2004), anonymous communication is likely to have important social and political consequences in coming years. Through continued scholarly efforts across disciplines, it seems possible to better understand this unique form of communication.

CHAPTER SUMMARY

In this chapter, the key findings from the studies reported in Chapters 3 and 4 were discussed. Additionally, implications of this dissertation concerning anonymous communication were considered. The chapter concluded with an agenda for future research on anonymous communication.

Appendix A: Sample Health Messages in the Stigmatized and Non-Stigmatized Conditions of the Health Information Study

Genital Herpes: My Story and Some Information about the Illness

By: Anonymous*

**Editor Note: The author's name has been withheld at their request.*

I couldn't believe it when the doctor told me I had genital herpes. That was a day I'll never forget. It was late spring and I had spent the last few months putting in a lot of long hours trying to finish up some projects. I was starting to feel pretty run down, but figured it was a result of working so hard. But then I had couple of days straight where I just felt really bad. I wasn't sure what the problem was, but I knew that something wasn't right. So, I scheduled a visit to my family doctor. Once I arrived at the doctor's office, I spent almost two hours waiting for my turn. As it turns out, they were changing their scheduling software and had accidentally double booked patients that day. After sitting in the waiting room for what felt like an eternity, I was finally called to see the doctor. The doctor ran the normal battery of tests and then asked some questions about my symptoms. As I answered the questions, the doctor's face seemed to change a little with each reply. The doctor's eyes seemed to squint a little more and creases in the doctor's brow started to appear. With the look I was getting, I knew that everything was not ok. At the end of my exam, the doctor said those words that still ring in my ears today: I had contracted genital herpes.

After hearing that I had genital herpes, I was really scared. Although I had heard of genital herpes before, I still had a lot of questions. I really didn't know what it was or how it would affect my life. As a result of that experience, I was motivated to get some information about genital herpes. I wanted to become informed about this illness and its consequences. I have requested to be anonymous and am sharing my experience and what I've learned about the illness so that others will not face the same uncertainty that I did.

What is genital herpes? Genital herpes is a sexually transmitted disease caused by a strain of the herpes simplex virus. The virus enters the body through small breaks in the skin or mucous membranes during sexual contact or skin-to-skin contact. The initial symptoms of genital herpes, beginning 2 to 10 days after exposure, include itching or pain in the legs, buttocks, or genital area. Several days after the initial symptoms, small, red bumps may appear in the genital area. These bumps then rupture and become ulcers that ooze or bleed. After three to four days, scabs form and the ulcers heal.

Throughout my life I have been pretty healthy. When I was younger, I would occasionally get ill but never had anything other than a garden-variety cold or flu. Needless to say, genital herpes was very scary to me. Early on, I felt terrible and didn't know quite why. I was in a constant state of discomfort. After going to the doctor, the potential severity of the illness worried me even more. Worst of all, I was afraid of having infected others and getting them sick.

How is genital herpes spread? Genital herpes is contagious. Sexual contact is the primary way that genital herpes spreads. It's almost impossible to get the infection through

contact with toilets, towels or other objects used by an infected person because the virus dies quickly outside the body. The surest way to prevent infection is to abstain from sexual activity or to limit sexual contact to only one person who is infection-free. Though less effective, latex condoms should be used during sexual contact and the number of one's sexual partners limited.

Once I learned I had genital herpes, I had to inform those people who I might have passed it on to and who were close to me. This was one of the hardest things I have ever had to do. I knew I had to tell them, but I was scared. The prospect that I might have infected someone else was the thing that worried me most. I didn't want to make anyone sick. I made the decision to sit each of them down and explain what I had and try to provide them with some information about the illness. The look in their eyes when I told them is something I'll never forget. They had a lot of questions for me. All I could do was try to comfort them and answer their questions.

How is genital herpes treated? Antiviral medications can shorten and prevent outbreaks during the period of time the medication is taken, but there is no cure for genital herpes. During an active herpes episode there are a few steps that should be followed to speed healing and avoid spreading the infection. First, the infected area must be kept clean and dry to prevent other infections from developing. It is also important to avoid touching the sores and to wash hands after contact with the sores. Finally, sexual contact should be avoided from the time the first symptoms are felt until the sores are completely healed (i.e., when the scab has fallen off and new skin has formed where the sore was).

Genital herpes is scary. Apart from the physical discomfort, the uncertainty associated with the illness makes it one of the most difficult things I have ever been through. I have requested to be anonymous and am sharing my story so that others will not have to face the same things that I did. I think that knowing the basics of genital herpes is the first important step to deal with this illness.

*Click [here](#) to learn more information about the author

Bacterial Meningitis: My Story and Some Information about the Illness

By: Pat Thomas*

**Editor Note: The author's name has been identified as a policy of the website.*

I couldn't believe it when the doctor told me I had bacterial meningitis. That was a day I'll never forget. It was late spring and I had spent the last few months putting in a lot of long hours trying to finish up some projects. I was starting to feel pretty run down, but figured it was a result of working so hard. But then I had couple of days straight where I just felt really bad. I wasn't sure what the problem was, but I knew that something wasn't right. So, I scheduled a visit to my family doctor. Once I arrived at the doctor's office, I spent almost two hours waiting for my turn. As it turns out, they were changing their scheduling software and had accidentally double booked patients that day. After sitting in the waiting room for what felt like an eternity, I was finally called to see the doctor. The doctor ran the normal battery of tests and then asked some questions about my symptoms. As I answered the questions, the doctor's face seemed to change a little with each reply. The doctor's eyes seemed to squint a little more and creases in the doctor's brow started to appear. With the look I was getting, I knew that everything was not ok. At the end of my exam, the doctor said those words that still ring in my ears today: I had contracted bacterial meningitis.

After hearing that I had bacterial meningitis, I was really scared. Although I had heard of bacterial meningitis before, I still had a lot of questions. I really didn't know what it was or how it would affect my life. As a result of that experience, I was motivated to get some information about bacterial meningitis. I wanted to become informed about this illness and its consequences. I am required by the website to include my name and hope that by sharing my experience and what I've learned about the illness that others will not face the same uncertainty that I did.

What is bacterial meningitis? Meningitis is an infection of the fluid in the spinal cord and the fluid that surrounds the brain. It can be caused by a bacteria or a virus. Bacterial meningitis is the more serious of the two types and there are a number of different bacteria that may cause the illness. It's easy to mistake the early signs and symptoms of meningitis for the flu. Bacterial meningitis causes a high fever, headache, and stiff neck. These symptoms can develop over several hours, or they may take 1 to 2 days. Other symptoms may include nausea, vomiting, discomfort looking into bright lights, confusion, and sleepiness.

Throughout my life I have been pretty healthy. When I was younger, I would occasionally get ill but never had anything other than a garden-variety cold or flu. Needless to say, bacterial meningitis was very scary to me. Early on, I felt terrible and didn't know quite why. I was in a constant state of discomfort. After going to the doctor, the potential severity of the illness worried me even more. Worst of all, I was afraid of having infected others and getting them sick.

How is bacterial meningitis spread? Bacterial meningitis is contagious. The bacteria are spread by direct close contact with the discharges from the nose or throat of an infected person. The bacteria can also spread through kissing or sharing eating utensils, a toothbrush or a cigarette. The bacteria that cause

meningitis are not spread by casual contact or by simply breathing the air where a person with meningitis has been. Something as simple as careful hand washing may be one of the best ways to stay well.

Once I learned I had bacterial meningitis, I had to inform those people who I might have passed it on to and who were close to me. This was one of the hardest things I have ever had to do. I knew I had to tell them, but I was scared. The prospect that I might have infected someone else was the thing that worried me most. I didn't want to make anyone sick. I made the decision to sit each of them down and explain what I had and try to provide them with some information about the illness. The look in their eyes when I told them is something I'll never forget. They had a lot of questions for me. All I could do was try to comfort them and answer their questions.

How is bacterial meningitis treated? Early diagnosis and treatment of bacterial meningitis is essential to prevent permanent damage. To diagnose bacterial meningitis, a doctor may do a spinal tap, in which a small amount of the spinal fluid is removed and tested in a lab. Bacterial meningitis requires prompt treatment with antibiotics to ensure recovery and reduce the risk of complications. A doctor may also recommend treatments for brain swelling, shock, convulsions or dehydration. Infected sinuses or mastoids —the bones behind the outer ear that connect to the middle ear —may need to be drained. Any fluid that has accumulated between the brain and the membranes that surround it may also need to be drained or surgically removed.

Bacterial meningitis is scary. Apart from the physical discomfort, the uncertainty associated with the illness makes it one of the most difficult things I have ever been through. I am required by the website to include my name and am sharing my story so that others will not have to face the same things that I did. I think that knowing the basics of bacterial meningitis is the first important step to deal with this illness.

*Click [here](#) to learn more information about the author

Appendix B: Questionnaire Completed by Participants in Health Information Study

Please rate the degree to which you feel the author of the article on strep throat is...

Honest	1	2	3	4	5	6	7	8	9	10	Dishonest
Inexpert	1	2	3	4	5	6	7	8	9	10	Expert
Trustworthy	1	2	3	4	5	6	7	8	9	10	Untrustworthy
Was sensitive	1	2	3	4	5	6	7	8	9	10	Was insensitive
Trained	1	2	3	4	5	6	7	8	9	10	Untrained
Was concerned with me	1	2	3	4	5	6	7	8	9	10	Was unconcerned with me
Efficient	1	2	3	4	5	6	7	8	9	10	Inefficient
Incompetent	1	2	3	4	5	6	7	8	9	10	Competent
Honorable	1	2	3	4	5	6	7	8	9	10	Dishonorable
Bright	1	2	3	4	5	6	7	8	9	10	Stupid
Cared about me	1	2	3	4	5	6	7	8	9	10	Didn't care about me
Ethical	1	2	3	4	5	6	7	8	9	10	Unethical
Informed	1	2	3	4	5	6	7	8	9	10	Uninformed
Immoral	1	2	3	4	5	6	7	8	9	10	Moral
Was self-centered	1	2	3	4	5	6	7	8	9	10	Was not self-centered
Phony	1	2	3	4	5	6	7	8	9	10	Genuine
Intelligent	1	2	3	4	5	6	7	8	9	10	Unintelligent
Was understanding	1	2	3	4	5	6	7	8	9	10	Was not understanding
Had my interest at heart	1	2	3	4	5	6	7	8	9	10	Didn't have my interests at heart

Please rate the degree to which you feel the information about strep throat is...

	Completely Disagree					Completely Agree				
Believable	1	2	3	4	5	6	7	8	9	10
Plausible	1	2	3	4	5	6	7	8	9	10
Accurate	1	2	3	4	5	6	7	8	9	10
Truthful	1	2	3	4	5	6	7	8	9	10
Reasonable	1	2	3	4	5	6	7	8	9	10
False	1	2	3	4	5	6	7	8	9	10
Interesting	1	2	3	4	5	6	7	8	9	10
Appealing	1	2	3	4	5	6	7	8	9	10
Fascinating	1	2	3	4	5	6	7	8	9	10
Intriguing	1	2	3	4	5	6	7	8	9	10
Uninteresting	1	2	3	4	5	6	7	8	9	10
Boring	1	2	3	4	5	6	7	8	9	10

Please rate the degree to which you felt the article about strep throat is...

	Completely Disagree					Completely Agree				
Persuasive	1	2	3	4	5	6	7	8	9	10
Influential	1	2	3	4	5	6	7	8	9	10
Convincing	1	2	3	4	5	6	7	8	9	10
Compelling	1	2	3	4	5	6	7	8	9	10
Unconvincing	1	2	3	4	5	6	7	8	9	10

Please rate you feel strep throat is...

	Completely Disagree					Completely Agree				
A substantial health issue	1	2	3	4	5	6	7	8	9	10
A serious concern	1	2	3	4	5	6	7	8	9	10
An unimportant problem	1	2	3	4	5	6	7	8	9	10
Something to be concerned with	1	2	3	4	5	6	7	8	9	10
A significant health issue	1	2	3	4	5	6	7	8	9	10

The author of the message you read is...

	Completely Disagree					Completely Agree				
Embarrassed	1	2	3	4	5	6	7	8	9	10
Ashamed	1	2	3	4	5	6	7	8	9	10
Scared	1	2	3	4	5	6	7	8	9	10
Frightened	1	2	3	4	5	6	7	8	9	10
Worried	1	2	3	4	5	6	7	8	9	10
Fearful of what others might think	1	2	3	4	5	6	7	8	9	10
Fearful of losing their job	1	2	3	4	5	6	7	8	9	10
Fearful of legal action that might be taken against them	1	2	3	4	5	6	7	8	9	10
Unwilling to take responsibility for their actions	1	2	3	4	5	6	7	8	9	10

Please rate your agreement with the following statements.

I ...

	Completely Disagree									Completely Agree
would donate money to support to support research on genital herpes.	1	2	3	4	5	6	7	8	9	10
would volunteer my time at an organization that works to help those suffering from herpes.	1	2	3	4	5	6	7	8	9	10
would vote for a bill that would provide increased government funding for research on herpes.	1	2	3	4	5	6	7	8	9	10
would <u>not</u> donate money to support to support research on genital herpes.	1	2	3	4	5	6	7	8	9	10
think education about herpes is something that should be included in high schools.	1	2	3	4	5	6	7	8	9	10

Genital herpes is....

	Completely Disagree									Completely Agree
Something that concerns me	1	2	3	4	5	6	7	8	9	10
Something I could get	1	2	3	4	5	6	7	8	9	10
A threat to me	1	2	3	4	5	6	7	8	9	10
Something I may have to face	1	2	3	4	5	6	7	8	9	10
Something I'm susceptible to	1	2	3	4	5	6	7	8	9	10

The article you read was...

Frightening.	1	2	3	4	5	6	7	8	9	10
Scary	1	2	3	4	5	6	7	8	9	10
Worrisome	1	2	3	4	5	6	7	8	9	10
Troubling	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents the extent to which you felt the identity of the author was

	Completely Disagree					Completely Agree				
Unknown	1	2	3	4	5	6	7	8	9	10
Unidentified	1	2	3	4	5	6	7	8	9	10
Identified	1	2	3	4	5	6	7	8	9	10
Concealed	1	2	3	4	5	6	7	8	9	10
Hidden	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents your agreement with the following statements. Anonymity is the degree to which an individual identity is known or specified. The identity of an anonymous person is perceived by others to be unknown. Anonymity for people posting health information on the World Wide Web is...

	Completely Disagree					Completely Agree				
Good	1	2	3	4	5	6	7	8	9	10
Useful	1	2	3	4	5	6	7	8	9	10
Important	1	2	3	4	5	6	7	8	9	10
Bad	1	2	3	4	5	6	7	8	9	10
Problematic	1	2	3	4	5	6	7	8	9	10
Beneficial	1	2	3	4	5	6	7	8	9	10
Harmful	1	2	3	4	5	6	7	8	9	10
Not useful	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents your agreement with the following statements.

In your opinion, posting health information on the World Wide Web anonymously is...

	Completely Disagree					Completely Agree				
Appropriate	1	2	3	4	5	6	7	8	9	10
Preferred	1	2	3	4	5	6	7	8	9	10
Inappropriate	1	2	3	4	5	6	7	8	9	10
Proper	1	2	3	4	5	6	7	8	9	10
Acceptable	1	2	3	4	5	6	7	8	9	10
Unacceptable	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents your agreement with the following statements.

Please rate the degree to which you felt you could identify the following characteristics about the author of the health information you read...

	Completely Disagree					Completely Agree				
Author's legal name	1	2	3	4	5	6	7	8	9	10
A way to locate the author	1	2	3	4	5	6	7	8	9	10
Patterns in the author's behavior	1	2	3	4	5	6	7	8	9	10
Information about the social categories to which the author may belong (gender, race, etc.)	1	2	3	4	5	6	7	8	9	10
If the author possesses unique or distinctive information	1	2	3	4	5	6	7	8	9	10
Symbols that could be used to locate the author's true identity	1	2	3	4	5	6	7	8	9	10
Symbols that could not be use to locate the author's true identity	1	2	3	4	5	6	7	8	9	10

Please rate the degree to which you agree with the following statements.
 In the article you read, the author's name was...

	Completely Disagree					Completely Agree				
Pat Thomas	1	2	3	4	5	6	7	8	9	10
"Anonymous"	1	2	3	4	5	6	7	8	9	10
Was not given	1	2	3	4	5	6	7	8	9	10

In the article you read...

	Completely Disagree					Completely Agree				
The author requested that his/her identity be hidden.	1	2	3	4	5	6	7	8	9	10
The website required the author to be anonymous.	1	2	3	4	5	6	7	8	9	10
The author's decision to be anonymous was voluntary.	1	2	3	4	5	6	7	8	9	10
The author's decision to be anonymous was not voluntary.	1	2	3	4	5	6	7	8	9	10

Please rate the degree to which you feel that the topic of strep throat is...

	Completely Disagree					Completely Agree				
Shameful	1	2	3	4	5	6	7	8	9	10
Embarrassing	1	2	3	4	5	6	7	8	9	10
Disgraceful	1	2	3	4	5	6	7	8	9	10
Stigmatized	1	2	3	4	5	6	7	8	9	10
Uncomfortable	1	2	3	4	5	6	7	8	9	10
Socially acceptable	1	2	3	4	5	6	7	8	9	10

What is your age?

Are you male or female?

Please rate how relevant you feel the information in the article is to you:

Very irrelevant Somewhat irrelevant Somewhat relevant Very relevant

Please indicate approximately how often you use the World Wide Web (not including using e-mail):

Never Less than once per month Once every two weeks Once per week
 Once every couple of days Once per day Multiple times per day

Please indicate how often you use the World Wide Web to look for health information:

Never Less than once per month Once every two weeks Once per week
 Once every couple of days Once per day Multiple times per day

In what year did you start using the World Wide Web (e.g., 199?)?

How often do you use the World Wide Web?

Never Every 6 months Monthly Weekly Daily

How often do you use the World Wide Web to look for health information?

Never Every 6 months Monthly Weekly Daily

Please identify the first and last name of the student who asked you to complete this study:

Please identify your name and email address.

Please note: This information will only be used to ensure that you completed the study. This information will be kept confidential until the study is completed, and then it will be deleted. You will not receive any spam email as a result of participating in this study.

Appendix C: Strong and Weak Arguments used in Small Group Study

Strong Argument

I think we should tell management about the leader, but not mention the team's role.

The leader is the reason for the problem and should take full responsibility. Why should the team get in trouble. The team was simply following instructions. The leader is the one who was stealing. I think we should just tell management, but not mention our role.

A key component of leadership is ethics. In this case the manager has ignored his ethical obligation and failed as a leader. So the leader should have to take responsibility for the consequences of his actions.

Just look at Enron. They were trying to trying to cover things up and that's what led to their problems. The company's stock fell from \$90 a share at one point to less than \$1. Not only did their investors lose a ton of money but after the company declared bankruptcy 4000 people were laid off. If we don't say something now, then it seems likely negative things will happen in the future.

Actually, in one of the classes I took last semester we read a case study like this. In it some of the employees at a manufacturing firm named Taos found out that their manager was stealing money. They didn't turn him in and they—not him—ended up not getting fired. He later blamed the whole thing on them.

We also talked about the Sarbanes-Oxley (sp?) act. It's a federal law passed in 2002 about reporting wrongdoing in organizations and basically requires us to tell management. If we don't tell on the manager we can be held legally responsible.

I vote for option B. I think we should turn in the leader, but not mention our role.

Weak Argument

I think we should tell management about the leader, but not mention the team's role.

The leader seems like he could be the source of the problem and maybe should be the one to get in trouble. It seems like the leader could have been the one who did the bad stuff. I think we should just tell management, but not mention our role.

Leaders are supposed to be good. This guy doesn't seem very good. I think this guy is sort of a bad leader. I guess he should get in trouble for what he did.

Look at companies lately. I think there might have been some that have tried to cover up stuff and had problems because of it. I think that it could have affected their stock prices. The people who invested might have even lost some money and people might have lost their job. If we don't tell on this guy, who knows what might happen in the future.

I think I remember hearing about something like this before. Some people at some company found out that someone at their office was stealing. The people didn't turn him in and I think that they—not the thief—might have ended up getting in some sort of trouble. I think the thief might have blamed the whole thing on them.

I think there could be a law or something about this. I think that there might be some kind of rule or law that says we are basically required to tell management. If we don't tell we might be the ones to get in trouble legally.

I vote for option B. I think we should turn in the leader, but not mention our role.

Appendix D: Case Study Used for Experimental Task in the Small Group Study

Instructions: Please read the following scenario.

Team Ethics

For the past few months, your leader has been submitting monthly reports to management that “stretch the truth” so as to make your team’s cost performance look better than it is. You disapprove, but do not think that you are in a position to protest, so you have kept silent. As a result, you and your team members have legally become an accomplice to him. However, your team leader has recently been sent away for two months on a temporary assignment to another city. Now the team must complete the reports.

On one hand, if the team submits an accurate report for the months without your boss, it will make your performance look poor and hurt the team’s chances for bonus and future individual promotions. You will also have to account to your leader upon his return. On the other hand, if you continue to submit inaccurate reports you could prompt an investigation by management. Such an investigation would reveal both your leader’s tampering with the truth and your role as an accomplice.

What will you do?

Please take a minute and rank the following responses. **Please rank the following solutions 1-4, with 1 being the solution you *most* prefer and 4 being the solution you *least* prefer.** You will then have a chance to discuss this issue with your group.

In this situation, you would...

- _____ A. Submit an inaccurate report (consistent with what your leader has been doing) and say nothing to management.
- _____ B. Tell management about the leader, but do not mention the team’s role. This will put the leader’s job at risk and the leader will face legal action.
- _____ C. Tell management about the situation and take the blame for the situation, but do not mention the leader. This will put each team member’s job at risk and the team will face legal action.
- _____ D. Tell management about the situation and explain both the team and your leader’s role. This will put each team member and the leader’s job at risk and all will face legal action.

Appendix E: Questionnaire Completed by Participants in the Anonymity (Required or Voluntary)/Strong Argument Condition of the Small Group Study

General Directions: Below, you will be asked a series of questions about the group meeting you just took part in. For each set of question, please answer the best you can. There is no right or wrong answer to any of the questions. I am only interested in your perceptions.

Section 1.

Please indicate your individual final rankings. **Number 1 is the solution you *most* prefer and number 4 is the solution you *least* prefer.** These should be the same rankings that you just individually made on the computer.

- _____ E. Submit an inaccurate report (consistent with what your leader has been doing) and say nothing to management.
- _____ F. Tell management about the leader, but do not mention the team's role. This will put the leader's job at risk and the leader will face legal action.
- _____ G. Tell management about the situation and take the blame for the situation, but do not mention the leader. This will put each team member's job at risk and the team will face legal action.
- _____ H. Tell management about the situation and explain both the team and your leader's role. This will put each team member and the leader's job at risk and all will face legal action.

Please circle the number that best represents the degree to which your team's **decision** was...

Effective	1	2	3	4	5	6	7	8	9	10	Ineffective
Bad	1	2	3	4	5	6	7	8	9	10	Good
Satisfactory	1	2	3	4	5	6	7	8	9	10	Unsatisfactory
Carefully developed	1	2	3	4	5	6	7	8	9	10	Recklessly developed
Not constructive	1	2	3	4	5	6	7	8	9	10	Constructive

Please circle the number that best represents the degree to which your team's **decision-making process** was...

Efficient	1	2	3	4	5	6	7	8	9	10	Inefficient
Coordinated	1	2	3	4	5	6	7	8	9	10	Uncoordinated
Unfair	1	2	3	4	5	6	7	8	9	10	Fair
Understandable	1	2	3	4	5	6	7	8	9	10	Not understandable
Satisfying	1	2	3	4	5	6	7	8	9	10	Unsatisfying

Please circle the number that best represents your agreement with the following statements.

	Completely Disagree					Completely Agree				
	1	2	3	4	5	6	7	8	9	10
I am satisfied with the group's solution.	1	2	3	4	5	6	7	8	9	10
The group's solution reflects my input.	1	2	3	4	5	6	7	8	9	10
I am committed to the group's decision.	1	2	3	4	5	6	7	8	9	10
I am confident in the group's solution	1	2	3	4	5	6	7	8	9	10
I am unsatisfied with the group's solution.	1	2	3	4	5	6	7	8	9	10

Section 2. For this section, you will be answering questions specifically about one of your team member's performance during the meeting in which you just participated. All of your responses should be in regards to that specific team member.

Please think about "USER 55's" behavior during the meeting. Circle the number that best represents USER 55's behavior during the meeting:

Honest	1	2	3	4	5	6	7	8	9	10	Dishonest
Inexpert	1	2	3	4	5	6	7	8	9	10	Expert
Trustworthy	1	2	3	4	5	6	7	8	9	10	Untrustworthy
Was sensitive	1	2	3	4	5	6	7	8	9	10	Was insensitive
Trained	1	2	3	4	5	6	7	8	9	10	Untrained
Was concerned me with me	1	2	3	4	5	6	7	8	9	10	Was unconcerned with me
Efficient	1	2	3	4	5	6	7	8	9	10	Inefficient
Incompetent	1	2	3	4	5	6	7	8	9	10	Competent
Honorable	1	2	3	4	5	6	7	8	9	10	Dishonorable
Bright	1	2	3	4	5	6	7	8	9	10	Stupid
Cared about me	1	2	3	4	5	6	7	8	9	10	Didn't care about me
Ethical	1	2	3	4	5	6	7	8	9	10	Unethical
Informed	1	2	3	4	5	6	7	8	9	10	Uninformed
Immoral	1	2	3	4	5	6	7	8	9	10	Moral
Was self-centered	1	2	3	4	5	6	7	8	9	10	Was not self-centered
Phony	1	2	3	4	5	6	7	8	9	10	Genuine
Intelligent	1	2	3	4	5	6	7	8	9	10	Unintelligent
Was understanding	1	2	3	4	5	6	7	8	9	10	Was not understanding
Had my interests at heart	1	2	3	4	5	6	7	8	9	10	Didn't have my interests at heart

Please circle the number that best represents degree to which you found **USER 55's** statements...
 Completely Disagree Completely Agree

Persuasive	1	2	3	4	5	6	7	8	9	10
Convincing	1	2	3	4	5	6	7	8	9	10
Influential	1	2	3	4	5	6	7	8	9	10
Compelling	1	2	3	4	5	6	7	8	9	10
Unconvincing	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents the degree to which **USER 55's** statements...
 Completely Disagree Completely Agree

Caused you to re-evaluate your choice (even if you didn't change it)	1	2	3	4	5	6	7	8	9	10
Made you take a second look at your selection (whether or not you changed it)	1	2	3	4	5	6	7	8	9	10
Impacted your decision.	1	2	3	4	5	6	7	8	9	10
Did not impact your decision	1	2	3	4	5	6	7	8	9	10
Affected your decision	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents the extent to which you felt the identity of **USER 55** was

	Completely Disagree		Completely Agree							
Anonymous	1	2	3	4	5	6	7	8	9	10
Unknown	1	2	3	4	5	6	7	8	9	10
Unidentified	1	2	3	4	5	6	7	8	9	10
Identified	1	2	3	4	5	6	7	8	9	10
Concealed	1	2	3	4	5	6	7	8	9	10
Hidden	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents the degree to which **USER 55's** statements during the meeting...

	Completely Disagree					Completely Agree				
Contained specific facts	1	2	3	4	5	6	7	8	9	10
Cited sources	1	2	3	4	5	6	7	8	9	10
Contained vague information	1	2	3	4	5	6	7	8	9	10
Listed concrete examples	1	2	3	4	5	6	7	8	9	10
Did <u>not</u> include specific facts	1	2	3	4	5	6	7	8	9	10
Included detailed information	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents the degree to which you found **USER 55's** statements during the meeting...

	Completely Disagree					Completely Agree				
Smart	1	2	3	4	5	6	7	8	9	10
Compelling	1	2	3	4	5	6	7	8	9	10
Well-supported	1	2	3	4	5	6	7	8	9	10
Effective	1	2	3	4	5	6	7	8	9	10
Informative	1	2	3	4	5	6	7	8	9	10
Detailed	1	2	3	4	5	6	7	8	9	10
Weak	1	2	3	4	5	6	7	8	9	10

.....
Section 3. This section addresses your perceptions of *all your team members and the meeting you just had.*

Please circle the number that best represents the extent to which you felt that the identity of *all your group members* during the meeting was ...

	Completely Disagree					Completely Agree				
Anonymous	1	2	3	4	5	6	7	8	9	10
Unknown	1	2	3	4	5	6	7	8	9	10
Unidentified	1	2	3	4	5	6	7	8	9	10
Identified	1	2	3	4	5	6	7	8	9	10
Concealed	1	2	3	4	5	6	7	8	9	10
Hidden	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents your agreement with the following statements.

Anonymity for people in computer-mediated group discussions is...

	Completely Disagree									Completely Agree
Good	1	2	3	4	5	6	7	8	9	10
Useful	1	2	3	4	5	6	7	8	9	10
Important	1	2	3	4	5	6	7	8	9	10
Bad	1	2	3	4	5	6	7	8	9	10
Problematic	1	2	3	4	5	6	7	8	9	10
Beneficial	1	2	3	4	5	6	7	8	9	10
Harmful	1	2	3	4	5	6	7	8	9	10
Not useful	1	2	3	4	5	6	7	8	9	10

The following five questions refer to the computer system your team used for the meeting. Please circle the number that best represents your agreement with the following statements.

During your team's meeting:

	Completely Disagree									Completely Agree
I believed that the system attached a code to comments so that their author could be identified if needed.	1	2	3	4	5	6	7	8	9	10
I believed that no names were attached to comments by the system.	1	2	3	4	5	6	7	8	9	10
I believed that each member's comments were identified to the rest of the team.	1	2	3	4	5	6	7	8	9	10
I believed that the system could identify other group members' comments.	1	2	3	4	5	6	7	8	9	10
I believed it was possible to identify other group members' comments using the system.	1	2	3	4	5	6	7	8	9	10

Please circle the number that best represents your agreement with the following statements.

During my teams meeting, my group members' *real* names...

	Completely Disagree									Completely Agree
Were posted during the discussion	1	2	3	4	5	6	7	8	9	10
Were not posted the discussion	1	2	3	4	5	6	7	8	9	10
Were hidden	1	2	3	4	5	6	7	8	9	10
Were identified	1	2	3	4	5	6	7	8	9	10

Finally, please circle the number that best represents your agreement with the following statements.

	Completely Disagree									Completely Agree
I had the opportunity to use a pseudonym during my team's meeting.	1	2	3	4	5	6	7	8	9	10
I did <i>not</i> have the opportunity to use a pseudonym during my team's meeting.	1	2	3	4	5	6	7	8	9	10
I had the opportunity to select and use a name different than my own during the meeting.	1	2	3	4	5	6	7	8	9	10
I did <i>not</i> have the opportunity to select and use a name different than my own during the meeting.	1	2	3	4	5	6	7	8	9	10

Please Turn to the Next Page.

SECTION 4.

DIRECTIONS: Below are randomly selected comments from the group's discussion. Please read each of the comments and write what you were thinking when your first heard them during the discussion on the lines to the right. All you have to do here is list your thoughts, if any, when you read each of the comments made by one of your group members.

1. The leader is the reason for the problem and should take full responsibility. Why should the team get in trouble. The team was simply following instructions. The leader is the one who was stealing. I think we should just tell management, but not mention our role.

2. A key component of leadership is ethics. In this case the manager has ignored his ethical obligation and failed as a leader. So the leader should have to take responsibility for the consequences of his actions.

3. Just look at Enron. They were trying to trying to cover things up and that's what led to their problems. The company's stock fell from \$90 a share at one point to less than \$1. Not only did their investors lose a ton of money but after the company declared bankruptcy 4000 people were laid off. If we don't say something now, then it seems likely negative things will happen in the future.

THIS TASK CONTINUES ON THE NEXT PAGE.

4. Actually, in one of the classes I took last semester we read a case study like this. In it some of the employees at a manufacturing firm named Taos found out that their manager was stealing money. They didn't turn him in and they—not him—ended up not getting fired. He later blamed the whole thing on them.

5. We also talked about the Sarbanes-Oxley (sp?) act. It's a federal law passed in 2002 about reporting wrongdoing in organizations and basically requires us to tell management. If we don't tell on the manager we can be held legally responsible.

.....

Please identify the person in your group who you think made the previous statements.

Real name of author:

Please circle the number that best represents your agreement with the following statements regarding the author of the previous comments.

	Completely Disagree										Completely Agree
I am confident that I know the author's identity.	1	2	3	4	5	6	7	8	9	10	
I am <i>not</i> certain that I know the author's identity.	1	2	3	4	5	6	7	8	9	10	
The author's identity is obvious to me.	1	2	3	4	5	6	7	8	9	10	
I am certain I know the author's identity.	1	2	3	4	5	6	7	8	9	10	
I am unsure about the author's identity.	1	2	3	4	5	6	7	8	9	10	

.....

PLEASE TURN TO THE NEXT PAGE TO CONTINUE THE STUDY.

Please read back through each of the thoughts you listed on the previous two pages. Here, focus only on those thoughts you listed on the lines on the right hand side of the page.

- Place a **“P”** next to each thought you consider to be a positive thought.
- Place a **“NEG”** next to each thought you think is negative.
- Place an **“N”** next to the neutral thoughts.

Please read back through each of your thoughts AGAIN. Think about whether the thoughts were relevant to the group's discussion. That is, is the thought you listed directly related to the topic covered in the discussion or is it completely irrelevant?

- Place an **“IRR”** next to irrelevant thoughts.
- Place a **“REL”** next to the relevant thoughts.

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