Transdisciplinary Science: The Nexus Between Communication and Public Health

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Theory development and empirical research conducted at the intersection of communication and public health are advancing both academic disciplines and accelerating progress toward important societal goals. An exciting emergent new research framework that combines key aspects of these 2 disciplinary perspectives has developed and become known as public health communication. This article examines the major intersections between health communication and public health scholarship that underlies public health communication; identifies unique theoretical, methodological, and societal contributions from the nexus between these 2 disciplines; and suggests fruitful directions for future collaborations. We also examine ways that collaboration between health communication and public health scholars has begun to generate important transdisciplinary scientific outcomes.


There are important areas of convergence and tremendous opportunities for collaboration between communication and public health scholars. Health communication scholarship has advanced both theory and practice in many areas of public health including public health promotion, environmental health, health policy, and global health (Abroms & Maibach, 2008; Bernhardt, 2004; Kreps, 2001b). The growing focus in public health on communication has led to the development of transdisciplinary frameworks for research, education, practice, and public health communication (Bernhardt, 2004; Maibach, Abroms, & Marosits, 2007; Nelson, Brownson, Remington, & Parvanta, 2002; Parvanta, Maibach, Arkin, Nelson, & Woodward, 2002). In return, the focus on public health problems has given communication scholars important opportunities to expand and test theories of communication methods, processes, and effects (Bernhardt, 2004; Nelson et al., 2002).

The rapid growth and continuing development of public health communication scholarship lead from the insights that this work provides to understanding the complex social processes involved in health information dissemination, adoption
of recommended health behaviors, and delivery of health care services and support (Kreps, Query, & Bonaguro, 2007). The past decade has seen many collaborative research efforts between communication and public health scholars designed to address complex health promotion issues (Bernhardt, 2004). We will track the major intersections between communication and public health scholarship, identify important contributions from each discipline, and suggest fruitful directions for future collaborative efforts.

An overarching benefit emerging from the blending of communication and public health scholarship is the growth of transdisciplinary science, resulting from the synergistic development of innovative integrative study designs, collection of relevant and revealing data sets, and generation of important new insights for promoting public health (Kreps, 2001b). “Transdisciplinary science involves the integration of theoretical and methodological perspectives drawn from different disciplines, for the purpose of generating novel conceptual and empirical analyses of a particular research topic” (Stokols et al., 2003, p. S21). Transdisciplinary science goes beyond borrowing ideas and methods from different disciplines (as in interdisciplinary science) to combine and integrate disciplinary perspectives and build new scientific perspectives and applications (Higginbotham, Albrecht, & Connor, 2001; Rosenfield, 1992; Stokols, Harvey, Gress, Fuqua, & Phillips, 2005). We examine here the ways that collaborative efforts between communication and public health scholars are generating important transdisciplinary scientific outcomes.

The public health and communication disciplines

Public health and communication are broad, well-established, and growing academic disciplines, with long histories and a range of vibrant subfields. Both disciplines have labored in the shadows of other well-established disciplines (communication in the shadow of psychology and public health is the shadow of medicine). However, both disciplines have been gaining increased stature and credibility within academia and the public sphere. Public health scholars study threats to societal health and develop evidence-based strategies (programs/policies) for improving the health of populations (Kass, 2001; Schneider & Lilienfeld, 2008) and has many subfields, such as health policy, health administration, hygiene, epidemiology, biostatistics, global health, infectious disease, health informatics, and health education. Communication scholars study the broad influences of message development and exchange and the creation of meanings across multiple channels in society (Cohen & Craig, 1995; Delia, 1987; Morreale & Backlund, 2002) and includes many subfields, such as interpersonal communication, rhetoric organizational communication, media studies, group communication, communication education, political communication, public address, intercultural communication, public relations, social influence, and health communication.

Both disciplines have historical roots in ancient Greek intellectual traditions. The influential writings of Hippocrates influenced the development of modern public
health (Porter, 1999), and the communication discipline has been deeply influenced by the work of Aristotle (Anderson & Baym, 2004). They both also combine aspects of professional, arts/humanities, and social/physical science traditions. Public health has a strong professional disciplinary orientation that grows out of its close historical association with Western medicine and its mission to promote public health (Schneider & Lilienfeld, 2008). Schools of public health train students to serve in important professional health service roles, such as public health officials, health educators, epidemiologists, and health care administrators. However, there are also strong behavioral science, public policy, and even biological components to the study of public health. The communication discipline is focused firmly on the humanities and social sciences, although there are professional aspects to the discipline, such as the training of public relations practitioners and journalists.

Both disciplines also attempt to understand the functioning of complex systems by focusing on how the system operates at multiple levels of analysis (Flora, Maibach, & Maccoby, 1989; Maibach et al., 2007). Both disciplines concern themselves with how people function at various levels of analysis—individuals, social networks, communities, or populations—and with how people interact with the attributes of place around them (including organizations, policies, the physical attributes of place, and the communication environment). Attempting to understand complex dynamic systems from a multilevel perspective positions both disciplines well—as well as those working at their intersection—to respond effectively to the challenges associated with moving beyond reductionism to embrace the paradigm of complexity theory (Resnicow & Page, 2008).

There has been steady academic growth in both disciplines, with the development of new programs, departments, and schools of communication and of public health. Public health focuses primarily on graduate education, with the practice-oriented master’s degree in public health (MPH) as a prime degree program and an increasing number of doctoral programs reflecting an expanded focus on public health research. The communication discipline has had a major focus on undergraduate education, with large undergraduate majors and the provision of basic required courses. However, graduate education at the master’s and doctoral levels has also been steadily expanding as the focus on communication research and communication as a management function has grown.

Health communication scholarship and public health

Communicating relevant, accurate, and timely health information to at-risk populations is a critical factor for promoting public health, making the study of communication a primary area of interest for public health scholars. Ineffective public health communication can lead to serious societal health problems, such as the failure to effectively warn groups about imminent health risks. Effective public health communication, such as development of persuasive campaigns to encourage adoption of health behaviors, is a major goal of public health. The communication discipline has
grown increasingly relevant to public health as more communication scholars have begun examining health issues.

Health communication has developed over the past several decades as a vibrant applied subfield of the communication discipline concerned with the influences of human and mediated communication on health care delivery and health promotion (Kreps et al., 2007). Health communication inquiry is often problem based, focused on addressing important and troubling health care and health promotion issues (Kreps & Bonaguro, in press). Communication is conceptualized as the central social process in the provision of health care delivery and the promotion of public health based upon the powerful functions communication performs in creating, gathering, and sharing relevant health information (Kreps, 1988). Health information directs health activities, guides health care delivery, and empowers “informed” health-related decisions.

Concerted study of health communication is needed to make sense of the complex roles performed by communication in health care and health promotion. For example, health care delivery systems involve a broad range of diverse, yet interdependent, communicators (health care consumers, providers, administrators, and others) who use many different channels and exchange numerous, sometimes contradictory, messages that influence health outcomes (Kreps & O’Hair, 1995). Health communication inquiry increases knowledge about the influences of communication on health outcomes and directs knowledge gained toward helping participants in the modern health care system to use communication strategically to accomplish health goals. Public health promotion is an area of great interest in health communication research (Kreps, 2001b).

Major areas for health communication research include (a) health care consumer–provider interactions; (b) social support; (c) health campaigns; (d) information technologies for health education, risk prevention, and health behavior change; (e) communication practices for health care systems; (f) using communication to influence public health policies; and (g) the impact of media and media use on health. Each of these interrelated health communication research areas has direct relevance to public health promotion and has spawned collaborations between public health and health communication scholars.

Public health scholarship and communication

The public health discipline is dedicated to improving the health of populations, emphasizing disease prevention and health promotion, and developing interventions to reduce incidence of illness, injury, and disability (Kass, 2001; Koo, O’Carroll, & LaVenture, 2001). Communication knowledge and skills have been identified as primary educational foci for public health workers, and communication instruction is incorporated in most public health educational programs (Allengrante, Moon, Auld, & Gebbie, 2001; Shortell, Weist, Sow, Foster, & Tahir, 2004). Communication is also central to the development of public health interventions, which are
introduced at multiple system levels (local, regional, national, and international) and depend on the delivery of relevant and persuasive health promotion and risk prevention messages to key audiences (Institute of Medicine, 2002, 2003a, 2003b). Public health promotion messages are designed to influence the health behaviors of targeted audiences (such as seeking screening and early detection services and promoting reductions in risky behaviors and increases in healthful actions) and to advocate for improvements in communities that enhance health (such as policies and services; Abroms & Maibach, 2008; U.S. Department of Health and Human Services [USDHHS], 2000).

The growing dependence on the use of health promotion campaigns as a primary strategy for public health intervention has paved the way for developing active collaborations between public health and health communication scholars (Hornik, 2002b). The most effective public health campaigns typically feature strategically designed persuasive messages delivered to targeted, often carefully segmented, audiences with sufficient reach and frequency to be easily accessed and remembered (Abroms & Maibach, 2008; Maibach, Kreps, & Bonaguro, 1993). Collaborations between communication and public health scholars to develop, implement, and evaluate health promotion campaigns have become common. For example, health communication and public health scholars at Johns Hopkins University have collaborated on a series of research programs to develop, implement, and evaluate HIV/AIDS prevention campaigns in Africa (Cho & Witte, 2005; Farr, Witte, Jarato, & Menard, 2005; Green & Witte, 2006; Smith, Ferrara, & Witte, 2007). Many communication scholars hold public health faculty appointments, and others hold joint appointments between communication and public health. We expect to see these active collaborations between communication and public health scholars increase.

The influences of federal agencies on transdisciplinary collaborations

Over the past decade, there has been a groundswell of increased interest in the role of communication in promoting public health by major government agencies such as the Centers for Disease Control and Prevention (CDC), the National Institutes of Health, and the DHHS (Kreps, Viswanath, & Harris, 2002). These agencies have encouraged health communication and public health scholars to work together through the introduction of innovative transdisciplinary research units, such as the Health Communication and Informatics Research Branch at the National Cancer Institute (NCI) and the National Center for Health Marketing and the National Center for Public Health Informatics at the CDC. These agencies have also introduced exciting large transdisciplinary research programs focused on health communication and public health promotion, such as the Centers of Excellence in Cancer Communication Research (NCI) and the Centers of Excellence in Health Communication and Marketing (CDC), that have encouraged collaboration between communication and public health scholars to address important health issues. The DHHS highlighted the important role of communication in promoting public health
in Healthy People 2010, which dramatically identified health communication as a major focus area (chapter) for improving public health (USDHHS, 2000). There has also been increased activity and many new initiatives across other government health agencies, such as the Agency for Health Care Research and Quality, the Health Resources Services Administration, the Food and Drug Administration, the National Library of Medicine, the Office of Disease Prevention and Health Promotion, and the Veterans Health Administration, focused on disseminating relevant health information to diverse audiences, developing evidence-based health promotion campaigns that address the complex communication issues related to health disparities, and applying strategic communication to improve quality of care. The increased focus on communication in promoting public health, coupled with exciting new opportunities provided by major federal agencies to conduct collaborative research on communication and public health, has been a major impetus to promoting transdisciplinary public health communication science.

Transdisciplinary contributions to theory, method, and application

The transdisciplinary nexus between communication and public health has helped to expand and refine theories, methods, and applications for both disciplines. Communication and public health have unique research traditions that foster different theories, methods, and intervention strategies. When working together, scholars from these disciplines have innovatively combined, adopted, and expanded these research traditions to develop new transdisciplinary approaches to public health communication scholarship. These innovative research and application advances are important integrative outcomes of the collaborations between communication and public health.

There are several complementary theoretical perspectives grounded in communication or public health that are being used to guide collaborative public health communication research. Ecological social theory, for example, which has a long history in public health, has powerful implications for guiding scholarship on the systemic influences of public health communication in societies (Abroms & Maibach, 2008; Green & Kreuter, 1999; Green, Richard, & Potvin, 1996; Patrick, Intille, & Zabinski, 2005; Sallis & Owen, 2002). The “people and places” framework, for example, builds upon the ecological model to explain and predict how the health of populations can be influenced by communication according to the unique: (a) attributes of members of different populations, (b) attributes of the environments where people live and work, and the (c) important interactions between the attributes of people and places (Maibach et al., 2007). The diffusion of innovations model (Rogers, 1973, 1995), which has a long history in communication research, has been adopted and extended for directing the development and implementation of large-scale public health communication interventions, especially in the area of development communication (Berwick, 2003; Haider & Kreps, 2004; McCannon, Berwick, & Massoud, 2007). The transtheoretical model, often referred to as the
“stages of change” model (Prochaska & DiClemente, 1983; Prochaska & Velicer, 1997), is a powerful public health framework that has been used to guide the development and implementation of health promotion interventions according to the readiness of targeted audiences to adopt changes. Increasingly, the transtheoretical model is being adopted to guide public health communication campaigns designed to influence a broad range of health behaviors (Brown, 2005; Hausenblas et al., 2001; Herrick, Stone, & Mettler, 1997; Nigg et al., 1999). In addition, Weick’s (1969) model of organizing, that describes the systemic role of information and communication for social organizing and has seen long use by communication scholars (Bantz & Smith, 1977; Everett, 1994; Kreps, 1980, 2007), is now being used as a theoretical perspective for guiding public health communication research and intervention (Kreps, in press; Weick, 2002; Weick & Sutcliffe, 2003).

There are also important methodological advances from transdisciplinary collaborations between communication and public health. For example, there is a long tradition of using randomized clinical trials (RCTs) in the public health and medical disciplines as a highly controlled experimental design that provides tight manipulation of independent variables and careful measurement of antecedent dependent variables for establishing causality (Oakley, 1998). Although rarely used by communication scholars in the past, RCTs have proven to be a useful method for increasing experimental control and prediction in evaluating the impact of public health communication interventions (Kreps & Chapelsky Massimilla, 2002; Williams-Piehota, Schneider, Pizarro, Mowad, & Salovey, 2004). Interestingly, this has also led to transdisciplinary innovation in experimental designs for public health communication research due to several limitations with RCTs that influences both internal and external validity (Chaulk & Kazandjian, 2004; Victora, Habicht, & Bryce, 2004). For example, it is difficult to fully capture the complex multifactorial nature of health communication with RCTs due to limitations on the numbers of relevant variables represented in these experimental designs and because of the use of often artificial tightly controlled conditions (Freudenheim, 1999; Green & Tones, 1999). There are also challenges to effectively operationalizing variables in RCTs that fully measure the concepts the variables represent, encouraging researchers to find ways to limit measurement errors for maintaining high levels of internal validity (Fogg & Gross, 2000; Knäuper & Turner, 2003). Additionally, there are concerns about the ethics of randomizing some subjects to experimental conditions and others to the control conditions, especially when the experimental conditions being tested are likely to provide health care and/or health promotion benefits to subjects (Jadad & Rennie, 1998; Senn, 2002). In response to these concerns with RCTs, public health communication scholars have championed the use of quasiexperimental designs that eliminate random assignment and provide greater freedom in the use of control groups, which makes it easier for researchers to conduct experimental studies in complex social environments (Campbell & Stanley, 1966; Cook & Campbell, 1979; Kreps, 2001a; Shadish, Campbell, & Cook, 2002; Trochim, 1986). Quasiexperiments that use direct
observation of naturally changing conditions (natural experiments) rather than actively manipulating phenomena as independent variables to enhance ecological validity are also being used in public health communication research (e.g., see Agha, 2002; Grimshaw, Campbell, Eccles, & Steen, 2000; Lu-Yao et al., 2000; Shapo, Coker, & McKee, 2002). Adaptive interventions have also recently been developed by public health communication scholars as an alternative to RCTs where different dosages of prevention or treatment components are assigned to different individuals, and/or within individuals across time, with the dosage varying in response to the intervention needs of individuals (Collins, Murphy, & Bierman, 2004). These adaptive treatment designs have been useful in analyzing the impact of tailored communication interventions (Collins, Murphy, Nair, & Strecher, 2005).

There has not been a strong tradition for using qualitative research methods in public health scholarship in the past, perhaps due to overdependence on experimental (especially RCTs) and survey research methods. This has resulted in limited depth in many public health studies. Although experimental research enables tight control and observation of small influences and changes between closely related variables, and large-scale standardized surveys provide broad information about population health, attitudes, and behaviors, these methods do not typically allow researchers to probe into the deeper meanings behind these phenomena (Kreps, 2008). There is limited understanding derived from these quantitatively oriented empirical research methods (experimental and survey-based studies) about the history of observed phenomena, the embeddedness of these phenomena within social structures, and the feelings health participants have for the processes under study. Public health communication scholarship has helped to expand the use of qualitative methods to provide deeper understanding of public health communication processes (Victora et al., 2004). For example, the use of ethnographic methods to provide in-depth descriptions of social events has been gathering strength in public health communication (Devers & Frankel, 2001; Dixon-Woods, 2003; Lambert & McKevitt, 2002; Simpson & Freeman, 2004). Ellingson (2003) reports a fascinating participant observational study of cancer clinics to identify the communication patterns used to engender teamwork. Ellerbeck et al. (2001) conducted a direct observational study of physician–patient encounters in doctors’ offices to better understand colorectal cancer screening practices in primary care. Leydon et al. (2000) conducted a revealing ethnographic study using in-depth personal interviews with newly diagnosed cancer patients to explore why they seek information about their condition beyond that volunteered by their physicians. These studies provide important insights into the underlying influences on health behaviors.

Another methodological innovation that has grown out of collaborations between communication and public health is the frequent use of content analysis in public health communication research. Public health communication researchers have adopted content analytic research to identify, enumerate, and analyze occurrences of specific messages and message characteristics embedded in relevant health texts, such as in print or electronic media, medical records, health promotion
Web sites, and even prescriptions. For example, Anglin, Johnson, Giesbrecht, and Greenfield (2000) content analyzed alcohol industry trade newsletters to examine discrepancies and common ground with respect to alcohol policy. Logan, Zengjun, and Wilson (2000) content analyzed science and medical news coverage in the Los Angeles Times and the Washington Post newspapers to evaluate the ways scientists and medical professionals were portrayed in newspapers. Henderson, Kitzinger, and Green (2000) content analyzed both visual and verbal references to breast or bottle feeding in newspapers and television programs to examine how breast feeding and bottle feeding were represented in the British media. Content analysis is an important method for tracking the ways health messages are covered and disseminated across different media to influence public health.

Although there has been a long history of the use of survey research in both communication and public health, public health communication scholarship has helped to expand the use of survey research methods. In communication studies, there is not a strong tradition for conducting large-scale national, or longitudinal, surveys. Instead, small limited application surveys have been the norm. In public health, particularly in the epidemiology subfield, there are many examples of large multiple administration surveillance surveys, often supported by government agencies (i.e., NCI’s Surveillance Epidemiology and End Results research program and CDC’s Behavioral Risk Factor Surveillance System and National Health Interview Survey; National Center for Health Statistics, 2000; Nelson, Holtzman, Bolen, Stanwyck, & Mack, 2001; U.S. Cancer Statistics Working Group, 2007). Few large-scale public health surveys, however, have examined communication issues related to public health until the NCI introduced the Health Information National Trends Survey (HINTS) to study the American public’s preferences, access, and use of health information (see Hesse, Moser, Rutten, & Kreps, 2006; Nelson et al., 2004). HINTS provides important data on a biennial basis (every 2 years) for guiding public health communication research, interventions, and policy.

There have also been advances in the use of evaluation research methods as a direct result of collaborations between communication and public health. The communication discipline has great strengths in the conduct of formative evaluation research, such as the applications of audience analyses, usability, and message-testing studies (Atkin & Freimuth, 1991; Ratzan, Payne, & Massett, 1994). Public health, on the other hand, has greater strengths in the use of summative evaluation methods, especially cost analyses, impact analyses, and the evaluation of policy implications of public health interventions (Friel, Hope, Kelleher, Comer, & Sadlier, 2002; Hornik, 2002a). The collaborations between communication and public health have increased the use of both formative and summative evaluation research methods for guiding implementation, refining, and assessing the outcomes of public health communication interventions (Flay, 1987; Kreps, 2002).

Perhaps the most profound transdisciplinary impact of collaborations between communication and public health has been the increasing focus on translating public
health communication research into practice (Dearing, Maibach, & Buller, 2006; Kreps, Neuhauser, Sparks, & Villagran, 2008; Maibach, Van Duyn, & Bloodgood, 2006; Parrott, 2008). The relevance of public health communication scholarship for addressing pressing public health problems has helped to reinforce the need for sustaining and institutionalizing public health communication interventions into the communities where studies have been conducted. Community participatory research, in particular, although complex and sometimes cumbersome to administer, has shown great promise for effectively translating public health communication research into practice, as well as for increasing both the participation and the sustainability of health intervention programs (Kreps, 2003, 2006, 2008). For example, Wray (2006) describes lessons learned from community-based public health communication research to identify strategies for institutionalizing interventions that promote interpersonal violence prevention. Similarly, Freimuth and Quinn (2004) describe the ways that public health communication research has helped to reduce health disparities.

**Future directions for collaboration between communication and public health**

Collaborations between communication and public health scholars will continue to expand. The use of interactive health communication technologies shows tremendous promise for enhancing dissemination of relevant and influential health information based on careful public health communication study to guide design, implementation, and policy development (Kreps, 2003; Kukafka & Hayden, 2005; Neuhauser & Kreps, 2003; Whitten, Notman, Maynard, Henry, & Glandon, 2004). There are important opportunities to conduct public health communication research concerning the role of risk communication in preventing, preparing for, and responding to public health crises and emergencies, such as natural disasters, epidemics, and even acts of terrorism (Kreps et al., 2005; Rowan et al., 2007; Sparks, Kreps, Botan, & Rowan, 2005). There is also increased demand to examine global public health communication issues (Institute of Medicine, 1997, 2003a). There will also be increased focus on ethical issues related to communication and public health (Guttman, 2000). There is a growing emphasis on public advocacy, consumerism, and empowerment in health communication research that will help revolutionize the modern health care system by equalizing power between providers and consumers and relieving a great deal of strain on the modern health care system by encouraging disease prevention, self-care, and empowering consumers as equal partners in the health care enterprise (Kreps, 1996a, 1996b). Public health communication research will increasingly be used to identify the information needs of consumers and suggest strategies for encouraging consumers to take control of their health and health care. Ideally, public health communication research will help identify appropriate sources of relevant health information that are available to consumers, gather data from consumers
about the kinds of challenges and constraints they face within the modern health care system, as well as develop and field-test educational and media programs for enhancing consumers’ health literacy. Such research will help consumers negotiate their ways through health care bureaucracies and develop communication skills for interacting effectively with health care providers. The nexus between communication and public health shows great promise for promoting transdisciplinary advances in public health communication research, education, and practice.

References


