

Expertise, Trust, and Communication about Food Biotechnology

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Experts typically presume to speak with authority about complex concerns, such as agricultural biotechnology. Research indicates, however, that the effectiveness of risk communication depends on perceptions about the trustworthiness of the institutions and experts providing information. This exploratory study investigates how experts from a range of food-associated professions and institutions perceive their own roles in communicating about biotechnology. Most of the respondents rated scientists and other experts as most likely to tell the truth about biotechnology, but many felt that members of the public were most influenced by the mass media and by critics of biotechnology.

Key words: expert opinion, food biotechnology, genetically modified food, public understanding of science, risk communication, trust.

Introduction

In the United States, bioengineered grains are prevalent in the food supply, but bioengineering remains poorly understood by the public (Hallman, Hebden, Aquino, Cuite, & Lang, 2003). Scientists and other experts with a stake in food technology have often suggested that public fears about bioengineering would be overcome if members of the public were given more information (Brady & Brady, 2003; Hoban, 1997). Although there is some empirical support for this belief, a careful review of the existing literature finds the relationship between knowledge and approval of genetically modified (GM) food to be weak and the direction ambiguous (Cuite, Aquino, & Hallman, *in press*). Moreover, communication about risk involves more than simply transmitting scientific information, and communicators need to consider organizational, contextual, and situational factors that shape reactions to perceived risks (Chess, 1998; Priest, 2001).

In studies of reactions to risks, scholars increasingly cite the importance of trust in institutions and experts (Poortinga & Pidgeon, 2003). Studies of the general population in the United States and Europe show that trust in information about genetically modified foods depends on the source (Priest, Bonfadelli, & Rusanen, 2003). For example, large-scale survey research in the European Union indicates higher public confidence in doctors, university scientists, and nongovernmental organizations (e.g., consumer and environmental organizations) than in governmental actors (Gaskell, Allum, & Stares, 2003; INRA Europe, 2000). Similar rankings are found in a survey of American consumers (Lang, 2003).

Most of the existing research on hazard-related trust focuses on the trust ordinary people invest in elites and experts (Johnson, 1999). There are undoubtedly several reasons for this, from theoretical imperatives to the methodological truism that ordinary people are more numerous and often easier to recruit into studies than elites. But this focus presents certain problems for both theory and practice. Ultimately, the sources these experts rely on and endorse as trustworthy have an advantage in influencing consumer opinion. So, who are the experts' experts? And whom do the experts present to the public as trustworthy?

Expertise, Technology, and Trust

One goal of this research is to consider how experts assess their own roles in debates about food biotechnology. Although the term *expert* includes a variety of actors, expertise in the United States usually centers on scientists and members of the professions. Scientists and professionals construct their authority in a given realm by applying specific methods of inquiry, by restricting entry to their profession through educational and testing requirements, and by creating ideologies that justify their professional methods and goals (Abbott, 1998; Freidson, 2001; Larson, 1977).

For a time in the United States, scientists who developed biotechnology techniques presumed to speak as the chief experts on food biotechnology (Priest, 2001). Hannigan (1995) argues that the apparent acceptance of biotechnology by food scientists in the United States meant that few experts acted as public critics of this technology during its early years. More recently, a variety of critics have emerged to question the now well-

established use of bioengineered products (Schurman, 2004). Under these circumstances, the roles of experts have become more complicated. Given this, we propose two possible types of responses, one asserting the authority of experts and another expressing the idea that experts should work to demystify the technology for the public and to earn the public's trust.

Although researchers have documented a general decline in the privileged position of scientists and professionals, it is also true that some experts have managed better than others to establish and retain prestige and privilege (Abbott, 1998; Freidson, 2001). Even though the authority of experts is not assured—particularly during times of controversy—experts might remain confident in asserting that members of the public should continue to trust them for information. We expect respondents who identify with this role to state that members of the public should trust experts to digest and present information about biotechnology or even assert that consumers have been prone to irrational reactions to biotechnology.

On the other hand, some experts might now believe that instead of acting as unquestioned authorities, experts should work to demystify biotechnology. Political activism in recent medical and scientific controversies—such as those concerning AIDS research or suspected cancer clusters—has often been coupled with skepticism about the priorities and authority of scientists (Brown & Mikkelsen, 1997). Within academia, the field of science and technology studies (STS) has attempted to deconstruct scientific authority by examining the mundane procedures of laboratories and other research sites (Latour, 1999). Studies also indicate that professionals have been losing prestige as they lose autonomy due to market pressures, legal constraints, and a general decline in trust in institutions (Brint, 1994; Krause, 1996). Some observers even question whether intellectuals and professionals have distinctive skills and personal qualities (Eyerman, 1994).

Experts with this attitude might believe consumers should trust experts, but they may also accept that consumers will derive moral principles and other values from a variety of institutions. We expect respondents who identify with this role to state that members of the public are capable of understanding research findings and other relevant information, that experts should work to make such information readily available, or that experts must accept the influence of nonscientific institutions on debates about technology.

Because the public lacks the means by which to assess complex technologies, trust in abstract systems,

experts, and institutions will ultimately determine the success or failure of any communication about food biotechnology by critics or proponents (Earle & Cvetkovich, 1995). Biotechnology began as a field with a clear set of experts, namely those scientists who created the technology itself (Hannigan, 1995). As others join the debate, expertise is being redefined. This study will identify some of the concerns that motivate experts in a changing field as they attempt to redefine their authority.

Methods

Because expertise is changing in this field, it would be inappropriate and perhaps impossible to define and randomly sample a universe of experts to identify beliefs that can be generalized to all experts. We therefore took a purposive sample, identifying an initial list of potential respondents from a membership listing of a regional industry trade association (the Eastern Perishable Products Association), an internet search for public media contacts for industry groups, and listings of academic contacts. Helping to ensure diverse opinions and expertise, a range of respondents were solicited, including academics, consumer organization staff and executives, farmers and farmers' advocates, food industry staff and executives, government officials, members of the media, and restaurateurs. This sampling technique recruited opponents and promoters of biotechnology, although we did not explicitly sample on the basis of these opinions.

Researchers recruited participants through letters of introduction followed by phone calls. In all, 176 letters of introduction were sent. Contact could not be made with 112 individuals due to out-of-date contact information or unreturned phone calls. Of the 64 individuals successfully contacted, 14 (22%) refused and 50 (78%) completed a telephone interview, yielding an overall response rate of 36% from the original pool of 176 individuals. The interviews were conducted by three interviewers over the course of five weeks, from May 10, 2002, to June 17, 2002, and ranged in length from nine to ninety minutes. Interviewers were randomly assigned to respondents. Each interviewer held at least a master's degree and received extensive training on qualitative interviewing techniques and on the specific interview schedule.

Three fourths (74%) of the sample was male. Respondent ages ranged from 26 to 73 with a median age of 50. Almost half of the respondents (48%) had a graduate degree, an additional 18% had attended gradu-

ate school, and another 20% had a college degree (86% of the sample). Nearly half (46%) had more than 20 years of work experience, and 30% had between 10 and 19 years of experience. The prevalence of highly educated men with lengthy work experience appears to reflect the demographics of those whom the industry has recognized as experts.

Participants were asked to comment on a wide variety of topics related to genetically modified foods, including trust, labeling, expert opinions, consumer opinions, and conditions under which genetically modified foods might be accepted or rejected. A semistructured interview protocol guided the interview process. However, there were no predetermined response categories, and interviewers were free to probe and explore within these areas of inquiry.

All interviews were transcribed and the text was analyzed using Atlas.ti, a software package that facilitates many of the activities involved in textual analysis. Coding categories were inductively derived from the transcripts by two coders working independently. After a portion of the sample was complete, the coders compared their schemas, differences were resolved, and coding lists were adjusted appropriately.

The goal of this purposive sampling scheme and emergent coding was to explore the range of opinion among experts rather than to demonstrate the exact proportion of experts who hold any particular opinion. As such, counting exact numbers of particular responses would be inappropriate given the data. We therefore quantify responses sparingly, preferring to give a sense of trends.

Results

Even before being asked detailed questions about communication and trust, experts volunteered their concern that communication about biotechnology should be improved. Moreover, given the unstructured nature of the interviews, respondents would often spontaneously volunteer their concerns throughout the conversation. By the end of the interviews, respondents had mentioned a range of concerns about communication 38 times. Although concerns were expressed about the safety of GM, the most prominent theme throughout the interview was the failure of experts to accurately and completely inform the general public. For example, one respondent said:

[T]he ways that we've been communicating about food with the general public have not

really resulted in an informed public... the extent that they've heard anything from biotechnology it's probably the glossy ads and the... feel good tear-jerkers and the Hallmark tradition of how golden rice is going to save people from blindness.

The Expert's Experts

Experts reported relying on various sources for information about food biotechnology. Most academics and consumer advocates said that they and their colleagues relied on scientists and other academics. Respondents from the food industry reported that they and their colleagues relied on biotech industry scientists and secondary sources of information (such as trade journals). Other groups showed no clear pattern and cited assorted sources, including consumer and environmental advocacy groups, the popular press, the Internet, and agricultural magazines.

Later in the interview, the respondents evaluated their belief that each of eleven specific institutions are "likely to tell the truth about genetically modified foods." This question was structured to elicit judgments about specific groups who are often rated in general consumer studies of trust in biotechnology. On a scale of 1–10 (with 10 being *most likely to tell the truth*), universities received the highest mean rating (7), followed closely by the medical profession, farmers' associations, international institutions, consumer organizations, and government agencies. Experts gave lower rankings (4–5) to environmental organizations, religious organizations, the popular media, and animal protection organizations. These rankings are roughly consistent with results reported from quantitative surveys of the general public in Europe and the United States (e.g., Gaskell, Allum, & Stares, 2003; INRA Europe, 2000; Lang, 2003; Priest, Bonfadelli, & Rusanen, 2003).

In response to an open-ended question, experts speculated as to the sources from which consumers receive information about food biotechnology. The popular media was named as the type of organization having the most influence on how consumers think about genetically modified foods. Nongovernmental organizations that opposed bioengineered foods were second in frequency. Every government representative in the sample listed the popular media and every academic in the sample listed either the popular media or activist groups as consumers' primary information source. Most respondents who named consumer advocacy groups as the primary source specified Greenpeace.

Consistent with their ratings, when the experts were asked whom consumers *should* trust for information, one third mentioned either government or academics as the one main source they would recommend. One expert said: "Well, the best information for them would be coming from the same places that we go to—the academics who study it."

A few respondents made an appeal to science as an objective source of inquiry. For example, one respondent said:

I think they also have to trust science and the whole scientific process of testing hypotheses, beyond a reasonable doubt, and then technical review of information before it's disseminated. So, I think those are the main things. They have to trust science.

A few respondents stated that although the government should be a trustworthy source for members of the public to use, in their opinion, government agencies had not always made reliable statements about food biotechnology in the past. One respondent hinted at partisan politics and the difficulties of interpreting government information: "Everybody listens to the USDA or the EPA or the Transportation Department or Congress with a grain of salt and there are always... at least two sides to the story dealing with Congress." In addition, as one respondent suggested, finding the right source inside the government is daunting. "I would like to say that government agencies would be the best place to get information, and I think they are for some people, but it's sometimes hard to get the information."

Another interviewee noted that the public "should trust the government, but [the government agencies] don't have the greatest P.R. engines." So, although these experts believe members of the public should trust the government, they also acknowledge that government is not always consumer-friendly. They suggest that even if one is able to get government information, it is often difficult to assess the political and bureaucratic motivations that may shape the way information is gathered or presented.

An additional third said that consumers should trust a variety of sources, using common sense and their own instincts to build a balanced, informative, and trustworthy knowledge base. As one expert said:

I really think that people should, rather than accept the first thing that they hear on the news in a twenty-second blurb in the morning when

they're getting dressed... give it a fair shot, look into it a little bit more. See what other information is available and then try to weigh it out itself, or sort it out themselves.

Discussion

To date, most consumer studies of food biotechnology have focused on broad issues such as public awareness and perceptions about this technology (Hamstra, 1988). This study more specifically explored experts' assessment of the role of trust in communication about food biotechnology. Although the experts who responded to this survey named a variety of concerns about the future of biotechnology and the safety of the food supply, many highlighted the need for effective communication between experts and the public. Regarding experts' assessment of their own roles in the debate about biotechnology, we proposed two possible types of responses: one asserting the authority of experts and another expressing the idea that experts should work to demystify the technology for the public and to earn the public's trust.

By first identifying inaccurate and incomplete communication as experts' biggest concern regarding food biotechnology, our results focused on the groups experts found most trustworthy. Throughout the interview, experts revealed their preference for including diverse organizations and viewpoints. Overall, we found little support for the authoritative role of experts. Experts did not express frustration or believe consumers were behaving irrationally by seeking multiple sources of information. Rather, we found support for the role of expert as a reliable source of public information about biotechnology. Experts seemingly viewed food biotechnology as something that consumers were capable of understanding. Furthermore, experts thought it would be wise for the general public to come to their own conclusions about the technology rather than accepting any one group as an absolute authority. Respondents provided support for this more inclusive view of expertise in two main ways.

First, experts expressed a concern that there was a communication failure when trying to inform the general public about food biotechnology. As reflected in the quotations, experts often looked beyond their own areas of specialty to help remedy this concern. In their responses to open-ended questions, few experts asserted their unique authority to digest and present information for the public. Many experts felt that consumers should use various sources of information about food biotech-

nology rather than relying on one type of organization. Some of the respondents advised using many sources, specifically because they believe that the popular media often provide consumers inadequate information.

Second, we also found support for this more inclusive view of expertise in the rankings of groups that have the most influence over consumers. The high ranking of media and critical nongovernmental groups suggests that the experts, who most trust science, fear that they themselves have failed to communicate scientific principles to the public. These rankings convey little support for the concept of expert as absolute authority. Many of the experts who value scientific assessments feel they should work to transmit scientific findings and concepts more effectively through the popular media. These findings also suggest that food experts in the United States have been somewhat humbled by the difficulties of communicating about biotechnology and that many acknowledge the importance of establishing trust.

Although there are obvious limitations to the generalizability of this sample, it is hoped that these qualitative results will serve as the basis for future research that will benefit from our observations. This study was conducted with a purposive sample of food experts in the United States; results might vary with other types of experts in other nations or on other topics. The use of an open-ended interview schedule and the rich descriptions that the respondents provide comes at the cost of limited quantitative data. Despite these constraints, however, several issues for future research on sources of trust in the context of food biotechnology seem to arise from these findings.

Most previous research on trust in experts has used ordinary citizens as evaluators of trust. However, expanding the evaluators beyond ordinary citizens is necessary if one is interested in identifying the views of those who might have particular influence on public opinion, whether food experts reach different judgments about biotechnology, or whether food experts might misinterpret or mismanage public opinion because they use different criteria. More detailed interviews with a larger sample of experts would allow differences of opinion across expert groups to be characterized and analyzed. Some of the differences between scientists and others in our sample suggest that experts in different institutions are motivated by considerably different concerns.

Expertise may also be constructed differently across cultures. The reception of biotechnology has been cool or even hostile in many countries. The definition of, and meaning attributed to, trust is also related to cultural

context. Systematic cross-national studies could test Hannigan's (1995) conclusion that experts contributed to public skepticism in other countries. Such studies could consider the political, organizational, and professional conditions that shape public trust in biotechnology.

Ultimately, members of the public will place their trust in specific institutions. Myriad expert groups attempt to influence these choices. Preliminary evidence indicates rising skepticism about agricultural biotechnology in the United States (Lang, 2003). Experts' beliefs about their own responsibilities and shortcomings will help determine which expert groups inspire trust.

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