Understanding the U.S. Public's Lack of Knowledge About Agricultural Biotechnology and Its Implications for Print Media

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Abstract

Agricultural biotechnology is a modern development that has recently had a major impact on the food system in the United States. Yet, according to recent surveys, the U.S. public is largely uninformed about this technology. When brought to their attention, though, the public is more interested in agricultural biotechnology's relation to their health and the environment rather than to economic issues. Newspapers are a major source for informing the public about agricultural biotechnology. Therefore, to better understand the public's lack of knowledge, we examined the 2004 coverage of agricultural biotechnology in four national newspapers, the *Los Angeles Times,* the *New York Times,* the *Wall Street Journal*, and the *Washington Post*. We found coverage does not reflect those aspects of agricultural biotechnology that most interest the public. Articles were primarily framed in terms of public accountability, which is relevant to the public. However, the angles covered in these articles primarily addressed social and economic issues, not health and environmental concerns. Furthermore, social, economic, and legal/regulatory controversies were the most commonly reported controversies rather than health or the environment. Thus articles on agricultural biotechnology do not address the concerns of the general public and may not be viewed as relevant by them. News is events driven. The emphasis of reporting, therefore, is not likely to change unless a major environmental or public health event related to agricultural biotechnology occurs. To facilitate public interest in and dialogue about agricultural biotechnology, change agents will thus need to depend on informational strategies other than newspapers.

Introduction

Agricultural biotechnology is a modern development that in recent years has had a major impact on agriculture in the United States as well as many other regions of the world. Agricultural biotechnology is often touted as the next great revolution since the green revolution in agriculture. Yet it has also raised many questions about its impact on human health, the environment, and other underlying social issues (Priest, 2001). Regardless of one's views on agricultural biotechnology, one cannot deny the significant role it plays in the United States' pantries. An estimated 60-70% of all processed foods in the United States are thought to contain at least one genetically modified (GM) ingredient (GEO-PIE project: GE foods in the market, 2004). The most common GM crops – corn, canola, and soy – are often the bases of these foods (GEO-PIE project: GE foods in the market, 2004).

Agricultural biotechnology has a history of controversy, starting with the first agricultural biotechnology food product approved for human consumption in 1993, milk from cows treated with recombinant bovine somatotropin (Priest, 2001). Today, GM foods are contested across the globe and have lead to major trade disagreements between the United States and the European Union (Agricultural biotechnology topics international/trade, 2005).

With such controversy surrounding agricultural biotechnology, one might expect the American public to be involved in the debate over the technology that is having such an impact on our food supply. However, a national telephone surveys by Hallman, Hebden, Cuite, Aquino, and Lang (2004) has shown just how uninformed the American public is. While 48% of those surveyed by Hallman et al. (2004) in 2004 thought GM foods were in their supermarkets, less than one-third believed they had ever eaten GM foods. Considering the prevalence of GM crops in American processed foods, this belief is a gross underestimation.

However, this group also found that the public is interested in the topic. When asked, 94% of respondents wished to see `labeling of GM ingredients (Hallman, Hebden, Aquino, Cuite, & Lang, 2003). Furthermore, issues relating to health and the environment could influence their acceptance of GM crops. Of those who initially disapproved of GM crops, 31% were more likely to buy GM food if it was "grown in a more environmentally friendly way," and 26% were more likely to buy if "it contained less fat than ordinary food" (Hallman et al., 2003, pg. 11). When asked, the public was also uneasy about the health consequences of growing GM crops. Over one-third (37%) of respondents did not believe GM food was safe to consume while another 18% were unsure (Hallman et al., 2003). Furthermore, when asked what topics they would like to see covered in a hypothetical television show featuring genetically modified foods, respondents were more interested in learning about possible health and environmental effects than in issues related to cost (Hallman et al., 2004). Therefore, while the public is uninformed about agricultural biotechnology, when asked, they are concerned about the technology's health and environmental implications, both its potential risks and benefits (Hallman et al., 2003; Hallman et al., 2004).

Research has shown that when a person is interested in a topic, not only are they more likely to read about that topic, they are also more likely to remember what they read (Hidi, 2001). The public is interested in agricultural biotechnology when they are introduced to the topic, especially its implications for environmental and health issues (Hallman et al., 2004). Thus, the question is why are so few people knowledgeable on the topic of agricultural biotechnology? Previous research suggests peaks in public awareness of agricultural biotechnology may correlate with peaks in reporting (Marks & Kalaitzandonakes, 2001). In September of 2000, Marks and Kalaitzandonakes (2001) noted an increase in newspaper

coverage devoted to the Starlink event, where GM corn not approved for human consumption entered the food supply. This reporting directly preceded the findings of two studies in which U.S. public awareness of agricultural biotechnology increased from previous measurements - in one case from 40% in 1999 to 49% in October, 2000 (Marks & Kalaitzandonakes, 2001). These peaks suggest that the amount of coverage may influence public awareness of this topic (Marks & Kalaitzandonakes, 2001). This leads to further questions about agricultural biotechnology newspaper coverage. How frequently is the topic covered? When agricultural biotechnology is covered, is the public being introduced to agricultural biotechnology in a way that addresses the aspects of the topic in which they are most interested, health and the environment?

Furthermore, from where does the public get its information about agricultural biotechnology? One study found 90% of Americans learned about agricultural biotechnology from television and newsprint sources (Hoban & Kendall, 1993). Research has also shown that the content of science and technology articles influences the public's knowledge of these issues (Einsiedel & Thorne, 1999).

To understand why the public is not informed on the historically controversial topic of agricultural biotechnology, we investigated one of the major sources the public has for becoming informed, the national newsprint media. The way these media report on agricultural biotechnology may offer some explanation for the public's lack of understanding. Furthermore, the quality of reporting on agricultural biotechnology may influence future public opinion should it ever solidify.

Theoretical Framework

To investigate the quality of reporting to which the general public is exposed by the national newsprint media, we first wanted to look at article framing, an important aspect of the

overall presentation of an article. Framing has been described as a "perceived reality" made "more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation" (Entman, 1993, pg. 52). Framing is especially important with complex topics. With framing, writers organize the various aspects of the topic, decide what type of story they wish to tell, and what information would be most useful in telling that story (Entman, 1993; Scheufele, 1999; Tuchman, 1978). The frame also influences the relevant values readers use to analyze the information presented since "the quality of civic debate necessarily depends on the information available" (Tuchman, 1978, pg. ix).

Agricultural biotechnology is a complex topic with many societal implications. As such, certain frames have been identified for agricultural biotechnology reporting:

Progress: celebration of new development, breakthrough; direction of history; conflict between progressive/conservative-reactionary

Economic prospect: economic potential; prospects for investment and profits; R&D arguments

Ethical: call for ethical principles; thresholds; boundaries; distinctions between acceptable/ unacceptable risks in discussions on known risks; dilemmas. Professional ethics.

Pandora's box: call for restraint in the face of the unknown risk; the opening of flood gates warning; unknown risks as anticipated threats; catastrophe warning

Runaway: fatalism after the innovation; having adopted the new technology/products, a price may well have to be paid in the future; no control any more after the event

Nature/nurture: environmental versus genetic determination; inheritance issues

> *Public accountability*: call for public control, participation, public involvement; regulatory mechanisms; private versus public interests
>
> *Globalization*: call for global perspective; national competitiveness within a global economy; opposite: splendid isolation (Nisbet & Lewenstein, 2002, p. 372)

Early reporting of agricultural biotechnology and general biotechnology framed articles primarily in terms of its scientific progress or economic prospect (Nisbet & Lewenstein, 2002; Thomson & Dininni, 2004). Over time, however, a shift away from scientific progress and economic prospect framing occurred (Nisbet & Lewenstein, 2002; Thomson & Dininni, 2004; Thomson, Dininni, & Kramer, 2005). Between 1995 and 1999, general biotechnology framing was moving towards ethical framing (Nisbet & Lewenstein, 2002). In 2001 and 2002, agricultural biotechnology was also increasingly being framed in terms of public accountability (Thomson & Dininni, 2004; Thomson et al., 2005). One interpretation of this shift might be that of a social maturation where writers and readers move from considering the technology in terms of its novelty and creativity towards considering its broader social impacts. Furthermore, these social impacts may have more relevance to the readers' concerns, and thus more long-term interest, than the technology's novelty.

Because of an article's frame, certain angles may have more salience within the article (Entman, 1993). For example, an economic prospect article would be primarily concerned with economic angles and might only discuss other angles, such as health, social or environmental angles, to the extent that they affect the primary angle of economics. Furthermore, an economic prospect framed article may not deal at all with health or environmental issues. However, a runaway or a Pandora's box framed article might not report on economic issues because, in such an article, damage to the environment or to public health would be the primary concern and

economics would not be relevant. An initial investigation by Thomson and Dininni (2004) found that the angles of newspaper reporting did change in focus depending on frame. In 2002, the most common angle reported in articles framed in terms of public accountability were social aspects whereas economic prospect/scientific progress framed articles mentioned economic angles most often (Thomson & Dininni, 2004). Interestingly, the most commonly used angles (Thomson & Dininni, 2004) were not the angles about which the public expressed the most interest - health and environmental issues (Hallman et al., 2004).

Framing has also been shown to have an effect on controversy reporting of general biotechnology such that progress framing was associated with reduced controversy reporting (Ten Eyck & Williment, 2003). Nisbet and Lewenstein (2002) also found controversy reporting in general biotechnology in national newspapers has increased over the years from about 30% of articles mentioning some controversy in 1970-1974 to 67% in 1995-1999. Ten Eyck and Williment (2003) noted that while general biotechnology reporting of controversy was dependent on frame, food-related biotechnology was controversial even initially and prior to general biotechnology being reported as controversial. Priest (2001) also discussed some of the health-related and economic controversies which surrounded the introduction of rBST milk. However, no studies were identified that have systematically examined which aspects of the technology are being reported as controversial.

Purpose and Objectives

The purpose of this study was to investigate the coverage of agricultural biotechnology reporting in four national newspapers for the most recent full year of coverage. The specific objectives were to:

1. Identify frames used to report agricultural biotechnology;

2. Identify the angles of agricultural biotechnology's impact reported and their relationship to article framing;
3. Identify the types of controversies reported and their relationship to article framing.

Methods

For this study, the *Los Angeles Times*, the *New York Times*, the *Wall Street Journal*, and the *Washington Post* were selected as the sample national newspapers. They were chosen based on their national recognition, daily circulation, and searchability. Each is a respected newspaper. The Los Angeles Times has been described as "the largest and most influential daily on the West Coast" (Bagdikian, 1997/1999, pg. 152). The *New York Times*, as well as the *Wall Street Journal* and the *Washington Post* are often used as peer sources for story ideas for other media across the country (Gans, 1980/1999). Gitlin (1980/1999) also noted many newspapers, which have shut down their out-of-town bureaus, have also shown an increased dependence on news from wire services, especially the *Los Angeles Times*, the *New York Times*, and the *Washington Post* wire services. Based on their year 2000 circulations, each is within the top five most circulated papers in the United States (Facts about newspapers 2001, 2001).

Articles were selected using Lexis-Nexis (the *New York Times* and the *Washington Post*), Newsbank (the *Los Angeles Times*), and Factiva (the *Washington Post*) for the calendar year January 1, 2004 to December 31, 2004 using the following search terms:

> "ag biotech" OR "GMO" OR "gm crop" OR "gm food" OR "agricultural biotechnology" OR "genetically engineered crop" OR "ge crop" OR "ge food" OR "genetically engineered food" OR "genetically altered crop" OR "genetically altered food" OR "genetically modified food" OR "GMF" OR "genetically modified crop" OR "genetically modified organism"

All articles found in this search (N= 154) were coded using a code developed by Thomson and Dininni (2004) and refined by Dininni, Thomson, and Kramer (2005). The final code contained 32 variables, including the variables of frame, angle, and controversy type.

To determine inter-coder reliability, two volunteers were recruited to code eight articles following a brief training session. Both volunteers were only trained for reliability purposes and did no further coding. All coding for data analysis was performed by a single coder once code reliability was determined. The eight articles were selected such that each paper was represented by two articles. For the *New York Times*, the *Wall Street Journal*, and the *Washington Post*, two articles each were randomly selected from all articles found that were published in those papers for the calendar year of 2001; the same was done for the *Los Angeles Times* for the calendar year of 2004. The volunteers were trained and given a practice article to code which was not one of the randomly selected articles. A tentative inter-coder reliability was determined, and the volunteers were further trained to clear up any confusion. Once the volunteers understood the codebook, they were given the eight articles to code on their own. For each variable, the percent agreement between the two volunteers and the main coder for each article was determined (0% for no agreement, 66% for two coders in agreement, and 100% for all in agreement). The percent agreements in each of the eight articles were then averaged to determine the inter-coder reliability for each variable.

The variable of frame was based on the agricultural biotechnology frames defined in the theoretical framework. However, for this code, scientific progress and economic prospect were combined because previous work by Thomson and Dininni (2004) found they can be difficult to distinguish. Pandora's box and runaway were also combined since the two are also closely related and difficult to distinguish when coding. The other frames were distinct enough to retain.

Articles were coded using the following frames: ethical, nature/nurture, public accountability, globalization, scientific progress/economic prospect, and Pandora's box/runaway. Inter-coder reliability was 0.75.

The variable of angle was defined by Dininni and Thomson as "emphasis on social, environmental, health and/or economic impact of agricultural biotechnology" (2003, p. 2). The inter-coder reliability for each angle was 0.88 for social, 0.83 for environmental, 0.75 for health, and 0.75 for economic. Articles could have more than one angle. If the angle was mentioned even once, the article was coded as containing that angle.

The refined Dininni et al. (2005) code included a variable for the type of controversy reported. This variable expanded on Nisbet and Lewenstein's (2002) variable of reporting of controversy where absence or presence of controversy was coded. Although Nisbet and Lewenstein (2002) did not specifically define controversy, the American Heritage College Dictionary defined it as "a dispute, esp. a public one, between sides holding opposing views" (Berube et al., 2000, pg. 303). Articles in our study were examined for the type of controversies reported. Types of controversy identified were: economic controversy, environmental controversy, health controversy, legal/regulatory controversy, social controversy, technology usefulness controversy, or other controversy. Legal/regulatory controversy referred to controversies surrounding legal issues, voluntary regulatory mechanisms or mandatory regulatory mechanisms (Dininni et al., 2005) and had an inter-coder reliability of 0.75. Technology usefulness controversy pertained to genetic augmentation working as claimed, augmented strains still producing or becoming obsolete, the technology growing or becoming obsolete, or arguments for agricultural biotechnology based on potential benefits yet to be developed (Dininni et al., 2005). Inter-coder reliability for it was 0.92. Social controversy,

environmental controversy, health controversy, and economic controversy pertain to social, environmental, health, and economic disagreements. Their respective inter-coder reliabilities were 0.88, 0.92, 0.71, and 0.79. Other controversy, with an inter-coder reliability of 0.92, pertained to any other type of controversy that did not fit into the defined categories.

Data collected from the newspapers using the code were analyzed using the SPSS 13.0 for Windows data analysis software.

Results

Objective 1: Article Framing

We first examined article framing to determine what the most prominent frames across the four newspapers were (See Table 1). For the *Los Angeles Times*, the *New York Times*, and the

Table 1

Frame Across Newspapers

	Newspapers			
Frame	*Los Angeles Times*	*New York Times*	*Washington Post*	*Wall Street Journal*
Sci. Prog./ Eco. Pros.	5	13	10	6
Public Accountability	17	20	17	4
Ethical	2	6	4	1
Globalization	0	5	4	8
Runaway/Pandora's Box	0	6	3	0
Nature/Nurture	0	0	1	1
Other	4	10	6	1
N	28	60	45	21

Washington Post, the most prevalent frame was public accountability. However, the relative level of use for this frame was different across these three newspapers. About 60% of the articles in the *Los Angeles Times* were framed using public accountability while one-third and just over one-third of the articles in the *New York Times* and *Washington Post* respectively were framed this way. The next most prominent frame for these three newspapers was scientific progress/economic prospect. The rate of use was similar among the three newspapers at about 20% of the articles. The *Wall Street Journal*, however, was distinct from the other three papers in how most articles were framed. The *Wall Street Journal*'s most prominent frame was globalization, with over one third of the articles using this frame. The next most common frame was scientific progress/ economic prospect, with 6 out of 21 articles framed that way. Overall, the most frequent frame for articles was public accountability, and the next most common frame was scientific progress/ economic prospect.

Objectives 2 & 3: Angle of Agricultural Biotechnology's Impact

We examined the angles of agricultural biotechnology's impacts reported in each article (See Table 2). Articles could have more than one angle. Across each newspaper, the most common angle reported was social. This angle is consistent with news media being a conduit for socially relevant information. All four newspapers also had economic issues as the second most reported angle for agricultural biotechnology. While over half of the articles in each paper mentioned economic issues, the percentage of articles ranged from a low of 53% in the *Los Angeles Times* to 100% of the *Wall Street Journal* articles.

Environmental and health issues were not covered as extensively as economic issues in any of the four newspapers. Both issues were each reported in less than half of the articles for two out of the four newspapers. The *New York Times* reported on environmental issues in just

over half of its articles (31 out of 60) while the *Wall Street Journal* reported on health issues in 11 out of 21 articles. Across these four newspapers, environmental and health angles were always reported less often than social and economic angles.

Table 2

Angle of Reporting Across Newspapers

	Newspapers			
Angle[a]	*Los Angeles Times*	*New York Times*	*Washington Post*	*Wall Street Journal*
Economic	15	43	32	21
Environmental	11	31	22	10
Health	12	28	19	11
Social	27	54	44	21
Other	0	1	1	0
N	28	60	45	21

Note. [a]Each article could contain more than one angle.

Next, we compared the frames to the angles reported (See Table 3). For the most frequent frame overall, public accountability, the most dominant angle was social; 41 out of 58 articles reported on social issues. The next most prominent angle for this frame was economic, with half of the articles reporting these issues. For scientific progress/economic prospect framing, economic issues were most frequently reported in 24 out of 34 articles with social issues closely following in 23 articles.

Again, neither of the most commonly used frames, public accountability and scientific progress/ economic prospect, reported environmental and health issue as often as social or

economic issues. For public accountability framing, environmental and health issues were only reported in 41% and 36% of articles respectively. Environmental and health issues were reported in less than one-third of all scientific progress/economic prospect framed articles.

Table 3

Reporting Angle By Frame Across the Los Angeles Times, the New York Times, the Washington Post, and the Wall Street Journal

	Angle[a]				
Frame	Economic	Environ.	Health	Social	N[b]
Sci. Prog./ Eco. Pros.	24	11	6	23	34
Public Accountability	29	24	21	41	58
Ethical	8	8	10	11	13
Globalization	16	9	8	17	17
Runaway/Pandora's Box	8	8	5	9	9
Nature/Nurture	1	1	2	2	2
None	7	2	6	16	21

Note. [a]Each article could contain more than one angle. [b]Data are compiled for all four newspapers.

Objectives 4 & 5: Types of Controversy Reported for Agricultural Biotechnology

We next examined the types of controversies reported for agricultural biotechnology (See Table 4). More than one type of controversy could be mentioned in an article. Across all four newspapers, social controversies were reported most often, from 75% of the *Washington Post*'s articles to 95% of the *Wall Street Journal*'s articles. The two next most commonly reported types of controversies were economic and legal/regulatory. However, differences among the

newspapers existed. In the *Los Angeles Times* and the *Washington Post*, legal/regulatory controversy was the second most reported type of controversy while economic controversy was the third. In the *New York Times* and the *Wall Street Journal*, this order was reversed. Overall 84% of articles mentioned some social controversy, 57% mentioned a legal/regulatory controversy, and 53% mentioned an economic controversy.

Table 4

Types of Controversy Reported Across Newspapers

	Newspapers			
Controversy[a]	*Los Angeles Times*	*New York Times*	*Washington Post*	*Wall Street Journal*
Economic	12	32	18	19
Environmental	9	19	13	9
Health	11	18	15	10
Legal/Regulatory	19	31	21	17
Social	26	49	34	20
Technology Promise	3	10	5	3
Other	0	1	0	0
N	28	60	45	21

Note. [a]Each article could contain more than one type of controversy.

As with angle of reporting, health and environmental controversies were not mentioned as often as social and economic controversies, as well as legal/regulatory controversies. Health controversies were only mentioned in 35% of articles overall. Less than one-third of the total articles mentioned environmental controversies.

Finally, we compared article frames to the types of controversy reported in overall national reporting of agricultural biotechnology (See Table 5). For all frames, social controversy was the most commonly reported type of controversy. For public accountability, the most often used frame, the next most reported controversies were legal/regulatory controversies, reported in almost three-quarters of articles. Economic controversy followed in half of the articles. In scientific progress/economic prospect framing, economic controversies were the second most reported controversies in 16 out of 34 articles while legal/regulatory controversies closely followed with 15 articles reporting them.

Table 5

Overall Type of Controversy Reported By Frame for All Four Newspapers

	Controversy[a]							
Frame	Econ.	Env.	Health	Leg./ Reg.	Soc.	Tech. Prom.	Other	N[b]
Sci. Prog./ Eco. Pros.	16	6	5	15	23	4	0	34
Public Accountability	29	24	24	43	51	5	1	58
Ethical	7	6	8	7	10	5	0	13
Globalization	16	5	6	13	17	2	0	17
Runaway/Pandora's Box	6	6	4	4	7	3	0	9
Nature/Nurture	1	1	2	1	3	0	0	2
None	6	2	5	5	19	2	0	21

Note. [a]Each article could contain more than one type of controversy. [b]Data are compiled from all four newspapers.

Coverage of environmental and health controversies in public accountability framing was higher than we found in overall coverage. Environmental and health controversies were each reported in 41% of articles using public accountability framing but in less than 18% of scientific progress/economic prospect framed articles.

Conclusions and Discussions

First, agricultural biotechnology is not extensively reported in the national newsprint media. Across four national newspapers, only 154 articles were published for the calendar year of 2004. Even the most prolific newspaper, the *New York Times*, published only 60 pieces, just over one piece a week. Experts suggest extensive coverage is needed to increase public knowledge about a subject for which they are not predisposed to seek information (Calvert, 2000). It is unclear exactly how much coverage constitutes "extensive." However, in 2000 and 2001, the *New York Times* published 124 and 189 article respectively (Thomson & Dininni, 2004). This coincided with both Starlink reporting and an increased awareness of agricultural biotechnology in the general public (Marks & Kalaitzandonakes, 2001). Total coverage among four papers in 2004 did not reach the level of coverage for a single paper in 2001. Furthermore, while the studies Marks and Kalaitzandonakes (2001) referenced considered awareness, no mention was made of public knowledge. Yet, the public can have heard or read something about the technology, and thus be aware it exists, without understanding much about it (Hallman et al., 2003; Hallman et al., 2004). While awareness might be the logical first step towards knowledge-gain and understanding, continuing on that path would likely require increased exposure, not less. Therefore, if newspapers are a major source of information about agricultural biotechnology for the public (Hoban & Kendall, 1993), and so few pieces are printed, it is no wonder the public is not informed (Hallman et al., 2004).

Second, national newspapers are continuing the move away from scientific progress/economic prospect framing. In 2002 national newspaper reporting, public accountability was the most commonly used frame, found in 26% of all articles (Thomson et al., 2005). Scientific progress/economic prospect framing followed closely in 23% of all articles (Thomson et al., 2005). By 2004, public accountability framing had increased to one-third of all articles, and scientific progress/economic prospect framing had dropped to 20%. This shift suggests that newspaper coverage is maturing beyond reporting on the potential of the technology to the impacts it is having on regulation, something more relevant to the public's concerns.

Even the *Wall Street Journal*, which differed from the other three papers in that its most prominent frame was globalization, showed a broadening in its reporting. Articles were also primarily framed using scientific progress/economic prospect in 2001 (Thomson et al., 2005). In 2002, framing in the *Wall Street Journal* moved to globalization, with 34% of its articles using this frame (Thomson et al., 2005). Globalization framing increased to 38% in 2004. While the globalization frame still focused on economic issues, instead of using scientific progress/economic prospect framing to report on the potentials of agricultural biotechnology, the use of globalization framing meant articles covered how agricultural biotechnology affects the broader issue of global competition.

Across the newspapers, framing continued to move away from the technology's potential to the impacts it is having. Yet despite this move, the impacts being reported do not appear to correspond with the primary concerns of the public – health and the environment (Hallman et al., 2004). This analysis showed social and economic issues were the most commonly reported angles. This reporting held true across newspapers as well as across the two most commonly

used frames, public accountability and scientific progress/economic prospect. The public has expressed less concern with the economic issues raised by agricultural biotechnology than with health and environmental issues (Hallman et al., 2004), and people are more likely to read and learn about topics they perceive are more relevant to them (Hidi, 2001). Furthermore, newspaper readers are often distracted while reading (Calvert, 2000). Therefore, reporting on aspects in which the public is less interested may not catch readers' attention, further contributing to the public's lack of knowledge on the topic.

The controversies reported also are not related to the issues in which the public is most interested. While public accountability framing reflected a consideration of broader social issues, the controversies reported were social, economic, and legal/regulatory. Considering public accountability addresses regulating the technology, one would expect legal/ regulatory controversies. However, articles also focused on economic issues involved in this regulation rather than on public health and environmental safety reasons for having these regulations. In terms of relevance, economic controversies might have salience for those interested in investment and trade, but public health and environmental controversies would have relevance for the public at large. Again, the controversies in which the public is interested regarding agricultural biotechnology are not as widely reported as other controversies, therefore these articles are not likely to catch the general public's eye and to capture their interest in the topic of agricultural biotechnology.

This study focused on national newspaper coverage of agricultural biotechnology. While this approach can provide a good national overview of coverage, it is limited in that regional reporting can differ from national coverage (Thomson & Dininni, 2004). Reporting can also vary

across regions (Thomson & Dininni, 2004). If there are regional differences in public knowledge of agricultural biotechnology, regional differences in coverage could be a contributing factor.

Implications and Recommendations

Our results demonstrate that national newspaper reporting of agricultural biotechnology is not covering the issues of greatest concern and most relevance to the public on this topic. The public is largely uninformed about agricultural biotechnology (Hallman et al., 2003; Hallman et al., 2004). With news reporting focusing on issues not relevant to them, it seems unlikely the public will ever become more informed through newspaper reporting.

However, expecting newspapers to increase coverage on a topic in which the public has limited interest may not be realistic. News reporting is current events driven, meaning news tends to report what has happened most recently rather than what might happen or what has happened in the past (Park, 1940/1999). The topics that the average reader would likely find most relevant, however, are not necessarily those that would be part of current events. Health and environmental issues are potential effects or past events, such as the Starlink scandal, not current happenings. In contrast, economic issues are easily visible in the events of the day, such as trade disputes. Unless a major environmental or public health event related to agricultural biotechnology occurs again, these topics are not likely to take center stage in newspaper coverage of agricultural biotechnology.

Instead, facilitating public interest in and dialogue about agricultural biotechnology will depend on strategies other than waiting for newspapers to change the manner in which they cover agricultural biotechnology. The professionals looking at agricultural biotechnology, especially in the broader context of how it affects the local food system, are already aware of its importance to the public and local communities. They have the creative insights crucial for

making the topic “real” to the public. It is then their responsibility to use these insights to inform the public of agricultural biotechnology’s relevance. When being interviewed by journalists covering agricultural biotechnology, professionals can answer the journalist’s questions in such a way as to make the information relevant and meaningful to the general public.

Those change agents interested in improving public dialogue about agricultural biotechnology will also have to use more active strategies than relying on media coverage. A part of the broader topic of local food systems, agricultural biotechnology affects the food available in a community, which is an issue relevant to everyone in that community. To have meaningful dialogue, the local food systems, and the subtopic of how they are affected by agricultural biotechnology, should be discussed in a context so that the public finds it personally relevant: how it affects their health, the local environment, and the local economy. For example, an educator might use a structure similar to the UK Café Scientifique to foster a dialogue (Café Scientifique, 2005). In such a group, members of the scientific community meet with members of the local community over a cup of coffee to discuss current issues brought up due to scientific progress (Café Scientifique, 2005). Regardless of the method used to improve dialogue about agricultural biotechnology, though, change agents have the responsibility of making the topic meaningful to the public and of discussing public concerns.

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Research Paper Submission

"The Stuff You Need Out Here": A Semiotic Analysis of Agricultural Magazine Advertisements

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"The Stuff You Need Out Here":

A Semiotic Analysis of Agricultural Magazine Advertisements

Abstract

In today's mediated society, people are continually searching to describe the relationship among themselves, the items they encounter in their physical environment, and the cultural and historical contexts in which they reside. By placing meaning-laden visuals in a medium as popular as magazines (Maddox, 2001) with agricultural audiences, advertisers are sending messages as to what rural life should consist of. The 2004-2005 advertising campaign of the Tractor Supply Company utilized photographs of rural life to sell viewers "The stuff you need out here." This advertising campaign, which relied heavily on a humorous appeal to play into stereotypical images of agriculture and rural life, was seen in a variety of magazines that reach rural audiences. Using the semiological framework of how images construct meanings, this study sheds light on the various messages behind these advertisements and how they convey the cultures of rural life to farm and non-farm audiences. It is apparent that these advertisements have a tendency to play into the dominant ideology of what farming and farmers look like. Through simplistic images playing into known stereotypes such as male domination, hardworking, and freedom, the dominant ideal is enforced through the selling of these products. By utilizing American ideals and colors, the advertisements played into the American need to be patriotic. Researchers must continue to track how these stereotypes are portrayed if agricultural communicators want to be able to effectively portray farming in the media.

Keywords: Rural Images, Advertising, Semiology, Qualitative Case Study, Tractor Supply Company

Introduction

"We can only understand what advertisements mean by finding out how they mean" (Williamson, 1978, p. 17). In today's mediated society, people are continually searching to describe the relationship among themselves, the items they encounter in their physical environment, and the cultural and historical contexts in which they reside. Advertising texts and visuals are cultural and social expressions that allow us to shed light on these relationships (Page, 2004). These images can be seen as "systematic masses of complex intricate soci-cultural relations that have been ordered in very specific ways to produce a variety of meanings" (Furey & Furey, 2003, p. 87).

By placing these meaning-laden visuals in a medium as popular as magazines (Maddox, 2001) with agricultural audiences, advertisers are sending messages as to what rural life should be. The 2004-2005 advertising campaign of the Tractor Supply Company utilized photographs of rural life to sell viewers "The stuff you need out here." This dynamic advertising campaign, which relied heavily on a humorous appeal to play into stereotypical images of agriculture and rural life, was seen in a variety of magazines that reach rural audiences. To explore these ideas and uncover the advertising's messages, this study will examine the ads of the 2004-2005 Tractor Supply Company "The stuff you need out here" campaign. Through a semiotic lens, this paper will seek to shed light on the various messages behind these advertisements. Semiotics is a philosophical framework that seeks to discover how images construct messages through the study of signs and codes (Rose, 2001).

Background into the company behind this advertising campaign will be provided to give a basis for these images. A review of advertising as a visual communication will follow. A brief overview of the methodology employed to evaluate the images and their meanings will be given.

An analysis of three images included in the 2004 campaign will be presented preceding an explanation of the implications for future semiotic analysis.

Literature Review

Tractor Supply Company

Tractor Supply Company, the largest retail farm and ranch store chain in the United States, was founded in 1938 as a mail order catalog business offering tractor parts to family farmers. Located in states mostly east of the Rocky Mountains, the company claims to focus on "supplying lifestyle and maintenance needs of recreational farmers and ranchers, and others who enjoy the rural lifestyle" (Tractor Supply Company, 2005). In 2004 the company, also known as TSC, was named to Fortune Magazine's list of 100 fastest-growing companies. The company, which is now headquartered in Brentwood, Tennessee, reported revenues that exceeded $1.7 billion in 2004, making it a leading retailer in its market. The corporate business mission of TSC is "to work hard, have fun, and make money by providing legendary service and great products at everyday low prices" (TSC, 2005). The highly visible efforts to communicate this mission are seen in their current advertising campaign.

Portraits of Rural Life

Farming and rural life in the United States have continually been portrayed throughout the 20th century as being subjected to a "domestic ideology" where men are farmers and women play a supporting role (Walter & Wilson, 1996). Media oriented toward rural audiences continue to project images of rural domestic life and gender roles that feed into these stereotypes (Walter & Wilson, 1996). Rural areas are typically comprised of lower income families with lower educational levels than those found in urban areas (Strover, 2001). While research has been

done looking at how women have been portrayed in agricultural media (Walter & Wilson, 1996), not much has been analyzed in terms of how agricultural media are portraying farm life.

Agricultural businesses continue to see magazines and other trade publications as an integral part in reaching producers with their advertising messages (Boone, Meisenbach, & Tucker, 2000). Agribusiness advertising is a major source of revenue for many rural publications and broadcast stations. Advertisers are given many opportunities to display images of cultural life in these publications. The advertising campaign being analyzed in this paper has done just that. By portraying images of rural life in these publications, they are able to confirm the relationships sought after by viewers between themselves, the product, and their physical environment.

A nationwide study of consumers was done by the American Farm Bureau to see how the buying public views farmers. The report was developed due to a concern that farmers were being portrayed in advertisements as lacking in modern context (American Farm Bureau, 1998). Results of the American Farm Bureau study found that consumers perceived farmers in a very positive light, saying that farmers contribute greatly to society. Consumers reported describing farmers as “hard working,” “honest,” and having “good family values” (American Farm Bureau, 1998). Researchers concluded that while the results were a step into the right direction to defeating stereotypes of farmers in the media, there is still a long way to go.

While this portrayal of agriculturalists is very common in most media (American Farm Bureau, 1998), very little research has been done to describe consumer perceptions, as well as media portrayals, of agriculturalists. In 1991, Mary Anne Higgins made a plea in the *Journal of Applied Communication Research* for more research looking at the communication gap between farmers and non-farmers, citing the fact that non-farmers hold farmers in high esteem, while

holding an idealistic, romanticized view of farming. Through a thorough review of the literature in communications, it appears that this call has been unanswered.

Advertising as a Visual

Advertising, at its basic core, is a communication method that is mass mediated to a specific audience with the goal to persuade someone about a product, service, an idea, or way of life (O'Guinn, Allen, & Semenik, 2003). Advertisements have been described as one of the most powerful tools that can influence and reflect a culture (Gorman, 2004, p1).

Advertisements work to make a connection and transpose meanings between an object and an image (Williamson, 1978). Messaris (1994) discussed this association of juxtaposition in the visual organization of advertising images. The notion is that these images will transfer their meanings to one another just through association in the advertisement. Williamson (1978) noted that advertisements' primary function may be to sell the product, but they also create a structure in which they are selling us ourselves. By relating a way of life through juxtaposition, the advertisements are also selling the viewer a lifestyle that they would like to have. Advertisements, according to Williamson (1978), have an independent reality that allows them to link to our lives and the lives we hope to live.

Several studies have looked at specific cultures and their representations in advertisements. Merskin (2001) analyzed the stereotypes that have been created and perpetuated by advertisers in relation to Native Americans. Through a semiological analysis of several American advertising brands, the researcher found that these brands (consisting of companies like Crazy Horse Malt Liquor, Land O' Lakes, and Sue Bee Honey) reinforce an ideology that has caused consumers to be blind to forms of racism against this culture group. Merskin (2001)

concluded that stereotypical images of ethnic groups are not only trends of the past, but remain typical entities of advertising and product branding today.

Some cultural groups have worked to define the ideologies being portrayed in advertising about them. Firth (2003) described the regulation of cultural content in advertising in Southeastern Asian countries. By analyzing advertising in Singapore, Malaysia, and Vietnam, the researcher was able to describe the distinctive methods of shielding local cultures through regulation of what international and national advertisers could depict in their ads.

These studies shed light on how other cultural groups are battling the stereotypes placed upon them through advertising images. Williamson (1978) argued that advertisements allow viewers to create meaning out of what they are seeing. As these stereotypes continue to be portrayed, will viewers reinforce these meanings in their own minds?

Purpose

Based on the proceeding literature review this study aims to explore the advertising messages presented in the 2004-2005 Tractor Supply Company "The stuff you need out here" campaign. By shedding light on the various messages behind these advertisements agricultural communicators can better understand the portrayals of agriculture and rural life. The research questions guiding this analysis were:

RQ1: How is agriculture and rural life portrayed in these advertisements?

RQ2: Do the images support or defy the stereotypes surrounding agriculture?

RQ3: How does the Tractor Supply Company portray its company in this campaign?

Theoretical Framework

To explore these connections deeper, the advertisements will be analyzed through the theoretical framework of semiology. Semiotics is a philosophical approach that seeks to confront

the question of how images construct messages (Rose, 2001). The study of semiotics originated in the literary and linguistics realms of study, and has been developed further by the works of Pierce, Levi Strauss, and Saussure. Semiotics is the study of signs and codes that are used in producing, conveying, and interpreting messages (Rose, 2001).

Saussure developed a systematic understanding of how linguistics works through the use of the sign (Rose, 2001). A sign is the basic unit consisting of the signified-a concept or an object, and the signifier-the sound or image attached to the signified. Researchers assert that the relation between the signifier and the signified is arbitrary and can mean different things to different people (Rose, 2001).

Individuals who belong to a culture are said to interpret the world in similar ways with similar ideals that are set by rules and norms of the culture (Kates & Shaw-Garlock, 1999). Over time, these codes constructed to legitimate social power relations, form what is known as ideology (Rose, 2001). Ideology is defined as those representations that work with the interests of the ruling class in mind (Rose, 2001). Codes are sets of conventionalized methods of making meaning that are particular to certain cultural groups. These codes allow a semiologist to come in contact with the wider ideologies at work (Rose, 2001). Advertisements are created with images loaded with ideological assumptions that reach audiences with a preconceived message (Merskin, 2001).

Ronald Barthes took semiotics further to describe how researchers must move beyond the common and obvious meanings of signs to see the hidden meanings in complex messages (Barthes, 2002a). Barthes' theory describes a bi-level reading of messages that must take place. The initial level, denotation, is a starting point in which one reads the direct, specific meaning of the sign (Barthes, 2002a). This is followed by the connotation, second level, in which the

meaning that is evoked by the object is read. Barthes describes the connotation as something that reflects the cultural meanings, mythologies, and ideologies. For example, an image of a tropical island would have a basic denotative reading of a tropical location, and a possible connotative reading of a vacation or relaxation and slow living. These meanings can reach mythological status as the text and the ideology work together to give a bigger meaning. Barthes describes myth as a second-order meaning of the signifier and signified that brings more cultural meanings (Barthes, 2002b).

Williamson (1978) stated that through semiotic theory advertising correlates specific feelings with objects. A product which may initially have no meaning must be given value through the product becoming the signified of the image that is the signifier. As viewers of an image, audiences are the host to the meaning. They must insert themselves into the advertisements and find signs within it. By seeing images that naturally would not be connected placed in the same visual, viewers correlate those meanings together.

This paper analyzes three advertisements that are dominated by visuals of rural life. The analysis recognizes the dominant visuals, their function as signs, and the denotative and connotative messages they convey, as well as the overall ideologies.

Methods

Semiology, as a method, offers many analytical tools for researchers to use to dissect an image and describe its meaning in relation to the world around it (Rose, 2001). The analysis of this study will focus on the idea of the sign and how it makes meanings in the advertisements. Semiology studies tend to concentrate on the image itself in terms of composition and social modality. This study uses these methods to develop a case study of three advertisements used in the Tractor Supply Company campaign.

Bloom (2004) described the "The stuff you need out here" campaign as engaging and effective. The campaign developed by Carmichael Lynch (Bloom, 2004) reflects the organizational mission of the Tractor Supply Company. While several television commercials, as well as print advertisements, were included in the campaign presented by the Tractor Supply Company in 2004, three specific print advertisements were selected for this study. These three images were selected based on the fact that beyond being interesting, creative, and offering a unique rural perspective, they were run in several agricultural-focused publications. While a total of 12 different print advertisements were found by the researcher in various magazines, the selected three were published the most out of all of the ads. The magazines in which the ads were taken include *America's Horse* and *Western Horseman.* The researcher also chose these advertisements since they were in publications the researcher could identify with as part of the target audience. By being familiar with the genre the researcher can understand the intertexuality (McKeown, 2005).

Images were analyzed individually without taking into consideration the text surrounding them on the page. Once the images were located and selected, the researcher utilized the steps outlined by Rose (2001, p. 91) to identify and explore the connections between signs. While many paths can be chosen for semiotic analysis, this method is supported in the literature (Rose, 2001). First, the images were dissected to identify the individual signs relevant to the analysis. Next, these signs were explored in terms of what they signify by themselves. Third, they were analyzed in relation to other signs and text within the ad. The advertisement images were next looked at to determine the denotative and connotative readings of the identified signs. Lastly, the ads were looked at as a whole to describe the ideology that was being utilized to reach the viewer. When analyzing signs, as was done in this study, there is an understanding that they are

polysemic in their nature, as they are open to different interpretations depending on the individual and the culture (McKeown, 2005). Signs were identified based on the research presented in the literature review.

Analysis

Each advertisement in the campaign is designed with an identical look that quickly connects the reader to the company. While text is not initially seen as the most important part of the advertisement, upon closer inspection it appears to be placed on the ad to appear three-dimensional, and in turn very important. All ads are laid out in a horizontal plane, with the viewer being eye-level with the subjects in the advertisement.

Each advertisement was placed toward the middle of the publication as a half-page ad on the bottom of the page. When the ads were run, there were typically three ads run in a row on three consecutive pages; however, no two ads could be seen at the same time.

Each of the images utilizes a photographic technique that makes it appear as if it was a snapshot of someone's day in rural America. Photographs are successful as advertising visuals because they are thought of as picturing reality instead of a premeditated message (Gorman, 2004). By portraying this ruralness, the advertisers are reaching farmers and non-farmers alike. The farmers are able to place themselves easily into the ad, as it is a picture of their daily life, while the non-farmers who romanticize farming (Higgins, 1991) are able to place themselves into this lifestyle they see as relaxing and serene.

The text is then "posted" with what appears to be duct tape onto the image so it stands out and draws your attention to it. The duct-taped note, plays into the imagery of hard-working, low income (Strover, 2001), rural America. Duct-tape, as a product, prides itself on being rugged, industrial strength, and for the common man. By positioning a product that is seen this

way by the public, the advertisers are juxtaposition these qualities onto the TSC product. These stand-out images are also shown in a sepia tone, indicating they are old. By tying into this tone, the ad is connotating a historical way of doing business and a company that is based on traditional values.

These posted messages, appear to be cut out of another magazine or a newspaper that someone put onto the image as a humorous side note. One would consider these to be humorous as the object they are selling in this pop-out ad is usually in contrast or a solution to what is happening in the image itself. Williamson (1978) described how advertisers will rely on these puns to draw viewers into the advertisement and involve them in the image.

Considering the very mixed, and if not slightly more feminine, audience of the magazines in which these ads were produced in, it is interesting that the dominant person in all three advertisements is a male figure. Only one ad contains a woman, who is very passive, and in the background. She is sitting between several men in the ad, and while they are all very open in their sitting by being sprawled out on the chairs, she is closed with her arms and legs crossed. As Gorman (2004) described, this is seen as being powerless or subordinate as she has lowered herself and made herself smaller, in comparison to the men around her. These ads play into the dominant ideology of the white, male farmer in rural America (Walter & Wilson, 1996).

Many semiotic studies of advertising images have pointed out the use of sexual symbols in order to place a “male gaze” into the advertisement (Messaris, 1994). While these ads do not use blatant sexuality to sell their images, they portray a male gaze in which they confirm the males’ comfortability with his sexuality and his being the active role in life. This is achieved by the viewer seeing all of the men in the advertisements doing something or seeing them in a position where they have just completed a task.

The images utilized in the TSC ad campaign show a product in order to juxtapose viewers into a lifestyle of agriculture and stereotypical rural lifestyle. These ads serve as an answer to viewers' problems.

The Manure Fork

This first advertisement (Figure 1) appears near the beginning of the February 2005 issue of *America's Horse.* Its bright colors and three-dimensional appeal, with the taped ad popping out of the photo, draws the viewer's eye straight for the ad. Upon first inspection, the viewer sees an older, white-collar, politician speaking at a podium stationed in a farmyard in front of a classic red barn, signifying the ideal farm setting, the classic rural picture of the barn in the field. This plays to the viewer's romanticized picture of rural life that has been shaped through media, such as movies and television programs.

Figure 1.Tractor Supply Advertisement for a Manure Fork.

Four people are placed in mis-matched chairs off to his left side. By using chairs that do not match it appears as if this image is real and was not posed. These people came here on their own, bringing their own chair. The four onlookers are a mixture of people who, by their posture, appear to have been listening to the politician speak for a while. The three males are dressed in stereotypical farmers clothing: bib overalls, jeans, baseball caps, and flannel shirt. Another person appears to be on the right side of the speaker; however, you can only see his arm and leg. He appears to be dressed nicely like the politician, in contrast with the farming audience.

The setting for the image is something that most minds conjure when thinking of farming life: the red barn, green grass, clear skies, wood fence, and crops in the background. The green grass and blue skies in the advertisement connotate freedom and purity by showing the beauty of nature. While the barn, fence, and crops continue to play on the image of rural America, bringing the idea of simplicity, hard work, and trustworthiness to the viewer's mind. These connotations are then transferred to the advertisement, showing the company as holding these qualities. By setting this political speech in this setting, the advertisement is playing into the stereotypical farm scene putting the viewer in an idyllic setting they would like to find themselves in. Viewers are not supposed to wonder how there is a podium with a microphone stuck in the middle of this scene and why they are not indoors.

The audience of onlookers plays into the common ideal of what a farmer might appear like, as well. The four people to the right of the speaker include an elderly farmer, a woman, a man in a flannel shirt, and a man who appears to be drinking something. The elderly farmer plays into the ideal of the rural person. He wears coveralls, a farm hat, and work boots. He is also the only one in the ad looking at the politician. This could symbolize his age and wisdom, and that he is the only one actively engaged with the politician. The other two male farmers do not appear to be paying attention to the speaker. Both men are relaxed and show no interest in the events going on in the scene. One of them is looking off toward the viewer and the other is taking a drink of what appears to be coffee. The coffee again helps to convey to the reader that this a realistic scene in which the advertiser did not pose.

The four people who are sitting alongside the politician are all very smug in their expressions. The elderly man appears as if he is just about to respond to the politician, showing that he is paying close attention. However, the other three are either looking off in to space or

have their eyes closed, connoting that they are not concerned with what the politician is saying and are wanting to be somewhere else.

The politician is shown gripping onto the podium wearing a white, collared shirt with his sleeves rolled up. He is looking out with a concentrated look that viewers assume is the audience with a concentrated look. The image of the man connotes that he is a hard-working man who is willing to roll up his sleeves to do the work. This meaning is transferred into the product being sold, showing that it is hardworking and ready to get the job done. The image is also shot to where the viewer appears to be below him. The angle of the shot connotates that he is in the position of power.

The only woman in the advertisement plays the role of the typical farm wife. While she is seated before the two younger men, she is obviously the most passive person in the ad. She is sitting closed with her legs and arms crossed, while the men in the ad are open in their sitting style. As mentioned earlier this connotates her lack of power and submission to the men (Gorman, 2004) who by spreading out are seen as showing their power and comfortableness with the situation. Walter and Wilson (1996) discussed how women in rural media are portrayed as farm support over farm managers. They are seen as the spouses and siblings, and the woman in this ad plays into that stereotype because one can obviously notice a ring on her hand. This ring indicates she is not there as a listener, but as support to her farming husband.

The elderly gentleman is one of two people in the ad holding a small American flag. His flag is held predominantly showing off his patriotism. The younger man in flannel is also holding a flag, but his is pointed out of the image and he appears not to be paying attention to the politician. This difference in how the flags are held plays into the difference in the way the men are paying attention as well. The signs connotate that the older farmer is more concerned with

what the politician is saying and could be more patriotic, and that the younger farmer seems to be less concerned with these things. By the younger farmer turning his gaze away from the politician, he can be seen as withdrawing from the situation and the communication with the political figure (Goffman, 1979).

The image of the flags being held connotate a patriotic image when thinking of this company. Tractor Supply is aligning itself as the all-American company by using such images. The dominate colors in the ad play into this image of Americana, as well. While the majority of the colors in the ad are dull, the red, white, and blue colors in the image stand out and continue to add to the connotation of patriotism.

The sign on the front of the podium plays into this ideal as well. By showing the patriotic swag, as well as the traditional political sign, the patriotic meaning is continually transferred to the product and the company. The political showing in the ad also connotates that this company is concerned for the future of agriculture.

Another connotation can be read into the sign of the text presented in the ad. The torn, pop-up that is duct-taped to the ad contains the logo, the slogan of the campaign, and a brief description of what is carried in the store. The satire of the ad comes into play with the image of the object they are selling and the title, “6-tine manure fork.” While this image is dennotating a political speech and farm life by the association of the product for sale, it is connotating a message that what the politician is saying is “manure” and to solve your problem of boredom and get rid of this filth in your life, you need the product. This advertisement plays on a mythical level by providing signs that support the idea that politicians are full of manure.

The Deluxe Shade

Figure 2. Tractor Supply Advertisement for a Tractor Shading Canopy.

The next advertisement (Figure 2) out of the campaign to be analyzed appears near the middle of the March 2005 issue of *Western Horseman.* The advertisement is placed as a dominant image on the lower half of the page, in contrast with a continuing article featured at the top of the page featuring a black-and-white image. Its bright colors and three-dimensional appeal draws the viewer's eye directly to the ad over the article.

In this ad the viewer again sees the apparently cut-out ad that has been placed on the image with duct-tape. The duct tape again connotates the strength of the company and the product being presented. The image in this ad is very simple compared to the previous ad. An older gentleman, presumably a farmer because he is standing in a field with what is considered a "farmer's tan," is featured in the foreground of the image facing the viewer at eye-level.

Behind him is a typical rural scene of rolling fields, trees, and a dirt road. The background of the image connotates the freedom and openness of the scene. This naturalistic scene shows the viewer a simple life that allows one to feel the serenity of the image. By transferring this idea onto the product, the viewers feel that by buying the item, they will experience the same freedom to explore nature and live a simple life. The farmer in the ad is shirtless and is wearing blue jeans. By using an older gentleman the ad symbolizes his age and the wisdom he has. He demonstrates the classical "farmer's tan" with a burnt face, neck, and arms, and a pale chest and shoulders. This plays into the idea that farmers are typically out in the

field for many hours and will have burn lines around their shirt. This does contrast with his age and wisdom, showing he had a lapse in judgment by allowing himself to get burnt. By looking straight at the viewer, he appears to be saying, “I am you and if you do not want to be in the same pain I am, you should buy this product.”

The “farmer’s tan” also connotates the large ideological idea of farmers being hard-working people who participate in manual labor. By showing this through the image, the advertisement is transferring this ideal into the company, showing that TSC is also a hard-working business that is willing to do manual labor to get the job done right.

It is interesting to note that out of the three ads, this is the only ad in which the image appears to have been created electronically. The man in the image looks as if he was digitally placed into this scene of bright green field and bright blue sky in order to accentuate his redness. The dominate background connotates the idea that this is a naturalistic setting and could be seen anywhere in America. This red-and-white person continues to play into the patriotic theme seen in the previous ad, by placing him against a bright blue sky, again connotating that TSC is an American company. Research has shown that non-farmers trust farmers and romanticize their profession (Higgins, 1991; American Farm Bureau, 1998). By showing stereotypical farming scenes and tying it into the ideal of Americana, TSC is placing itself as a hard-working, trustworthy, American company that the viewer should want to shop at.

The pop-out ad duct-taped to the image is exactly like the previous ad, but the product advertised this time is a deluxe shade for the riding lawnmower. The answer to his pain and his “farmer’s tan” is this product sold by TSC. The man in the image is also not physically fit, indicating undesirableness by today’s society. Through juxtaposition, the viewer feels that by buying this shade you will not look like a farmer.

The Deluxe Insulated Coverall

The final advertisement being analyzed (Figure 3) is similar to the tractor shade advertisement. This ad was two pages behind the previous ad in the March 2005 issue of *Western Horseman* magazine. Just as the previous two images, this ad was dominantly placed at the bottom of the page underneath a story featuring a black-and-white image. This ad was also placed near the middle of the magazine, but due to its contrast to the text above it, it was able to stand out to a viewer flipping through the publication.

Figure 3. Tractor Supply Advertisement for Insulated Coveralls.

This ad depicts a larger, middle-aged man sitting in a lawn chair in the snow. He is wearing a head band, hat, shorts, and pool shoes. The man is sitting in a lawn chair, which symbolizes the spur of the moment reality of the image. It is obvious that it is snowing around him, and you can see a hot tub sitting in a barn in the background, indicating he possibly could have just gotten out of it. His shorts appear to be made for swimming and are obviously wet.

There is a sense of innocence about the man, as he is holding a cup and smiling at it as if he was trying to capture the snowflakes that are falling around him. Goffman (1979) described how advertisers will present men in ludicrous or childlike poses to make them appear unreal, and in turn preserve the image of strong, smart men. This connotates that while this man appears to be childlike, he is still manly, and as the mission of TSC states: “work hard, have fun, and make money…” The man in the advertisement is smiling, showing that he is having a good time and

that by putting yourself in his place, you could too. By buying the product advertised or shopping at TSC, you can still be successful and have fun, while maintaining your manly image.

However, the man is obviously cold, indicated by the pale color of his skin and the few red marks on his bare stomach that could be from frost bite. Farmers and people living rural areas are usually seen as less-educated populations in America (Strover, 2001). This ad plays into that ideal by showing a man on a cold day sitting outside half-dressed and wet who is simplistically amused by the snow. By sitting in the snow with so little clothes on, this ad is also connotating that freedom that was seen in the other two ads. While this ad does not show the green rolling hills as the other two ads, the white purity of the snow and the random falling flakes connotates a simplistic lifestyle and a sense of freedom.

Interestingly, this ad plays into the idea that TSC is an American company just as the previous two ads have. The lawn chair he is sitting on is red, white, and blue; his clothing is all blue and white, while he is holding a red cup. These colors, while subtle, continue to place this company as an American organization that is founded on rural, hard working traditions. By buying their product the consumer is also buying into this farming lifestyle, which by this ad shows, is not all work.

As in the previous ads, TSC tries to tell the viewer that by buying the product on the pop-out ad you can combat this stereotype and solve your problem. The product being offered by the duct-taped note is TSC's deluxe insulated coverall. By calling this a deluxe product, they continue to play on the idea that this is a product that is strong and will last all of the situations you put it in.

The duct-tape used in this ad is different from that used into other three ads. It is shown as being more wrinkled than that of the other two. This helps to connotate the ideal of hard

working. While in the other two ads, they show how the product is hard working, in this image they are showing a fun scene. This wrinkled tape appears to be struggling to keep the ad posted and in turn is working hard for the ad. This meaning is again transferred into the product.

Conclusions

Due to the importance of visual images in today's mediated society, it is essential to take inventory of what these images are portraying and saying about rural culture and ideologies. Semiological analysis offers a unique opportunity for researchers to analyze such images and determine the messages that they portray.

Based on this analysis, it is apparent that these advertisements that were shown in rural agricultural magazines have a tendency to also play into the dominant ideology of what farming and farmers look like. Through simplistic images playing into known stereotypes, the dominant ideal is enforced through the selling of these products. By utilizing American ideals and colors, the advertisements played into American need to be patriotic. The romanticized ideal of farmers living a serene lifestyle in picture perfect settings is continuously portrayed in the ads analyzed. The farmers are seen to be middle aged men who are undereducated and hard working. These ads also play into the ideal of the subordinate farm wife who is there to support her husband.

Many classical advertising techniques are utilized to draw in viewers and allow them to put themselves into the images and make specific meanings out of those images (Williamson, 1978). While these techniques have allowed the advertiser to juxtaposition the qualities of hard working, American qualities of rural life onto there product; they have also played into the myth of farming life. The images portrayed through these images continue to emphasize the same stereotypes past researchers have warned about (Walter & Wilson, 1996).

Further analysis of other advertisements used in the “the stuff you need out here” campaign or a more comprehensive analysis of all advertisements in the campaign, as well as triangulation with audiences could shed more light on the contexts and messages being presented. By analyzing the television spots as well as the print advertisements, one could gain a broader picture of what this campaign is saying about rural life.

It is imperative as communicators that we continue to study how rural cultures are portrayed in the media. It is apparent through this analysis that negative stereotypes about farmers are still being presented. There is hope in that many positive ideals are also being presented. As future studies explore these ideologies, it is important to realize how this affects how information presented by these cultural groups is read by non-farming audiences. Farmers are seen as stewards of the land, and must be trusted when presenting information to publics. Researchers must continue to track these stereotypes if communicators want to be able to effectively portray farming in the media.

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Environmental Groups Identify Barriers to Agriculture in Adopting Water Quality BMPs

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Abstract

In October 2000, Kansas initiated a water quality program to determine total maximum daily loads (TMDLs) by river basin. This research helped assess that program seeking to identify barriers agricultural producers face in adopting water quality best management practices (BMPs). Data from environmental groups were complementary to focus group research with community leaders. Ultimately the project aims are to help develop a strategic communications plan to help create awareness of water quality issues and to promote BMPs. Most research explaining adoption of conservation practices has been based on adoption-diffusion model and psychological environmental research showing attitude as predictive of behavior. However, attitudinal studies have shown environmental concern or attitudinal variables do not correspond to behavior (Tanner, 1999). In this study, the reasons for non-action or intervening events that act on intention and behavior (Theory of Planned Behavior) define the barriers/constraints that agricultural producers face. Intervening events also indicate approaches for affecting behavior. Recent research in Switzerland (Kaufmann-Hayoz & Gutscher, 2001) suggests new approaches that complement or replace classical approaches for promoting environmentally positive behavior with ones relying on voluntary and cooperative action, and are available to all actors. To be more inclusive of all stakeholder groups, research using semi-formal interviews was conducted with three Kansas environmental groups. Data were coded and analyzed using a grounded theory approach. In addition to barriers faced by individuals, the study identified some larger social structure barriers that need to be overcome. The data in this study corroborates the data obtained from the focus group study (Hill et al. 2005) with little difference.

Key words: water quality, Theory of Planned Behavior, sustainable, TMDLs, BMPs, barriers

Environmental Groups Identify Barriers to Agriculture in Adopting Water Quality BMPs

Introduction

State efforts to improve water quality in Kansas are currently driven by the requirements of a 1998 lawsuit requiring Kansas to develop Total Maximum Daily Loads (TMDLs) for water quality impairments on the Environmental Protection Agency's 303d list. In October 2000, Kansas State Research and Extension and USDA/NRCS began a voluntary compliance approach to develop TMDLs by river basins. The goals of the program were to build awareness of water quality issues, identify impairment sources, and demonstrate, promote and implement best management practices (BMPs) for water quality improvement and protection. The program included assigning seven watershed specialists to high priority TMDL watersheds to implement the program.

To help assess that TMDL program, research by Hill, Clark, Cable, & Boone (in review) sought to identify the barriers or constraints that agricultural producers face in adopting water quality BMPs, and to identify possible solutions to overcome the barriers. Their eventual goal was to help develop a strategic communication plan to assist the watershed specialists in creating awareness of water quality issues and promoting use of BMPs. Focus groups with community leaders found that barriers and associated approaches to solutions clustered into four theme areas: knowledge, awareness, and understanding; strong relationships; ownership of issues; and enforcement. In addition, a fifth and key barrier identified was money; a fifth key approach was place/home/community (Hill, Clark, Cable & Boone, in review). Community leaders, however, represent only one group of stakeholders. Researchers also conducted interviews with "expert

sources" from state agencies that address water issues. These interviews included sources from the Kansas Department of Health and Environment, Kansas Department of Agriculture, Kansas Natural Resource Council, Kansas Water Office, and the watershed specialists. The researchers questioned that the knowledge and perceptions of the expert sources and community leaders may not be representative of all stakeholder groups. To be more inclusive of knowledge and perceptions about barriers and possible solutions and as a check on the data, the research team interviewed representatives of three Kansas environmental groups. Groups interviewed were Kaw Valley Heritage Alliance, Kansas Alliance for Wetlands and Streams, and Friends of the Kaw. The objective of this study was to obtain from these environmental groups their insight regarding Kansas water quality, existing barriers, and possible approaches to mitigate those barriers**.** Specifically, the groups were asked what they perceived to be the barriers to achieving water quality goals in Kansas, what they perceived as barriers to agricultural producers in adopting positive water quality management practices, and what might be possible approaches to overcome these barriers.

A review of the literature shows that since the 1950s, research has focused on the adoption-diffusion model to explain how agricultural producers have adopted conservation practices. This model explains conservation practices through individual action while ignoring the social and economic factors such as financial cost to the farmer or relevance to a specific farm structures (Clearfield & Osgood, 1986). Similarly, previous psychological environmental research has concentrated primarily on environmental concern or attitudes as predictors of environmental behavior. Those seeking to change environmental behavior assumed that education and information would change people's attitudes and beliefs and thus their behavior.

Attitudinal studies have shown that environmental concern or attitudinal variables do not correspond to behavior (Tanner, 1999).

Given the findings that attitude does not correspond to behavior, Tanner addressed the question of how to promote adoption of behavior. Her 1999 study focused on why people do not adopt or why they take no action. She found non-action may be due to the lack of opportunity or motivation, even though individuals have a positive environmental attitude and intend to act. Performing a behavior requires that it be physically possible, salient as an option for the individual, and relevant to the individual. These reasons for not acting are (for purposes of this study) equivalent to barriers or constraints to adoption.

The Theory of Planned Behavior (Ajzen, 1991, 1985) posits that intention is central to behavior; however, intention may be influenced by salient information and behavioral, normative, and control beliefs. Other factors (or intervening events) can affect behavior by acting on an individual's system of beliefs that affect intention, or by directly affecting intention, actual behavioral control, or the behavior. Even with a positive environmental attitude and intention to act, individuals may lack opportunity or motivation. The behavior must be physically possible, a salient option and relevant for the individual (Ajzen, 1991, 1985). In this study, the reasons producers have for not taking action or intervening events define the barriers/constraints that agricultural producers face in adopting water quality BMPs. These intervening events also indicate approaches for affecting behavior.

Although, according to Morse (1991), farmers and environmentalists tend to have the same goals – clean air, clean water, and good soil – conflict tends to arise from their different philosophical approaches to achieving those goals. Traditional U.S. farm policy has been one of relying on voluntary adoption of environmentally friendly production practices. Policy

approaches to encouraging reduction of environmental impacts by farm practices have included moral suasion and education, economic incentives, research and development, and direct regulation. To encourage adoption, these policies have used such tools as extension education, technical assistance, and cost share programs (Bosch, Cook, & Fuglie, 1995). Moral suasion and education rest on the premise that farmers will voluntarily adopt environmentally friendly practices if fully informed about the economic and environmental consequences of their current practices. Although economic incentives may include taxes on inputs or fees on observable pollutants, they also include subsidies to help producers defray the financial cost of implementing farming practices that promote environmental quality.

Similarly, research in Switzerland (Kaufmann-Hayoz & Gutscher, 2001) has presented a model to encourage environmentally positive behavior and sustainable development that coincides with the traditional farm policy in the U.S. The Swiss research has shown that policy must incorporate ecological, economic, and socio-cultural dimensions to accomplish environmental goals and encourage sustainability. This research divided approaches into two categories: "classical" and "new" policy instruments. Classical instruments are regulatory (or "command and control") and economic or financial instruments. The classical approach has lacked efficiency because regulation is difficult to implement and enforce. This inefficiency implies a need for new instruments. The Swiss model adds approaches that complement or replace classical approaches with those that are available to actors other than authorities; these approaches rely on voluntary and cooperative action. New instruments fall into categories of service and infrastructure, collaborative agreements, and communication and diffusion.

As do U.S. government agencies, farm groups like the National Association of Conservation Districts look to achieve environmental goals through education, technical

assistance, and economic incentives. Farm groups view environmentalists as proponents of enforcement, taking the "big stick" approach. In 1990, the U.S. government seemed to make a move toward more regulations; the 1990 Coastal Zone Act Reauthorization Amendment is one such act. It requires states in coastal areas to develop a set of "best management practices" and land-use controls to reduce nonpoint source pollution. The act also obliges these states to enforce the use of best management practices by farmers in sensitive coastal areas (Bosch, Cook, & Fuglie, 1995).

Although 1990 saw a move toward more enforcement through regulation, the yearlong talks that resulted in the 1990 Farm Bill also saw agriculturists and environmentalists come together on compromise provisions that allowed for agricultural productivity and economic incentives within a framework that offered environmental protection. Agriculture will have to continue addressing environmental concerns if it wants a continued say in the decision-making process. Maintaining such a role will allow farmers the opportunity to better shape legislation that will affect their lives (Morse, 1991). Cost of environmental compliance worries farm groups; many practices that are good for the land cost more.

Despite ideological differences, agriculturists and environmentalists are addressing the same issues – air pollution, water pollution, and soil erosion. For this study, three environmental organizations were included in the discussion to assess barriers and possible solution approaches to achieve better water quality in Kansas. Specifically, the groups were asked:

1. What are the barriers to achieving water quality goals in Kansas?
2. What do you perceived as barriers to agricultural producers in adopting positive water quality management practices?
3. What might be possible approaches to overcome these barriers?

Method

Representatives of three Kansas environmental groups were interviewed for their perspectives on water quality issues in the state, what they see as barriers for agricultural producers' adoption of positive water quality practices, barriers to addressing water issues in general, and how these barriers can be overcome. To provide continuity of the data, the question route used for these interviews and the subsequent analysis closely followed the question route and analysis used for the community leader focus groups (Hill, et. al., in review).

Interviews from the environmental groups were transcribed, and then coded using NUD*IST analytical software and a grounded theory approach to identify primary themes (Glaser & Straus, 1967). Data were grouped into categories that resulted from thorough analysis and coding in the previous focus group study (Hill et al., in review)." The final analysis categorized the specific barriers and approaches and their corresponding salient quotes into the same general themes as the focus group data. Data were compiled into similar analytic summary tables. The barriers and approaches were labeled to indicate the type of barrier being addressed: intrapersonal (internal), interpersonal (socially related), or structural (factors external to individuals, such as cost, program availability, lack of technical assistance, etc.) (Jackson & Scott, 1999). They were also labeled to show where in the model of TPB intention would be affected, and the instrument, from the Swiss model that might be used in the approach.

Results

Data from interviews with three environmental groups did not result in significant variations from general themes identified in the focus group study (Hill et al., in review) – with one exception. Four general themes emerged from the data for both barriers and approaches that

mirrored themes from the earlier study: money; knowledge, awareness and understanding; strong relationships; ownership. As barriers, these themes express a negative attribute and as approaches, a positive attribute. Three additional approach themes were identified: place/home/community, enforcement, and effectiveness of state efforts.

Barriers

As would be expected, **money** was immediately identified as a barrier for agricultural producers. One statement suggested that paying producers to implement BMPs was a means to subsidizing farmers and these payments represented a public or social cost, and questioned the appropriateness of this practice. Similarly allowing industry to continue practices that are detrimental to water resources (e.g. dredging sand from river beds) because they have been doing it for many years was also questioned. Comments generally centered on the cost to producers of implementing BMPs, cost to municipalities in complying with regulations, and the use of financial incentives to ease these burdens. In addition to specific lack of money, other cost barriers included time and maintenance requirements, limits to management options, limits to sale opportunities, and cost to municipalities. Barrier themes are summarized in Tables 1 through 4.

Table 1 Barriers Theme: Money

Barrier	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Lack of Money	How much it's going to cost people to implement the practices that are going to do the most for water quality.	Intra-personal	Perceived Behavioral Control	Economic
Time and maintenance	I heard a lot of "I'm not going to fence..." because who's going to maintain those fences? Who's going to be walking them and who's going to pay for them?	Intra-personal	Attitude	Communication & Diffusion / Economic
Limits management flexibility	The process can take a number of years to get the money turned around. Meanwhile, they may get the itch to change their whole use for that particular parcel and they feel like they can't…	Structural / Intra-personal	Attitude	Service & Infrastructure / Collaborative Agreements
Questioning farm subsidies	Why are we paying people to do what they should be doing anyway so – we're paying them because they need the money to survive.	Structural	Subjective Norm	Communication & Diffusion / Service & Infrastructure
Discontinuing industrial subsidy	Why should we subsidize the construction industry at the risk of our river?	Structural	Subjective Norm	Service & Infrastructure
Cost to municipality	It's…meeting their phase two storm water standards and don't have enough money.	Structural	Perceived Behavioral Control	Service & Infrastructure / Economic

Lack of knowledge, awareness, and understanding was one of the two largest themes areas. Specific to agricultural producers were lack of knowledge about benefits of best management practice adoption and adoption programs. Interviewees characterized producers as being unlikely to adopt measures that do not provide a benefit to their operation or unlikely to adopt measures with a small benefit if cost is incurred. Non-producer barriers in this theme were poor policy decisions from the past and untrained media reporting on water quality issues. Interviewees recounted instances where policy decisions where more difficulties were created from decisions later determined to be unwise and when media were less than precise in reporting on environmental issues.

Table 2 Barriers Theme: Lack of Knowledge, Awareness, and Understanding

Barrier	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Lack of benefits	All … want to know how it's going to benefit them....If it doesn't have much of a benefit, they'll just keep putting it off and a lot of it's because of money issues.	Intra-personal	Attitude	Communication & Diffusion
Not knowing water source	They're kind of insulated from where their water comes from. They just think they turn on the tap and the water comes out.	Intra-personal	Subjective Norms	Communication & Diffusion
Media lacking specialize training	You put something like that on front page and you point upstream and say it's their problem, they've created it…That doesn't help the community with those relations and it doesn't clarify an issue. But journalists are not really trained to cover environmental or technical issues.	Structural / Inter-personal	Subjective Norm	Service & Infrastructure
Time to complete project	That's about their term, two to three years so they don't want to wait that long. Farmers want it done and they want it done now.	Intra-personal	Attitude / Subjective Norm	Service & Infrastructure / Collaborative Agreements / Communication & Diffusion
Not knowledge-able about causes	We did the stuff that was horrible for water quality…. It's the way it's always been done. Didn't think a thing about it. Nobody told me any different…	Intra-persona	Subjective Norms	Communication & Diffusion
Not knowledge-able about solutions	The government is not doing anything; we need to do something radical. That is juxtaposed with this sense of too much government. I'm told I have to do something, but I can't figure out what. And the people on this left end also say, somebody should do something, but they don't know what it is either.	Intra-personal	Subjective Norms / Perceived Behavioral Control	Service & Infrastructure / Communication & Diffusion /
Working through bureaucracy	So much of our state system is our own hindrance. We got permits for about everything, got to apply for permits that cost money. They don't know how to do them and then stuff requires surveys, designs, engineering, who do they go to get that done? And...I ain't going to mess with it; it's too much trouble for me.	Intra-personal	Attitude / Perceived Behavioral Control	Service & Infrastructure / Communication & Diffusion / Collaborative Agreements
Past Policy / Management decisions	"You guys ought to have your asses kicked for building a development right under a dam so close after there was a major flood. Don't expect to be bailed out again." But, stuff like that is happening constantly where we're bailing situations out that never should've been put into place. And they were put into place, with this naïve "the-government's-going-to-save-us."	Structural	Subjective Norm	Service & Infrastructure

The theme **lack of strong relationships** included such specific barriers as rural-urban polarization. Previous projects in some areas have contributed to polarization between rural and urban segments of the population. Sub-themes of exclusion rather than inclusion closely connected these barriers with misunderstandings about rural-urban encounters, past government policies over-ruling local management efforts, and limiting participation in state agency projects to producers with specific circumstances.

Table 3 Barriers Theme: Lack of Strong Relationships

Barrier	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Rural-Urban Polarization	I think the people in the city have no idea what it's like to live in the country, and the people in the country think the people in the city are very selfish.… But thinking all of this (water quality measures) is done for the betterment of (town) and the farmers know what they need and here we are trying to tell them how to work on their business.	Intra-personal	Attitude	Communication & Diffusion
Not part of the solution	There are some deep wounds … with the rural community, but (when the government does the kinds of things that they did to the land there, there is going to be some scars in the collective consciousness of how people feel about government. You know, they took a bunch of land way, they flooded it and they usurped the work that was happening at the local level, as if what the local level--as if what they were doing was moot.	Inter-personal	Attitude	Infrastructure / Communication & Diffusion / Collaborative Agreements
Agency issues	On a county basis because they're required to focus their dollars within those TMDL areas. And you got to deal with the other partners in the whole county that want to do the same projects, but there's a little line through their county that says this guy can, this guy can't. They see the benefit of letting this guy do a couple projects too, for demos …maybe not giving him much of a cost share, but give him a little because you want to encourage good stewardship of the water…	Inter-personal	Actual Behavioral Control	Service Infrastructure

Lack of ownership of issues was another of the largest theme areas. Taking ownership of water quality issues is difficult for producers when they are not involved in identifying solutions or when addressing a problem involves working with several agencies. Changing family circumstances may also pose barriers such as a producer close to retirement. Historical precedent was also discussed. The owner/operator of an agricultural or industrial operation that has operated in the same place using the same practices for many years may not understand the need for change or may be unwilling to bear the cost for any such change.

Table 4 Barriers Theme: Lack of Ownership of Issues

Barrier	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Not part of the solution decision	So you're kind of asking them to go above and beyond what anybody else is having to go to. And so far, I really don't think--and farmers aren't leaping at the opportunity to do more work and they really haven't been included enough, I think, in the decision making.	Intra-personal	Attitude	Communication & Diffusion / Collaborative Agreements
Time management	All the agencies get to do all this work on the clock, you know, and so it's a lot easier for them to devote time and energy. The farmers are asked to add ...it's their land, ultimately, they're going to be responsible so – and it's not part of their workday.	Intra-personal	Attitude	Communication & Diffusion
Agency issues	And so once you start throwing them (agencies) out ...I got to go through the permits and KDHE is going to be on me for that and EPA will probably jump in this. They just as soon stay back and not be in the highlight, nobody's bothering me, leave me alone so -	Inter-personal	Attitude	Communication & Diffusion
Changing family circumstances	A lot of its landowners themselves – the guy's an aging farmer out there, 40-plus. I would imagine most of the kids are going – moving to cities and getting different jobs and so we have an aging agricultural community out there.	Intra-personal	Attitude	Communication & Diffusion / Structural
Independent attitude	And then you got the next percentage down, which is, you know, by God, I'm not going to do it 'til they make me do it.	Intra-personal	Attitude	Communication & Diffusion
Inability to see the big picture	I think one of the biggest barriers is being able to relate what's at stake to folks who aren't looking at the bigger picture.	Inter-personal	Attitude / Subjective Norm	Communication & Diffusion
Too focused on profit	I think some of our agriculture and other entities are becoming such big corporations that all they look at is the bottom line. They're not looking at what is best for the state.	Intra-personal	Attitude	Communication & Diffusion / Structural
Historical precedent	Ok, I've gotten this sand (here) all these years, and now they want me to move to a pit mine, and I'm going to have to spend extra money to get that land and move my equipment and move my business...but you know, things change in everyone's life. So sometimes you just have to make accommodations for change, and a lot of people don't want to.	Intra-& Inter-personal	Attitude	Communication & Diffusion / Economic

Approaches

Seven themes emerged as approaches, three of which were not the same as those that emerged as barriers: Enforcement, place/home/community, and effectiveness of state agencies Four approach themes were the same as the barrier themes: money, knowledge, awareness and understanding; strong relationships, and ownership of issues. .

The groups interviewed did not identify the lack of enforcement as a barrier to achieving better water quality, but they did identify **enforcement** as a valuable approach that should be used in a consistent manner. Additionally, a suggestion made in this study that was not made in the focus group study was that of mandating some practices state-wide.

Table 5 Approaches Theme: Enforcement

Approach	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Employ regulations	Those older guys are not going to mess with it unless you force them to. ... Until they tell me I have to, I'm not going to. Well, if you don't have the stick, you can't have the law.	Structural / inter-personal	Attitude / Subjective Norm	Communication & Diffusion / Command & Control
Mandate state-wide practices	Maryland just passed statewide buffers, mandatory. Now, that's a step in the right direction … putting buffers on all streams to buffer everything coming in. There is still continuous CRP; the guy's not losing a thing. But now he's mandated. We want to try it in a few counties that are so urbanized...	Structural / inter-personal	Attitude / Subjective Norm	Communication & Diffusion / Command & Control
Consistency in enforcing existing regulations	We're the advocate that holds Kansas's feet in the fire so they will take care of the laws. I think we would try to get all the groups to work together for the common goal. I feel that is starting to happen. I'm encouraged.	Structural	Attitude / Subjective Norm	Command & Control / Collaborative Agreements

Another topic that came out of the interviews and seemed to warrant being its own theme was **effectiveness of state agencies and programs**. Although the groups interviewed all emphasized the importance of education, an approach suggested was to increase the

effectiveness of state agencies and programs. The long-time emphasis on education by state agencies without corresponding implementation with actual projects was criticized. Although education is a continuing need, the suggestion was to put education into practice and make more progress in improved water quality.

Table 6 Approaches Theme: Effectiveness of the state in addressing water issues

Approach	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
State Agencies & programs	That watershed thing has kind of been a bust. Not what we expected ... I would've said the KDHE program itself, up until just a few years ago was pretty much a bust, all that money was going out and there weren't a lot of projects going on the ground. ...But it wasn't a bust. It was funding a lot of research, a lot of educational stuff, but they'd been doing it for 20 years. I hear the EPA people saying we're tired of the research, education; let's see some results on the ground….	Structural	Subjective Norm	Service & Infrastructure / Communication & Diffusion/ Collaborative Agreements

Knowledge, awareness and understanding primarily consisted of different education approaches. Education through recreation and education programs for water professionals were each identified as valuable approaches. And, as in the previous study, emphasis was placed on having programs in the schools and the use of presentations and demonstrations. The theme **strong relationships** included working with violators of regulations to mediate the problem rather than closing them down. The watershed specialists program was identified as a viable approach for education and awareness projects.

Table 7 Theme: Increase Knowledge, Awareness & Understanding

Approach	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Education in Schools	We're working with KACEE and Stream Link and hooking kids up to the projects. We want to teach the teachers how to do it so they can go out every year and do it. We provide the project, the information, you know, the educational materials with even little water sampling kits and everything.	Inter-personal /Structural	Actual / Perceived Behavioral Control	Service & Infrastructure / Communication & Diffusion/ Collaborative Agreements
Education through Recreation	One of our tools to get that idea across to the public is through recreation. So we are actively encouraging recreation on the river. We're actively encouraging the building of public access	Inter-personal	Attitude / Subjective Norm	Communication & Diffusion
Presentations & Demonstrations	I'm meeting groups and giving presentations to Kiwanis Clubs and to different environmental groups– 3-4 different types: stream, lake stabilization, animal waste, wetlands. We want several types of projects, demos to take people to and show them and explain what they're good for. And let the farmer tell them what the benefit to him was - usually financially - or it wasn't burden-some on him financially so that we can get that across - so they understand that it's not going to eat their pockets up to do some of this stuff.	inter-personal	Attitude / Perceived Behavioral Control	Communication & Diffusion
Education programs to pro-fessionals	We had people coming from the agencies ... We had a guy, he was road maintenance, but interested in seeing how all of this fit with what he was doing in managing that infrastructure. We had an engineer - he wanted more background on how to do green infrastructure. We had a private landowner and not only was he a private landowner, but he's also been on the National Board for Nature Conservancy, State Audubon of Kansas. And some water quality connection with Tyson…	Structural / inter-personal	Attitude/ Subjective Norm	Communication & Diffusion

Table 8 Theme: Strong Relationships

Approach	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Working with violators	We want to work with them and find out what their problems are and try and help mediate it. When we found a problem on the river we went to that company and said, "Hey, we've noticed this problem; we think that you need to work on it. We thought things were getting better, but then again, when we visited the site we discovered it wasn't— So this time we went to KDHE —we don't want to close the company down, we just want them to fix the problem.	Structural / inter-personal	Attitude/ Subjective Norm	Communication & Diffusion
Building partnerships/ cooperation	And now, I don't know if you could probably stop them ... Topeka, Lawrence, Latham, the park, the city representatives. It's the only time they ever get to share stuff ...You get conser-vation district staff and RCS people, different state agency people, plus a few of the local farmers from watershed districts that are big into cow or beef you get them involved.	Structural / inter-personal	Attitude/ Subjective Norm	Communication & Diffusion / Collaborative Agreements
Watershed Specialists	Depends where you are.... He dove right in ...probably helped us do 30 projects and probably another eight or ten. (He) has been bringing a few in now. But as far as projects coming in, you know, you can tell how active a person is by the number of projects that they're bringing to the table.	Inter-personal	Perceived Behavioral Control	Communication & Diffusion / Collaborative Agreements

Approaches within the **ownership of issues** theme include local involvement and distribution of information by word-of-mouth. These approaches rely on local stakeholders participating in identifying issues and determining solutions, and local a producer serving as a model for a new practice.

Table 9 Approaches Theme: Ownership of Issues

Approach	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Local involvement in decision-making	The local stakeholders identify where the problems are. ...We don't use just TMDLs because that doesn't fit everybody's needs. Kansas Wildlife and Parks is focusing on biological priority areas; we cross them with TMDLs. The water office is focusing on watersheds above public water supplies. We've overlaid all those and those are our priorities.... Second priorities will be singles based on the local people. They pick their own. We're trying to get them past county boundaries; now we're getting multi-counties together doing [projects].	Inter-personal	Perceived Behavioral Control	Communication & Diffusion / Collaborative Agreements
Distribution of information through local leaders	Through the neighbors, we sit and talk. They're always wondering what you are doing? They want to know what you're up to. And they'll tell them. Well, is that a good thing? If he says it's a good thing and it didn't cost him much, by golly, that might pique his neighbor's interest, to come and say, well, Joe has one of those. Can I get one? Can I get a deal like he did? If it's a good deal, they'll do it.	Inter-personal	Perceived Behavioral Control	Collaborative Agreement

The theme, **place/home/community,** is similar to ownership but places more emphasis on concern for place. In this approach, local stakeholders take the lead in identifying issues and work for their solution to care for their home area or community.

Table 10 Approaches Theme: Place/ Home/ Community

Approach	Salient Quote	Barrier Type	Influences Model Aspect	Instrument Type
Defining issues & Solutions	If they're in the TMDL or in a priority area, we do projects there first. We're doing an EPA grant project - what that county see as issues then that's what we put in. And they use them as demo sites within that county. Doesn't matter if is has a TMDL or not, they're going to be out there trying to do good things for the county and so you got to do something to benefit them and let them feel good that they're doing great things within their county.	Inter-personal	Perceived Behavioral Control	Communication & Diffusion / Collaborative Agreements

Money as a theme included the use of money as an incentive to encourage producer participation in designated programs. Available grants often determined the type of projects the groups could sponsor; they were cited as the primary funding source behind many projects and activities.

Table 11 Approaches Theme: Money

Approach	Salient Quote	Barrier Type Addressed	Influence Model Aspect	Use Instrument Type
Landowner incentives	We got another U.S. Fish & Wildlife Service grant that focuses on landowner incentive programs, which have focused on the biological issues. So we just - we don't pay any attention, you know, we do, but we don't, you know, for the grant, we say we're going to focus on--so biological areas have the number one priority, but it just so happens they overlap the TMDLs and they get--so that's how you prioritize them. You just change the priority based on funding source.	Inter-personal	Attitude / Subjective Norm	Economic / Communication & Diffusion
Funding driven	And so grants drive what we need too. If I have a KDHE grant, we focus on TMDLs- but if I have the EPA grant, objective of that grant...is to get demo projects in every county, no matter what, want them in every county of the state.	Inter-personal	Attitude / Subjective Norm	Economic / Communication & Diffusion

Discussion

Using a qualitative method in this research allowed a broader, deeper discussion of barriers that included individual barriers as well as socio-economic and structural barriers. The interviews with representatives from these three Kansas environmental groups revealed concern about some of the larger, social structure barriers in addition to identifying individual barriers. Analyzing the interviews by type of barrier, Theory of Planned Behavior (TPB), and the Swiss model shows that intervening factors can influence behavior or intention at multiple points and that more than one type of instrument may be indicated for implementing change. These associations support Tanner's (1999) findings that education and changing attitudes is not always sufficient to change behavior. The barriers identified often were of the type and subject to influence at points of the TPB model that would indicate use of the Swiss model's "new" instruments – service and infrastructure, collaborative agreements, and communication and diffusion.

The findings of this study corroborated the findings of the previous focus group study. Themes emerging from the interviews closely aligned with themes from the earlier study with one exception. Effectiveness of state efforts was a topic raised in this study that, not surprisingly, was not raised in the focus group study. Criticism would more likely come from environmental groups than from agencies and organization that work more closely with the agricultural community. The environmental groups expressed some frustration at the number of years spent focusing on research and education without corresponding action being translated into projects on the ground. Although this may seem to be a contradiction in the findings of their support for education, it is not. This study, as much as the focus group study, stressed the importance of educational efforts to achieve the change in behavior needed and both studies

recognized the educational efforts of the watershed specialist program and its importance. The environmental group representatives weren't aware of many tangible projects initiated to address water issue problems that correspond to the research and educational campaigns the state has initiated. While continued education is needed, so are more tangible efforts.

The environmental groups questioned the appropriateness of agricultural producers being paid to adopt best management practices, something they see as a benefit to producers and a practice that producers should adopt on their own. The interviewees also questioned the appropriateness of continuing to allow industry to continue a practice for private gain at the public's expense merely because they "have always done it." The groups interviewed understand the importance of taking ownership to resolve water quality issues. That the question of who should pay for public good issues was raised is indicative of the need for a broad change in attitude across Kansas; as interviewees acknowledged that water quality is an issue that affects everyone and everyone should be involved in addressing it.

One larger social concerns identified is large farming operations, whether owned by families or industry, where profit is a greater concern than the effects operations of that scale have on the people, community, surrounding environment, and water resources state-wide. Another area of concern is that portion of the population that does not seem to "get the big picture." This barrier has been referred to as a cultural difference and as an independent, pioneering, self-sufficient attitude, and as being "stand-offish" and uncooperative. The concern is how to relate the "big picture" to this segment of the population. Solutions to these barriers are structural as well as individual and support the call for continued education, better communication of issues.

Media were seen in this study as being part of the problem, not part of the solution. Although interviewees recognized and made allowances for the fact that environmental issues are complex, often technical and difficult to understand, and that reporters are trained as generalists rather than specialists, they did cite media coverage as complicating the solution process. It is easier, more interesting, and faster for readers when reporters write a story about conflict than it is to go below the surface and investigate underlying causes and issues. Addressing this barrier will require efforts on the part of all parties involved to make information easily available to media to encourage more precise reporting on environmental issues. The interviewees did not talk about using media outlets as an approach to overcome barriers or as a resource to distribute information. This is useful for developing a strategic communication plan and identifying appropriate information channels.

Enforcement was suggested an approach although *lack* of enforcement was not identified as a barrier. As such, it held no greater emphasis than other approaches. This finding seems to support the Swiss research indicating the need to incorporate ecological, economic, and socio-cultural dimensions to promote and achieve positive environmental behavior. Like community leaders in the focus groups, the environmental groups were in favor of regulations as "the stick" to go along with the "carrot." Equitable and consistent enforcement of regulations was also supported by respondents in both studies. Interviewees in this study did go further with enforcement, suggesting that some practices be made mandatory state-wide. They cited the example of Maryland mandating riparian buffers state-wide. The state's water resources would benefit from the buffers and the producer would still receive compensation for keeping the land out of production.

Education was an approach of importance. These groups favored having education in schools, providing education to both rural and urban communities, and using presentations and demonstrations. The environmental groups endorse and use programs such as Stream Link, which offers training for teachers and also provides the teaching materials for them to use in their classrooms. The environmental groups also offer educational programs for water professionals; one group offers education through recreational activities for individuals and families, and one group works with violators of water regulations to mediate problems. They would rather build a relationship with the violator and work cooperatively and to solve the problem than simply have the operation shut down or fined. Other approaches suggested were one-on-one communication, local involvement, ownership, building partnerships and interagency or inter-group cooperation, and producer incentives.

Poor policy and management decisions made in the past were another barrier identified in the knowledge, awareness, and understanding theme. Responses between studies differed in their focus. The environmental group representatives stated the government shouldn't be expected to bail out communities for poor development decisions, while focus groups participants talked about the cost of remedying the problems that have surfaced from those past decisions. Data indicate that policy decisions have to include better environmental information to avoid the detrimental consequences that have occurred.

The inclusion of environmental groups to this barriers research, added another perspective while supporting knowledge gained from the focus group study and supporting theory on affecting behavior change. This information is useful on its own, but will be more useful when combine with results from research conducted with agricultural producers in high-

priority watersheds in Kansas; the best information regarding barriers and approaches producers face will come from the producers themselves.

Although addressing water quality issues arising from agriculture will go far in improving Kansas water quality, the issues the state faces are not restricted to agriculture. Similar research efforts should be made to identify barriers and approaches applicable to the rest of the population.

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Cognitive and Affective Responses by Lubbock Chamber of Commerce Affiliates to Agricultural News

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ABSTRACT

One of the greatest challenges in agriculture today is helping the total U.S. population develop a basic understanding of the food, agricultural, and natural resource systems. Several of the most critical topics that confront our society include agriculture (Terry, 1993). The need for agricultural literacy is growing, specifically in the area of agricultural policy, but many individuals lack a basic understanding of how agricultural policy affects the global food, fiber, and natural resource industry (Goeker, 1992).

This study is a replication of the methods based on Davis' (2003a) study which looked into the affects of agricultural news presented to Hispanic/Latino populations of West Texas. Davis (2003a) recommended a Caucasian population be studied for cross-cultural comparisons; therefore, this study explored the cognitive and affective responses of Lubbock Chamber of Commerce affiliates when presented agricultural policy news in differing presentation mediums.

As in the Davis study, this study used an experimental posttest-only control-group design to compare four presentation media: print, electronic text, audio, and video. Participants were members of multiple committees of the Lubbock Chamber of Commerce (n=60). The participants were assigned to one of four treatment groups or a control group. The dependent measure included aided recall, unaided recall, and issue salience.

Results indicated a significant difference in aided recall between print and electronic text and a moderate correlation between aided recall and issue salience. No significant difference existed between agricultural issue salience and media presentation. The author suggests replication in other Caucasian populations, as well as other specific ethnic groups.

Key Words: Media Presentation, Cognitive, Affective, Print, Electronic Text, Television, Radio

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Introduction

The number of individuals choosing for agricultural careers in rural communities has declined sharply (Goeker, 1992). Previous studies indicate the population as a whole generally is not literate about the production of food and fiber in the U.S. (Campbell, 1997). Working in areas to promote a higher knowledge base in agricultural facts helps secure the future for agricultural communicators (Frick, Kahler, & Miller, 1991). Rogers (1983) states that media iare the primary source for attaining initial awareness about agriculture. Agricultural literacy must continue to expand through media to reach general populations (Frick et al., 1991).

Davis (2003a) explored the effects of agricultural policy news presented to the Hispanic/Latino population of West Texas. It was recommended to study the effects of different presentation media in other ethnic populations of West Texas. This study design is a replication of the methods of that research. Davis (2003a) used the Agenda-Setting Theory to compare media channels containing agricultural content and focused on the English and Spanish language. The research used an experimental posttest-only control-group design to compare four English and Spanish presentation media: newspaper print, electronic text, video news release, and radio news release. The dependent measure included aided recall, unaided recall, and issue salience. Results indicated significant differences in aided recall between English newspaper print and English electronic text, Spanish newspaper print, and Spanish electronic text. A significant difference also occurred between English video news release and Spanish electronic text. Results indicated a strong correlation between aided and unaided recall. Although a

change in issue salience was evident, no significant differences existed between agricultural issue salience and media channel.

This study follows the Davis (2003a) study and was designed to find the best medium presentation method to send messages and receive the highest cognitive level response and the strongest issue salience by determining the effectiveness of four different medium presentation methods dealing with agricultural issues. In this study, the learners were made up of Lubbock Chamber of Commerce affiliates. The media used in this study consisted of: print, electronic text, audio, and video. The author measured salience among these issues, and aided and unaided recall.

In order to accomplish the purpose of the study the following questions were formulated:

1) What forms of mass media and agricultural reporting have the highest recall effect on Lubbock Chamber of Commerce affiliates?
2) What forms of mass media and agricultural reporting have the highest issue salience effect on Lubbock Chamber of Commerce affiliates?
3) Is there a relationship between recall and issue salience among the Lubbock Chamber of Commerce affiliates when consuming agricultural policy news?

Research Hypotheses

The following research hypotheses, constructed from the literature review, were tested:

1) Lubbock Chamber of Commerce affiliates in the medium presentation groups of print, electronic text, video, and audio will exhibit statistical differences in aided recall of agricultural policy news.

2) Lubbock Chamber of Commerce affiliates in the medium presentation group of print, electronic text, video, and audio will exhibit statistical differences in unaided recall of agricultural policy news.

3) Lubbock Chamber of Commerce affiliates in the medium presentation groups of print, electronic text, video, and audio will exhibit statistical differences in issue salience when given a news story dealing specifically on agricultural policy news.

4) There are relationships among the medium, unaided recall, aided recall, and issue salience among Lubbock Chamber of Commerce affiliates when consuming agricultural policy news.

Theoretical/Conceptual Framework

Experiments on media effects have been conducted on media presentation methods to unearth which medium best suits the general audiences' recall and salience. Public opinion forms through the primary focus of certain issues; this in turn, establishes salience.

The "medium is the message," a phrase coined by Marshall McLuhan, exemplifies the reversal of the traditional dominance of content over the medium (Munday, 2003). This study focuses on the medium of presentation channels with the message being agricultural news.

The Agenda-Setting Theory, defined by McCombs and Shaw (1972), found an almost perfect correlation between media story coverage and issue salience. News stations and publications set the agenda simply by deciding what stories they will cover and those they will not at any given time. "Researchers usually define the media agenda as consisting of a hierarchical ranking of issues, according to the amount and prominence of news coverage," (Perry, 1996, p. 73). McCombs and Shaw (1972) attempted to explain the reasons people cognitively process and develop issue salience. They found that the high correlation between

amounts of media coverage and issue importance had a great influence on mass media research. The Agenda-Setting Theory shifts the focus of away from the immediate effects of mass media to more of a long-term effect on cognition (Shaw, 1979). This notion promotes a positive association between mass media and consumers of news issues.

Concerns are often raised as to which stories emphasize important issues when the mass media set the agendas (Perry, 1996). Viewers, listeners, and readers take in what is considered "important" by the presentation medium. Agricultural communicators seek ways to convey the importance of agriculture to the public sector. An issue's importance can expand and shrink again as a result of a lucid communication presentation (Bonk, Griggs, & Tynes, 1999).

The less knowledgeable an individual is about the subject featured, the more susceptible hr/she tends to be towards the media's outlook on the matter and the importance it is given (Althaus & Tewksbury, 2002). The general public's knowledge, attitudes, and perceptions towards agriculture are seemingly on a down hill slope, with each generation moving a little farther away from the agrarian environment (Doerfert, 2003). Unfortunately, many people, especially in urban areas, do not understand how food is produced, or the financial complexities associated with farm legislation (Boone, Meisenbach, & Tucker, 2000). Much of the information people receive about risks from agriculture comes from the mass media. Televisions, newspapers, and magazines are among top information sources. Mass media's innate ability to influence behavior, social change, and policy agenda render them essential to any discussion concerning agricultural production (Doerfert, Akers, Haygood, & Kistler, 2003).

Cognitive effects are supported by the Agenda-Setting Theory of media effects (Davis, 2003a). Understanding cognitive effects involves experiencing how people can learn new information from the mass media. Interpretation of the information received relates to one's

individual experiences (Symes, 1995). Different medium presentations stimulate different types of cognitive processing (Harris, 1999).

The Newcomb-Trefz model (1987) captures the cognitive foundation of the Agenda-Setting Theory. For this study we mainly focused on the model's lower level, recall/remembering. Recall is Newcomb and Trefz's (1987) first level of learning behavior and is a key step in importing knowledge. Once people have remembered an issue, they have the capacity to take it to the next cognitive level. Understanding the information is not required or assumed. The information is lost without the remembering step; retaining information makes it become knowledge. The second level in the Newcomb and Trefz model (1987) is processing, taking what was remembered and putting it to use in different situations. This level addresses the issue salience of agenda setting. Creating is the third level, and evaluation is the fourth.

Recommendations have been suggested by Boone, Miller, and Brown (1996) for agricultural communicators to continue researching media communication and improving information to educate their clientele. However, relatively few studies similar to this measure cognitive recall or issue salience change when exposed to the various forms of media presentation (Boone, 1994). News presentation media exert a significant influence on perceptions of current salient issues (Davis, 2003a). This absence makes it difficult to link specific media elements with any desired outcomes of salience.

Literature Review

Approximately 1,500 daily newspapers and 7,415 weekly newspapers are circulated throughout the U.S. encompassing 56.9 million readers. Although these numbers have dropped from the 1980's (Bonk et al., 1999), newspapers remain a powerful force. From printed versions, individuals are able to construct their own images and meaning of the text in which

they consume. Print superiority is further supported because of the results it affords in the cognitive processes (Gunter, Furnham, & Griffiths, 2000). Readers are self-paced and exercise more cognitive control over information processing and easier facilitate the storage of information (Gunter et al., 2000). Previous studies show evidence on the recall effectiveness of print being a better medium than audio only and audiovisual modes (Davis, 2003a).

Boone et al. (1996) state that a vast quantity of information is becoming accessible to citizens through new channels, such as the superhighway. Many newspaper companies provide Internet editions, in hopes to keep the competitive edge television had in terms of immediate coverage (Bonk et al., 1999). Rapid communication through electronic media magnifies the speed of the senses (Symes, 1995). Nielsen (2000) states that "doing" (the movement of scrolling) makes a stronger emotional impact that just seeing alone.

On the other hand, since online communication is very specialized according to the individual, some feel it allows people to create information environments that are too personalized, ultimately separating themselves off from the larger, more general, information bases of the public agenda (Althaus & Tewksbury, 2002). Sparks (2002) states, with the rapid advancement of new online technology: it encourages "traditional media-effects scholars to ask new questions and design new research paradigms," (p.186).

Radio is better for notifying, reminding, or telling uncomplicated stories that can be easily remembered (Davis, 2003b). Studies prove radio conditions elicit a significantly lower recall level when compared to print and television (Facorro & DeFleur, 1993); this may be because of the fact that when listening to radio news, full attention is rarely devoted to just the broadcast. In Davis' (2003a) study , the Hispanic/Latino participants revealed a higher mean recall score in Spanish audio, as compared to the English audio, English electronic text, Spanish

print and Spanish electronic text. However, it should be noted this difference was not statistically significant.

For video, studies have shown recall is enhanced by presenting information using both visual and verbal forms ("Learning Theories," 1996). Postman (1986) argues that the television has had a negative effect on culture as a whole because it destroys the logical thought process. However, children have shown to consistently remember news better from television than from print (Gunter et al., 2000). This could be, in part, due to the limited vocabulary of children; making some concepts better comprehended by pictures than words alone.

Methods and Procedures

Data collection took place at seven committee meetings held by the Lubbock Chamber of Commerce during July 8, 2004 through August 30, 2004. Participants were solicited after their meeting was over. The study took place in a boardroom, classroom, or lecture hall setting. All of the meetings were held in Lubbock, Texas.

Before the treatments, the research process was explained; subjects were asked to read a letter of explanation of the study and sign to signify they understood the processes and rights as a participant as part of a Human Subjects consent form. They were then asked to fill out a demographic information sheet, asking the following: sex, age, race, highest education level completed, marital status, number of children, business/occupation and voting behavior on a federal, state, and local/county level. The next section consisted of fill-in-the-blank questions asking the number of hours spent consuming news in each of the four mediums being tested.

The subjects then watched, listened, or read the medium of their corresponding setting; the control group proceeded to the aided recall section of the questionnaire; they did not

consume media for this study. This medium presentation consisted of three news stories, and all media provided the same content. The story of interest, titled "Government Agricultural Subsidies Good for All" distributed by Texas A&M, interviewing Dr. Carl Anderson, agricultural economist, was presented in the pre-determined presentation media formats. This story fell in between two "dummy" stories involving current events; one reporting on the rising cost of gas, and the other the increase in prescription drug prices.

Immediately following the treatment, individual responses regarding the social, economic, and political issue salience were recorded by asking the participants to list the five most important news issues of today in order of importance from their personal viewpoint. Participants were also individually tested on their recall levels to determine the level of cognition through a post-test of unaided and aided recall questions. The unaided recall was stated as an open-ended question asking the participants to list as much as possible on the second story, which was about agriculture. The aided recall was established through a 12 question multiple choice test. Again, questions were asked about the second story, which pertained to agriculture. *Figure 1* offers a representation of the research design.

R	a_1	O_1
R	a_2	O_1
R	a_3	O_1
R	a_4	O_1
R	C	O_1

Figure1: Gall, Borg, & Gall (1996) post-test-only control-group, randomized subject design

R = random assignment, O_1 = posttest measures, a_1 = print (newspaper, magazine), a_2 = television (video), a_3 =(radio) audio, a_4 =Internet (electronic text), C = control group

This study employed a posttest-only control group with randomized subject design and multiple conditions. A pretest is not in the administration process. This plan was designed so the subjects would not affect the external validity, mainly pretest sensitization, of the experiment.

The qualitative, independent variable consisted of the five treatment levels (print, electronic text, video, and audio, and the control group). The dependent variables measured in this study comprised of issue salience, unaided recall, and aided recall.

The population consisted of Lubbock Chamber of Commerce affiliates living in the Lubbock area that attended chamber meetings. A sample (n=60) was selected. This number (n=60) was derived from multiplying five, the number of presentation mediums and the control group, by 12, the number of participants for each group. This recommendation comes from Davis (2003a), and is supported by Tang's chart (Kirk, 1995, p. 814). In Davis' aided recall analysis, an observed power of .91 was reported. Tang's chart (Kirk, 1995, p. 814) recommends a treatment size of 12 for replication.

Instrumentation

The measurement and treatment instruments, tested for face and content validity, were constructed and evaluated by experts in mass media. A journalist from the *Lubbock Avalanche-Journal* helped write the print instrument. This version was also placed in html format for the electronic text. The audio-only track was used from the video portion of the treatment.

Administration of a pilot test for the multiple-choice test verifies internal consistency. This instrument was given to a similar population not included in the sample, of 21 faculty and staff in the graduate school at Texas Tech University. The Kuder-Richardson-20 (KR-20) yielded an alpha level of 0.69 for the pilot test. The reliability of the aided recall test was measured by KR-20 formula for multiple-choice exams, after the posttest were filled out. This

reliability was recorded at 0.72 and deemed acceptable for this study. The two portions of issue salience and unaided recall sections of the instrument were analyzed qualitatively. Strict data analysis procedures were employed to ensure instrument reliability for issue salience and unaided recall.

For the unaided portion of the experiment, all true statements recorded in the description were scored as a +1. Untrue statements recorded in the description were scored as a -1. The true and untrue points were summed up for each statement pertaining to the agricultural news story. Taking the number of points in the individual story attains a mean recall percentage for the agricultural news story, and helps assume equal recall.

Asking participants to list the five most important social, economic, and political issues of today provides an issue salience base. These responses were qualitatively analyzed. Code assignments to any responses relevant to agriculture or natural resources correlate with their rank in the five spots provided. The responses were weighted as follows: listed 1^{st} = coded 5, listed 2^{nd} = coded 4, listed 3^{rd} = coded 3, listed 4^{th} = coded 2, listed 5^{th} = coded 1 (Trochim, 2002).

Data Analysis

All demographic and posttest measures were documented from the instruments provided; the questionnaire was developed by the researcher and adapted from Davis (2003a). The issue salience and unaided recall portion of the experiment were investigated using the content analysis outlined in Berg (2001). The aided recall portion, a 12 question multiple-choice test, was recorded as means from each medium. The quantified data was used in statistical procedures. Windows SPSS® was used to analyze the data.

Findings and Results

Participants were solicited and selected from a Caucasian population of Lubbock Chamber of Commerce affiliates, meaning they could reside in other areas of West Texas. Davis (2003a) recommended ethnic groups other the Hispanic/Latino population, such as Caucasians, be studied for cross-cultural comparison. The sample consisted of 60 (n=60) adults. It was reported in the 2000 Census that 62.5% of Lubbock County was composed of white persons, not of Hispanic/Latino origin, as compared to 52.4% in the state of Texas (U.S. Census Bureau, 2000). In this study, it was recorded that 31.7% (19) were male and 68.3% (41) were female. In Lubbock County 51.1% of the population is female, as compared to 50.4% in Texas (U.S. Census Bureau, 2000).

The average age of the participants was 40.3 (SD=12.3); 21 was the youngest age recorded and 65 was the oldest age in the study. The median age of the participants was 39. Single participants comprised 11.7% (seven) of the sample, 83.3% (50) were married, and 5% (three) were divorced. There were zero participants who were widowed.

The education level of the participants varied from some high school to graduate and professional degrees. The majority of the participants had a bachelor's degree (66.7%). Four participants indicated they had some college, while 16 reported a graduate or professional degree. Zero participants indicated they just had some high school, high school graduate or equivalent (GED), associate degree in college or in the category labeled "other (please specify)."

The number of children reported by the participants ranged from zero to four. Twenty-five (41.7%) of the participants had two children followed by 16 (26.7%) with zero children. Two participants (3.3%) reported having four children.

The media consumption of the analysis reported an average video viewing of 11.7 (SD=8.0) hours per week for participants. The audio medium followed with 10.3 (SD=13.5)

hours listened to per week; electronic text ranked third with 7.3 (SD= 8.3) hours per week, and print usage of 5.1 (SD=4.7) hours per week for the participants was the lowest.

Print produced the highest average aided recall of 0.77 (SD=0.11) of the media studied, followed by video with an average of 0.64 (SD=0.18) recall. The lowest recall was electronic text with an average of 0.52 (SD=0.20). Table 1 reports mean scores, standard deviations, standard error, and confidence intervals (lower and upper bound) for each treatment group and the control treatment group.

Table 1:
Summary of aided recall for treatment groups

Treatment	M	SD	SE	95% Confidence Interval for M Lower	Upper
Print (newspapers and magazines)	.77	.11	.03	.70	.84
Internet (electronic text)	.52	.20	.06	.39	.65
Radio (audio)	.60	.15	.04	.50	.70
Television (video)	.64	.18	.05	.53	.75
Control	.28	.12	.03	.20	.35

SE – Standard Error

Video revealed the highest average of unaided recall at 4.17 (SD=2.98). The lowest unaided recall score occurred in the audio group with an average score of 3.08 (SD=2.27). Table 2 provides data for each of the four treatment groups involved in the research.

Table 2:
Summary of unaided recall for treatment groups

Treatment	M	SD	SE	95% Confidence Interval Lower	Upper
Print (newspapers and magazines)	4.00	2.95	.85	2.12	5.88
Internet (electronic text)	3.58	2.57	.74	1.95	5.22
Radio (audio)	3.08	2.27	.66	1.64	4.53
Television (video)	4.17	2.98	.86	2.27	6.06
Control	0.00	0.00			

SE – Standard Error

In the issue salience portion agriculture and/or natural resources related issues were listed by 18 (30%) of the participants. Responses resembled current issues consistent with current mass media coverage from the summer of 2004.

Research Null Hypothesis One

$H_0$1: Lubbock Chamber of Commerce affiliates in the media presentation groups of print, electronic text, video, and audio will exhibit no statistical differences in aided recall of agricultural policy news.

The following research hypothesis was developed *a priori* at the $\alpha = .05$ level.

$$H_0 1: \mu_1 = \mu_2 = \mu_3 = \mu_4$$

$$H_a 1: \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$$

The Levene's test for equality of variances for aided recall was not significant; therefore, the assumption of homogeneity of variances was satisfied (Kirk, 1995). To test the null hypothesis of no difference in aided recall between print, video, audio, or electronic text treatment groups, an ANOVA was utilized. Table 3 gives the detailed results of the ANOVA used to test the hypothesis of no difference between the four treatment groups.

Table 3:
Analysis of variance comparing print, electronic text, video, and audio treatment groups on aided recall scores

Source	SS	df	MS	F	p
Between	1.60	4	.400	16.36	.001*
Within	1.34	55	.024		
Total	2.94	59			

**significant at α = .05*

The obtained omnibus $\underline{F}$ (4, 55) = 16.36, $\underline{p}$ = 0.00 was significant; therefore, the null hypothesis of no difference in aided recall print, electronic text, video, and audio treatment groups was rejected. The strength of the relationship between the dependent variable of aided

recall and the independent variable of media was strong. The statistic had a moderate effect size (F= 0.26). The analysis of variance (ANOVA) indicated an observed power of 0.82. A power of greater than 0.80 is considered acceptable (Kirk, 1995).

The analysis of variance revealed the F statistic as significant at 16.36. A post-hoc comparison was then used to determine the location of the significance. A Tukey post-hoc comparison was used to locate significant mean differences. Table 4 presents the results from the Tukey post-hoc comparison.

Table 4:
Tukey post-hoc comparison of print (P), video (V), audio (A), and electronic text (ET), and control (C).

	M	P	V	A	ET	C
P	0.77	--	0.13	0.17	0.25*	0.49*
V	0.64		--	0.04	0.12	0.36*
A	0.60			--	0.08	0.32*
ET	0.52				--	0.24*
C	0.28					--

**p<.05*

Significant differences exist in mean comparisons between print and electronic text. The control group also indicated significant differences with print, video, audio, and electronic text.

Research Null Hypothesis Two

$H_0$2: Lubbock Chamber of Commerce affiliates in the medium presentation groups of print, electronic text, video, and audio will exhibit no statistical differences in unaided recall of agricultural policy news.

The following research hypothesis was developed *a priori* at the $\alpha = .05$ level.

$$H_0 2: \ \mu_1 = \mu_2 = \mu_3 = \mu_4$$

$$H_a 2: \ \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$$

The Levene's test for equality of variances for unaided recall was not significant; therefore, the assumption of homogeneity of variances was not satisfied (Kirk, 1995). To test the null hypothesis of no difference in unaided recall between print, video, audio, or electronic text treatment groups, an analysis of variance (ANOVA) was utilized. Table 5 gives the detailed results of the ANOVA used to test the hypothesis of no difference between the four treatment groups.

Table 5:
Analysis of variance comparing print, electronic text, video, and audio treatment groups on unaided recall scores

Source	SS	df	MS	F	p
Between	8.42	3	2.80	.382	.767
Within	323.50	44	7.34		
Total	331.92	47			

**significant at α = .05*

The obtained omnibus $\underline{F}$ (3, 44) = 0.382, $\underline{p}$ = 0.767 was not significant; therefore, the null hypothesis of no difference in unaided recall print, electronic text, video, and audio treatments was not rejected. There was no significant difference in treatment groups for unaided recall.

Research Null Hypothesis Three

$H_0 3$: Lubbock Chamber of Commerce affiliates in the medium presentation groups of print, electronic text, video, and audio will exhibit no statistical differences in issue salience when given a news story dealing specifically on agricultural policy news.

The following research hypothesis was developed *a priori* at the $\alpha = .05$ level.

$$H_0 3: \ \mu_1 = \mu_2 = \mu_3 = \mu_4$$

$$H_a 3: \ \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$$

The Levene's test for equality of variances for issue salience was not significant; therefore, the assumption of homogeneity of variances was satisfied (Kirk, 1995). To test the null hypothesis of no difference in issue salience between print, video, audio, or electronic text treatment groups, an analysis of variance (ANOVA) was utilized. Table 6 gives the detailed results of the ANOVA used to test the hypothesis of no difference between the four treatment groups.

Table 6:
Analysis of variance comparing print, electronic text, video, and audio treatment groups on issue salience scores

Source	SS	df	MS	F	p
Between	11.27	4	2.817	.746	.565
Within	207.58	55	3.774		
Total	218.85	59			

**significant at α = .05*

The obtained omnibus $\underline{F}$ (4, 55) = 0.746, $\underline{p}$ = 0.565 was not significant; therefore, the null hypothesis of no difference in issue salience for print, electronic text, video, and audio treatments was not rejected. There was no significant difference in issue salience as it relates to treatment groups.

Research Null Hypothesis Four

$H_0 4$: There are no linear relationships among unaided recall, aided recall, and issued salience among Lubbock Chamber of Commerce affiliates when consuming agricultural policy news.

The preceding research null hypotheses was developed *a priori* at the $\alpha = .0166$ level. Correlation coefficients were computed among the three dependent measures—unaided, aided, and issue salience. Using the Bonferroni approach to control for a Type I error across the three

correlations, a p-value of less than 0.0166 (.05/3 = 0.0166) was required for significance (Bonferroni, as cited in Green, Salkind, & Akey, 2000).

The results of the correlation analyses presented in Table 7 illustrates one out of three correlations was statistically significant and was equal to 0.328, the aided and issue salience.

Table 7:
Correlations among the three dependent measures

	Aided recall	Unaided recall	Issue Salience
Aided recall	--	0.208	0.328*
Unaided recall	0.208	--	0.213
Issue salience	0.328*	0.213	--

**p<.0166*

The correlation of aided recall and issue salience was moderate; therefore, the null hypothesis of no linear relationship between aided recall and issue salience was rejected. The higher the aided recall score of the participant, the more likely they were to list an agricultural or natural resource topic as an important political and/or social issue.

Conclusions

Research Hypothesis One:

The results from this study indicated a statistical significance in aided recall for print, video, audio, and electronic text. A post-hoc test identified the significant mean separation among treatment groups. Significant differences existed between print, and electronic text. The control group also indicated significant differences with all four treatment groups. These findings are consistent with the literature, which expresses print superiority, especially in comparison with electronic text, among adult populations (Facorro & DeFleur, 1993).

Research Hypothesis Two:

The results of the analysis revealed no significant differences among treatment groups for unaided recall. These data were reported as qualitative data and are outlined in the discussion portion of this chapter.

Research Hypothesis Three:

The results of the analysis revealed no significant differences among treatment groups for issue salience. These data were reported as qualitative data and are outlined in the discussion portion of this chapter. Furthermore, these data were correlated with aided recall and further discussed in hypothesis four.

Research Hypothesis Four:

The results from this study revealed a moderate correlation among aided recall and issue salience. The more agricultural information a participant retains, the more likely they will report an agricultural or natural resource related issue as a salient issue.

Discussion

Descriptive

The highest mean recall score resulted from the print treatment group. The rest are ordered as follows: video, audio, and electronic text. The qualitative data from the unaided recall resulted in the following order from highest to lowest: video, print, electronic text, and audio. Although print was first in the aided recall section, it was recorded as the least amount of time is spent. Video produced higher recall in the unaided portion.

Finally, the other component of the Agenda-Setting Theory, issue salience, was qualitatively supported in this study. When participants were asked the five most important

social and political issues, one agricultural story, hidden in a three-story news segment, resulted in adoption of agricultural topics as salient issues.

Inferential

Among the recall measures, only aided recall revealed a significant difference among treatment groups. The post-hoc test in the aided recall analysis revealed print as significantly better than electronic text. Furthermore, the post-hoc revealed all treatment groups as significantly better than the control group. When these cognitive results are associated with the Agenda-Setting Theory, it is important to place printed publications pertaining to the importance of agriculture in the hands of individuals who will consciously read them. Also, make Internet publications printer friendly so the user can print the material and not read it on the computer screen to produce a higher recall level.

The linear relationship between aided recall and issue salience (r=.328) strengthens the association of material exposure and retention, and the development of a person's salient issues outlined in the Agenda-Setting Theory.

Recommendations for practioners

Based on this study's results and findings and conclusions, recommendations for further practice and research have been made. An in-depth needs assessment when addressing any population through mass media channels is recommended. It is recommended by the researcher that media campaign developers and practitioners consider outcomes of this study when addressing the constituents of West Texas, especially as it relates to agricultural issues. Listed below are recommendations for addressing the Lubbock Chamber of Commerce affiliates of West Texas on agricultural issues. These were generated by the researcher as a result of the literature review and study results.

1. Use a variety a media channels when possible. There is a direct correlation between channel diversity, exposure time, and overall campaign effectiveness.
2. Because of limited consumption time and a lack of overall cognitive effectiveness, direct resources away from electronic text channels.
3. Commodity or interest groups should invest their time and resources to produce mass media public relations material to enhance issue salience of certain topics.

Again, an in-depth needs assessment to provide a full comprehension of the subjects under consideration is recommended by the researcher when planning or facilitating any mass media campaign. People conducting such media presentation research should also stay well informed on current trends of media effectiveness research and theory to yield the best results.

Recommendations for Further Research

First, it is recommended this study be replicated to determine if the current study's findings are consistent. Replications should take place in various population settings in West Texas. Also, replications should be performed with extended treatment periods in each of the four groups. In order to measure delayed recall, it is important to solicit a population that can easily be contacted after an extended period. Delayed recall by mail survey was attempted in this study, but due to a low response rate and the resulting unequal treatment groups, statistical analysis could not be conducted on this measure.

Second, the researchers recommend further investigation into media channel recall as it relates to learning style.

Third, it is recommended the descriptive statistics and correlation assumptions from this study be validated. An adequate sample size for the target population is needed to validate the descriptive and qualitative portion of the instrument used in this study.

Fourth, the researchers recommend a comparison of the Davis (2003) study and the results of this study.

Finally, it is recommended the study be replicated with a Black/African American population in West Texas. This would yield insight to cross-cultural associations of mass media effectives and consumption. Facorro and DeFluer (1993) provide evidence that people of different societies and cultures learn from news differently, even when content and conditions of exposure are identical.

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Communication Efforts of Florida Extension Agents During the 2004 Hurricane Season

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RESEARCH PAPER SUBMISSION

Communication Efforts of Florida Extension Agents During the 2004 Hurricane Season

Abstract

From August 13 to September 26, 2004, the state of Florida was hit by more hurricanes in one year than any state in more than 120 years. The wrath of hurricanes Charley, Francis, Ivan, and Jeanne left homes destroyed, lives lost, and businesses to rebuild. As a result, Extension agents and personnel were called to take an active role in this crisis situation. Determining how to communicate to their publics or clientele, what messages would be most effective, and how to do so in a timely manner, were just some of the communication issues facing Florida's Extension agents.

The purpose of this study was to examine what communication channels Extension utilized and what messages were communicated during the 2004 hurricane season, in an effort to be better equipped to respond during future hurricanes and natural disasters. Through a descriptive survey of quantitative and qualitative responses, this study described the perception of respondents' communication efforts. A total of 208 people responded to the survey, for an overall response rate of 63.4%. Overall, respondents indicated that they did not use mass media channels at all during the hurricanes, and personal communication, such as word of mouth or site visits, appeared to be the most common form of communication used. Respondents also reported that 83 % of their offices had an internal crisis communication plan, while 57% said their Extension office had an external plan.

Key words: Extension, natural disasters, hurricanes, crisis communication, agriculture

Communication Efforts of Florida Extension Agents During the 2004 Hurricane Season

Introduction

When Hurricane Charley came ashore on August 13, 2004, Florida residents began to feel the effects from what would soon be a total of four hurricanes to sweep the state in just over a month (Sherman, 2004). The wrath of hurricanes Charley, Francis, Ivan, and Jeanne left homes destroyed, lives lost, and businesses to rebuild. One hundred and seventeen people died in the four hurricanes, and damage estimates reached more than $22 billion (Florida Office of Insurance Regulation, 2005). In agriculture and allied industries, estimates of hurricane-inflicted damages totaled more than $2 billion (UF/IFAS, 2005). The hurricanes affected key commodities, ranging from citrus and strawberries to livestock and forestry.

In response, the University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS) formed a Hurricane Recovery Task Force to inventory UF/IFAS's immediate response during the six months following the hurricanes and "develop long-term strategies for dealing with these and future hurricanes or disasters, both natural and man-made" (UF/IFAS, 2005, p. 1). Among the recommendations, UF/IFAS Extension identified the need to improve communication efforts as a primary concern during the 2004 hurricane season (UF/IFAS, 2005).

Historically, the Cooperative Extension Service has responded to the problems and crises of communities from local depressions and regional droughts to more nation-wide cases, such as the Great Depression and world wars (Cartwright, Case, Gallagher, & Hathaway, 2002). Extension's primary role in many former crises was to provide reliable information delivered by various forms of communication media, such as radio (addressed question/answer sessions);

television (interviews and informational segments); Web site links; and printed information, such as fact sheets, information packets, and other publications (Cartwright et al., 2002).

In relation to the Florida hurricane crisis of 2004, Extension agents responded during these four natural disasters by supporting the hurricane preparation and recovery efforts in their communities and neighboring counties. When their areas were raked by the hurricanes, agents communicated through various means to provide important information to clientele groups through mass and personal channels (UF/IFAS, 2005). All UF/IFAS Extension personnel provided a variety of resources and services to agricultural producers and residents across the state, while simultaneously working with local, state, and federal government agencies to insure that people and agricultural industries recovered from the natural disasters that struck the state (McGovney, 2005).

After the second hurricane, a small working group in the University of Florida's Department of Agricultural Education and Communication began discussions of the professional and personal development needs of county Extension agents impacted by the hurricanes, communication channels, informational resources, and the impact the Extension Service had throughout the state. By the third hurricane, the working group decided to develop a comprehensive questionnaire to examine these areas. The study sought to provide more clarity of the front-line response efforts of Florida's county Extension faculty.

Research shows that before a crisis occurs, planning may reduce response time and possibly prevent missteps in an organization's initial response to a crisis (Benoit, 1997). However, Extension agents and personnel were called to take an active role in a crisis situation that no state had experienced since the 1880s. Determining how to communicate to their publics

or clientele, what messages would be most effective, and how to do so in a timely manner, were just some of the communication issues facing Florida's Extension agents.

Therefore, in relation to the 2004 hurricane season, it is crucial to conduct research on Extension's communication efforts to determine how their clientele's needs were met and to address future concerns of clientele facing a natural disaster (UF/IFAS, 2005). The purpose of this study was to examine what communication channels Extension utilized and what messages were communicated during the 2004 hurricane season, in an effort to be better equipped to respond during future hurricanes and natural disasters.

Literature Review

Extension's history of serving others by educating and providing information can also be associated with their many years of responding to the problems and crisis of communities (Bosch, 2004). Among the categorization of "crisis" include natural disasters, such as hurricanes, droughts, tsunamis, tornadoes, floods, earthquakes, volcanoes, and wildfires (Paul, 2001). In 1988, The Ohio Cooperative Extension Service played a major role in disseminating information to families and communities facing the drought crisis in Washington County, Ohio (Chenoweth, 1991), by utilizing a daily fact sheet, known as "Drought Directives" to reach individuals with information.

Once a natural disaster strikes, there is little time for thinking ahead, and implementing a plan of action. Crisis communication strategy begins with a plan. "A good one anticipates the worst that could happen, sets procedures for key strategists, and prepares for the unpredictable" (Bonk, 2003, p. 14). The key for all communicators and representatives of an organization is to plan thoroughly and carefully before the crisis occurs (Covello, 2003). According to the Institute of Crisis Management, 65 percent of most business crisis today are non-event-related or

"smoldering" crisis, originating mostly with management interaction and/or neglect (Sapriel, 2003, p. 348-49). As a result, corporations recognize that crisis management must be implemented and that all key business functions must address crisis prevention and management formally as part of business planning.

In the case of Extension, crisis management would involve insuring effective communication internally among the employees of the organization, the organizations' publics, the community, and in many cases, the general public. Even though the agricultural industry faces problems that no other industry faces and must communicate about complicated issues "there remains a lack of documented cases from which industry professionals and students can learn" (Telg & Dufresne, 2001, p. 8).

Whiting, Tucker, and Whaley (2004) analyzed the preparedness of colleges of agriculture across the U.S. and the handling of crisis situations at those institutions. Only about 60 percent of responding land-grant universities had a central crisis communication plan, while nearly one-third of the respondents were unaware of a crisis communication plan in place for their Experiment Station and academic programs. A large majority of respondents believed that their administrators were somewhat or well informed of the crisis plan; however, less than half of the respondents believed that either faculty (43.3%) or staff (46%) were somewhat or well informed (Whiting et al., 2004).

Crisis communication involves incidents that suddenly and unpredictably threaten the stability of an organization (Whiting, Tucker, & Whaley, 2004). It is the "dialog between the organization and its publics to, during, and after the negative occurrence" (Fearn-Banks, 2002, p. 2). Coombs (1999) noted that there are two dominant message factors crisis experts recommend communicating: information and compassion. According to Covello (2003), communicating

clearly and with compassion involves understanding that trust is earned. This means as a communicator and as an organization, one should not ask or expect to be trusted by the public. Therefore, it is critical to express genuine empathy, only to promise what can be delivered, and then follow through, and acknowledge and say that any illness, injury, or death is a tragedy to be avoided (Covello, 2003). These types of messages are most effective if delivered by leaders and well-respected representatives of one's organization (Sapriel, 2003). The messages of hope, support, and the rebuilding process offer publics the reassurance needed in uncertain times (Sapriel, 2003). Also, relaying timely information is relevant when communicating in a crisis. Communicators should strive for brevity, but respect requests for information and offer to provide desired information within a specified time period (Covello, 2003). Many times these "requests" are presented by the media. Because the goal of crisis and risk communicators is to establish long-term relationships of trust and credibility with the media, communicators should provide information tailored to the needs of each type of media (Heath & Nathan, 1990-91).

"News reports of disasters have inherent public appeal. They are often treated as the biggest stories, attract the largest audiences, and are remembered the longest" (Sood, Stockdale, & Rogers, 1987, p. 27). As such, it is extremely important to communicate with the news media during a crisis because of their easy access to large publics and communication systems that remain working even in the case of partial breakdown (Peters, Covello, & McCallum, 1997). However, crisis situations become a crisis communication problem when there is extensive media attention that is not planned for or anticipated (Barton, 2000). Media coverage during a crisis situation tends to attract increased media attention for the individuals impacted by the crisis (Brown, 2003). Therefore, it is important for industry communicators to plan for and manage crisis/disaster through crisis communication planning in regard to the media.

Zoch and Duhe (1997) found the news media first target affected individuals or victims for information about a disaster, followed by eyewitnesses, authorities, and the family of affected individuals. Spokespersons for the affected organization were listed as the last source of contact. Additionally, the news media generally try to obtain information about a disaster from authoritative sources like officials from county, state, and federal government agencies and traditional emergency organizations (Sood, Stockdale, & Rogers, 1987).

To understand how the news media typically operates in natural disaster situations, communicators should examine how the media's coverage frames the public's perception of one's organizations, and work to establish report and credibility with the media in order to maintain and enhance news coverage (Ruth, Muegge, & Irani, 2005). By examining the framing of news media coverage of agriculture in three major metropolitan newspapers in Florida during the 2004 hurricane season Ruth, Muegge, and Irani (2005) found that agricultural stories only constituted about 4 percent of the hurricane coverage of these three major newspapers in Florida; yet, as the second-largest industry in the state, agriculture was severely impacted by the hurricanes.

Methodology

A team of researchers in the Agricultural Education and Communication department at the University of Florida developed a 76-question survey instrument, which included quantitative and open-ended (qualitative) questions. The questionnaire was converted to an online Web form using Zoomerang, a premium online survey software that numerous businesses and organizations use to create professional, customized questionnaires. The survey was conducted via e-mail using an adapted form of Dillman's Tailored Design method (2000).

The 76-question survey was adapted from previous research on professional development and agricultural scientists' communication efforts (Ruth, Lundy, Telg, & Irani, 2005), as well as specific questions the researchers believed necessary to gain a clear understanding of Extension's role during the hurricane preparation and recovery efforts. Experts from the departments of Family Youth and Community Sciences, Agricultural and Biological Engineering, Food and Resource Economics, and Clinical and Health Psychology were also asked to include and edit questions related to disaster preparedness, educational materials, agents' personal needs (including mental health issues), and community support needs.

A letter from the UF/IFAS Extension dean was e-mailed to all county Extension faculty and district Extension directors on November 30, 2004, the last day of the official hurricane season, to inform faculty of the forthcoming questionnaire and to encourage their participation. The population for this study included all UF/IFAS county Extension faculty and district Extension directors (n=328) with a viable e-mail address as of October 2004. The faculty received an e-mail that gave them an overview of the study and provided the link to the 76-question survey.

Two waves of follow-up reminders were conducted with nonrespondents on December 9 and December 20, 2004. The researchers closed the questionnaire on January 5, 2005, preventing any new responses. All communication and distribution of the questionnaire was done online, via e-mail, based upon the most current list of faculty. A total of 208 viable responses were received for a 63.4% response rate.

The data were analyzed using descriptive statistical analysis and the constant comparative method. The SPSS ® Student Version 12.0 for Windows software was used for most of the analysis. This study was quantitative in nature in that it used objective measurements and

statistical analysis to understand and examine the communication efforts of Extension agents. By using applied research methodology, this study was designed to examine what communication channels Extension utilized and what messages were communicated during the 2004 hurricane season, in an effort to be better equipped to respond during future hurricanes and natural disasters.

Results

A total of 208 agents responded, which returned a 63.4% response rate. In terms of gender, 38% (n=70) of respondents were male, while 62% (n=114) were female. Table 1 identifies respondents according to age. The majority of agents (38.1%, n=51) ranged in age from 51-60, and 30.6% (n=41) were ages 41-50. Only 4.5% (n=6) were over 60 years of age.

Table 1
Number of Extension agents by age.

Age	n	%
26-30	15	11.1
31-40	21	15.7
41-50	41	30.6
51-60	51	38.1
61-66	6	4.5
Total	134	100.0

For those with administrative responsibilities, 39 (95%) were County Extension Directors, and two (5%) were District Directors. (See Table 2.)

Table 2
Extension agents with administrative responsibilities.

Agents	n	%
County Extension Director	39	95
District Extension Director	2	5
Total	41	100

Respondents were asked to indicate their primary program area from a list generated by the District Extension Directors' office. Out of 194 responses, the top program areas were family and consumer sciences, (n=46, 24%); agricultural and natural resources, (n=45 23%); and 4-H youth development (n=37, 19%). Agents who indicated "other" as their response listed citrus; water quality; urban forestry; and livestock, pasture, and forage production, as some of their program areas. (See Table 3.)

Table 3
Extension agents' primary program area.

Program Area	n	%
Family & Consumer Sciences	46	24
Ag/Natural Resources	45	23
4-H/Youth Development	37	19
Ornamental/Environmental Horticulture	21	11
Urban Horticulture	16	8
Commercial Horticulture	8	4
Community Development	2	1
Other	11	6
Total	194	100

Agents reported their years of experience with the Cooperative Extension Service in and outside of Florida. About one-third of respondents (30%, n=60) had worked for Extension five years or less, while less than 8% (7.6%, n=15) had worked more than 30 years. Table 4 identifies the number of responses according to years of service.

Table 4
Agents' years of experience with the Cooperative Extension Service.

Years of Service	n	%
0-5 years	60	30.0
6-10 years	35	17.7
11-15 years	17	8.5
16-20 years	19	9.6
21-25 years	29	15.0
26-30 years	23	11.6
More than 30 years	15	7.6
Total	198	100

The majority of respondents reported they made slight (28%, n=56) to moderate (27%, n=54) use of mass media channels to communicate during the hurricanes. The greatest percentage of respondents (31%, n=61) did not use mass media channels at all, while only 14% (n=27) said they used the mass media to a great extent. (See Table 5.)

Table 5
Extension agents' use of mass media channels to communicate during 2004 hurricane season.

Response	n	%
Not at all	61	31
Slight extent	56	28
Moderate extent	54	27
Great extent	27	14
Total	198	100

When asked the same question about mass media usage by their local county Extension offices, the pattern of response was similar, although the greatest percentage of respondents (35%, n=68) indicated moderate usage of mass media channels. Thirty-three percent (n=65) said their county Extension offices' slightly used mass media, 21% (n=40) did not use mass media channels at all, and only 11% (n=22) of respondents said their county Extension offices used the mass media to a great extent. (See Table 6.)

Table 6
Extension offices' use of mass media channels to communicate during 2004 hurricane season.

Response	n	%
Not at all	40	21
Slight extent	65	33
Moderate extent	68	35
Great extent	22	11
Total	195	100

The most used method of communication during the 2004 hurricane season was flyers/print materials (29%, n=56), followed by newspapers at 19% (n=37). The majority (n=130) of respondents reported that they did not use live television interviews, while 69% (n=128) did not use television public service announcements, and 66% (n=123) did not use live radio interviews. (See Table 7.) Respondents often commented on the Internet and Web simultaneously, and several respondents reported this combination was the best medium to have in order to communicate. One respondent wrote, "I have total control of when and what goes out." While this form of communication might have been preferred, respondents noted that electronic media was problematic due to electrical outages caused by the hurricane. Radio was mentioned by a few respondents as one of the best means to get a simple message out immediately.

Table 7
Extent that communication sources/channels were used by Extension agents during 2004 hurricane season.

Response	Not at all		Slight extent		Moderate extent		Great extent	
	n	%	n	%	n	%	n	%
Flyers/print materials	20	10	56	29	63	32	56	29
Newspaper	34	18	64	34	56	29	37	19
Internet/Web	74	39	42	22	46	24	27	14
Radio PSA	96	51	43	23	36	19	12	6
Live radio interviews	123	66	39	21	19	10	6	3
TV PSA	128	69	35	19	17	9	5	3
Live TV interviews	130	71	40	22	13	7	1	1
Radio PSA	96	51	43	23	36	19	12	6
Other	37	56	7	11	12	18	10	15

When asked what personal communication methods were most used by Extension agents, respondents said face-to-face communication was the most commonly used (37%, n=71) personal method of communication. Telephones (37%, n=71), on-site visits (20%, n=38), and cell phones (19%, n=36) were also ranked as necessary sources of personal communication. The least sources of personal communication used were text messaging (95%, n=169) and electronic e-mail (34%, n=62). (See Table 8.)

Table 8
Extent that Extension agents used personal communication methods during the 2004 hurricane season.

Response	Not at all		Slight extent		Moderate extent		Great extent	
	n	%	n	%	n	%	n	%
Face to face	16	8	43	23	61	32	71	37
Telephone	22	12	40	21	57	30	71	37
On-site visits	51	27	56	30	43	23	38	20
Cell phone	64	34	47	25	40	21	36	19
Electronic Mail	62	34	57	31	43	23	23	12
Text messaging	169	95	5	3	3	2	0	0
Other	31	67	1	2	9	20	5	11

Agents were asked to give their perception of the general public's and their clientele's awareness of Extension's efforts during the hurricane season. Table 9 identifies Extension agents' perspective of the general public's awareness. Of respondents, over half (53%, n=104) reported the general public was only slightly aware of Extension's efforts, and 20% (n=39) of respondents indicated the general public was not at all aware. Only 4% (n=8) of respondents felt the general public was aware to a great extent.

Table 9
Extension agents' perception of the general public's awareness of Extension's efforts during the 2004 hurricane season.

Response	n	%
Not at all	39	20
Slight extent	104	53
Moderate extent	46	23
Great extent	8	4
Total	197	100

When asked the same question about their Extension clientele group, the majority of agents (40%, n=79) reported their clientele was moderately informed of Extension's efforts; however, 11% (n=22) reported their clientele not being aware at all. (See Table 10).

Table 10
Extension agents' perception of Extension clientele's awareness of their efforts during the 2004 hurricane season.

Response	n	%
Not at all	22	11
Slight extent	67	34
Moderate extent	79	40
Great extent	29	15
Total	197	100

Agents were also asked to report how effective communication sources/channels were used to communicate during the natural disaster. Table 11 shows that most respondents (32%, n=49) reported using flyers/print materials, followed by newspapers (29%, n=45) and "other" (17%, n=26) forms of communication. Responses in the "other" category ranged from e-mail and telephone, to phone trees and cell phones, to site visits and word of mouth. Newsletters, handouts, workshops, and meetings were also mentioned. Only 3% felt live television interviews (n=4) and Internet/Web (n=4) were the most effective sources/channels used.

Table 11
Sources/channels of communication perceived as most effective in conveying information to the public during the 2004 hurricane season.

Response	n	%
Flyers, print	49	32
Newspaper	45	29
Radio PSA	15	10
Live radio interview	6	4
TV PSA	6	4
Live TV interviews	4	3
Internet/Web	4	3
Other	26	17
Total	155	100

When reporting on the most effective personal communication methods used to communicate, agents perceived face-to-face communication (36%, n=60) to be the most

effective, followed by telephone communication (35%, n=59), on-site visits (9%, n=16), and cell phones (8%, n=14). Respondents listed television and radio; two-way radio; newsletter and handouts; mail; and workshops and meetings, under the "other" most effective personal communication methods category. (See Table 12.)

Table 12
Extension agents' perception of most effective personal communication methods used during the 2004 hurricane season.

Response	n	%
Face to face	60	36
Telephone	59	35
On-site visits	16	9
Cell phone	14	8
Electronic mail	8	5
Text messaging	1	1
Other	11	7

Finally, respondents were asked if their Extension office had an internal or external plan to manage communication efforts in a crisis like the hurricanes or other emergency situations. For the purpose of this study, "internal" referred to the crisis communication preparedness on behalf of Extension agents, Extension offices, and the UF/IFAS Extension administration. "External" communication preparedness was how participants communicated with outside agencies at the local, county, state, and national level. Agents reported that 83% (n=160) of their offices had an internal crisis communication plan, while 17% (n=33) did not. Slightly more than half (57%, n=104) reported having an external plan; however, 43% (n=80) did not.

The importance of having a crisis communication plan can be described from one respondent, who reported, "We had not electricity or phone services in our county for over two weeks, so communication was limited. Once electricity was restored, our computers were

damaged and we were unable to access the Internet or e-mail for a month. Communication during this time was quite a challenge. We relied on cell phones mostly." (See Table 13.)

Table 13
Internal and external communication preparedness efforts used by Extension offices in a crisis like the2004 hurricanes or other emergency situations.

Communication Plan	Yes		No	
	n	%	n	%
Internally	160	83	33	17
Externally	104	57	80	43

Discussion and Conclusions

Based on the data associated with the communication methods used by Florida Extension agents during the 2004 hurricane season, respondents made slight to moderate use of mass media channels to communicate; however, the greatest percentage of respondents (31%) did not use mass media channels at all to communicate. Instead, agents used personal communication, such as word of mouth or site visits as the most common form of communication. When asked the same question about mass media usage by their local county Extension offices, the pattern of response was similar. Although the greatest percentage of respondents (35%, n=68) indicated moderate usage of mass media channels, only 11% indicated that their local county Extension office used mass media channels to communicate to a great extent. These findings indicate that personal communication, such as word of mouth and on-site visits, were the most effective communication method in the time of a natural disaster or crisis because without face-to-face communication, people would not have kept informed. It can be inferred that, due to the limited access to electrical power and technology, agents had no other choice but to use these forms of communication. However, it can also be concluded that Extension agents chose forms of personal communication as the most effective means of insuring the well-being of their clientele.

The most often used sources/channels to convey information was flyers/print materials (29%, n=56), followed by newspapers at 19% (n=37). The majority of respondents reported that they did not use live television interviews, nor television public service announcements, or live radio interviews. Respondents also reported telephone, limited e-mail, cell phones, site visits, and word of mouth as sources/channels used. Again, these findings indicate that in times of a natural disaster, people need information that is readily and easily accessible, and also contains limited technological or power restraint.

To describe Florida Extension agents' perception of communication efforts during the 2004 hurricane season, agents were asked to give their perception of the general public and their clientele's awareness of Extension's efforts during the hurricane season. Respondents felt that the general public was only aware to a slight extent (53%) of Extension's efforts during the hurricanes, while 20% of the general public was not aware at all. Agents felt their clientele were moderately (40%) informed of their efforts; however, 11% reported their clientele not being aware at all. This could be a result of Extension not traditionally delivering information to an audience other than its traditional clientele, or that the general public might not have viewed Extension as source of information during a crisis, or have known about their efforts.

Eighty-three percent of respondents reported that their offices had an internal crisis communication plan, while 57% said their Extension office had an external plan. Without crisis communication plans intact, communicating in disaster and crisis scenarios is likely to be difficult, especially if advance preparation is not sufficient to prepare for the crisis and if all employees are not trained to respond when and if a crisis occurs (Sandman, 1998, Covello, 2003, Fearn-Banks, 2002, Bonk, 2003). As a result of the lack of a unified crisis communication plan, consistent internal and external outreach efforts on behalf of Extension were, in many instances,

not known and not obtained. At times, this caused agents to be unclear of their roles and responsibilities and how to effectively communicate to their clientele and the public during a time of crisis.

Overall, results from this study indicate that Florida's Extension agents were, indeed, front-line responders following the four hurricanes of the 2004 season: Charley, Frances, Ivan, and Jeanne. Extension professionals were on the front line to provide aid to storm victims, sometimes when the professionals themselves were also severely impacted by the storm (UF/IFAS, 2005). Many times, they were the first persons to assist farmers and ranchers in rural and hard-to-reach areas, while also providing food, water, and ice, organizing chain saw crews, and securing and providing electrical generators to their clientele and the general public (UF/IFAS, 2005). In addition, Extension was faced with the challenge of communicating and responding in a situation that no state had experienced in over 120 years**.**

Due to the massive destruction caused by the hurricanes of 2004 and the recent Gulf Coast hurricanes of 2005, Katrina and Rita, it is vital that Extension assess the personal and professional needs of its employees and determine the impacts of Extension agents within their communities in times of a crisis or natural disaster. In addition, communication preparedness, such as implementing crisis communication plans, crisis training, and establishing how to communicate during these situations, should be addressed. When organized and employed with strategic communication plans intact, Extension will continue to be the arm that provides education, research, and instruction (Seevers, et. al, 1997).

Recommendations for Practice

Based on the results of this study, it is recommended that the implementation of a unified crisis communication plan be implemented in each state, to achieve consistent internal and

external outreach efforts. These crisis plans should incorporate all forms of natural disasters – such as hurricanes, fires, tornadoes, earthquakes, and floods – man-made disasters, and terrorist attacks. Through the implementation of these efforts, Extension agents will be better prepared and informed about their roles during disasters and how to react in these disaster and/or crisis situations. Because 31% of respondents indicated that they did not use mass media channels at all to communicate during the hurricanes, recommendations include establishing a media relations plan to enhance informative and positive news coverage of Extension and agriculture during a crisis situation.

By establishing sound media relations, communicators will increase their access to the media, enhance the media's understanding of the issues, and influence the delivery and accuracy of information (Ruth, et al., 2005). This type of assessment and preparation will enhance Extension professionals' overall ability to communicate effectively during a crisis and understand the organization and their individual roles in assisting clientele, members of their community, and outside organizations. Because electronic media was problematic due to electrical outages caused by the hurricanes, Extension agents need to depend on other channels, such as flyers/print materials, word of mouth, newspapers and radio to communicate their messages. These procedures should be outlined in the crisis communication plan. While personal contact, such as word of mouth or site visits, appeared to be the most common form of communication used during the hurricanes, it is also vital that Extension attempt to reach all outlets of news coverage.

It can also be recommended that Extension develop training for Extension agents on how to respond during hurricanes and other disasters, to be prepared and informed about their roles and responsibilities. Developing a "dark" Web site, which would be activated as Extension's

home page in the event of a hurricane or other emergency, is also suggested. The "dark site" would provide information about emergency preparedness and recovery, links to various emergency relief agencies, Extension publications, and overall information to aid Florida's residents.

Recommendations for Future Research

Although this study specifically focuses on Florida's 2004 hurricane season and Extension's communication response, research in other states faced with disasters is essential to further the understanding and awareness of Extension's response in these types of situations. By comparing Extension's efforts in states other than Florida, researchers could further determine what roles and responsibilities agents serve according to location. It would also be important to survey both Extension clientele and the general public regarding their perception of Extension's communication efforts during times of crisis.

Another recommendation is to conduct a follow-up study of how Extension applied what was learned from the 2004 hurricane season about communicating and responding to the needs of its clientele and the general public to future hurricane seasons. Also, additional research, with an emphasis in qualitative questioning, might allow researchers to better understand respondents' input and feelings on what they faced during times of a natural disaster.

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Local Marketing and Promotional Efforts of Florida Extension Agents

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RESEARCH PAPER SUBMISSION

Local Marketing and Promotional Efforts of Florida Extension Agents

Abstract

The purpose of this study was to gain a better understanding of what Florida Extension agents do to promote and market programs in their county. The objectives of the study were to determine the perceptions of current Florida Extension agents as to specific methods or materials used to market Florida Extension programs and activities. The research design for this study was a descriptive census survey of the population of all active Extension agents in the state of Florida. A total of 175 people responded in this study, for an overall response rate of 54.18%. Results of this study indicated that Extension agents would benefit from the development of marketing and promotional tools that would help them to disseminate information to the public.

Key words: Extension, marketing, promotion, media relations

Local Marketing and Promotional Efforts of Florida Extension Agents

Introduction

Among their many other duties and responsibilities, county Extension agents are in charge of promoting programs that are beneficial to the residents of their county. According to Varea-Hammond (2004), three main reasons exist for marketing Extension: political motivations, so that funding and support is gained; internal benefits, which happen when high-performance teams are created and good staff is attracted; and survival, competing for clientele who have resources available. Promotion and marketing help to enhance the impact of county Extension agents' efforts and to help maintain their presence.

Chappell (1990) stated that there is more to the Extension marketing process than merely developing good programs and then making them available for public use. Chappell suggested that the success of an Extension program relies on communicating with the public in a way that creates awareness, stimulates interest, and, in the end, produces involvement by targeted clientele. Extension marketing programs use "effective pricing, communication, and distribution to inform, motivate, and service clients" (Chappell, 1994, para. 3). The main objective of Extension programming is to meet the needs of their clientele (Boldt, 1988).

Verma and Burns (1995) stated that in the 1980s, "marketing Extension" became popular in several states' Extension Services. New names, logos, outreach materials, and staff training programs were initiated. These materials together provided a unified, consistent, and cohesive image of the Extension Service. Yet the usage of Extension is

declining in many areas, and public awareness of Extension programs is decreasing (McDowell, 2004).

Extension agents must use effective communication and distribution in order to best inform, motivate, and service their clients (Chappell, 1994). However, with the change in the diversity of the clientele, finding the most effective communication vehicle is becoming increasingly difficult. King and Boehlje (2000) pointed out that Extension's day of being a sole-source provider of information is gone. They mentioned that technology, combined with an open access to information, lure private organizations to compete for people who once relied solely on Extension's services.

Although Extension professionals are being encouraged to market their programs, their reaction to increasing their marketing efforts has been mixed (DeYoung, 1988). DeYoung stated that some agents are hopeful that their marketing efforts will increase funding for future projects. Others, however, fear that if a new audience is acquired, their time and resources will be overloaded (1988).

Little research has been conducted on the marketing and promotional efforts, as well as the training needs of county Extension agents. However, Extension agents are expected to use the media to varying degrees in order to get information out to their audience. A study of what media Extension agents currently use and what they feel comfortable using will help to provide a basis for developing marketing and promotional training tools for Extension agents. Therefore, the purpose of this study was to gain a better understanding of what Florida Extension agents do to promote and market programs in their county.

Literature Review

American population centers have shifted from 80% rural to predominantly urban areas since the creation of Extension (Place, 2003). Extension has traditionally focused on disseminating information to people within surrounding communities (McDowell, 2004); however, studies have demonstrated that the general public does not possess a clear understanding of the mission and funding of the Extension Service (Adkins, 1981; Blalock, 1964). In fact, Extension is perceived as better at carrying out effective programs than at communicating these programs (Warner, 1993). According to Fett, Shinners-Gray, Duffy, and Doyle (1995), most persons' only contact with Extension is through the mass media.

A goal in marketing is the development and repetition of a good name or brand image (Marken, 2001). Extension programs across the nation have identified with this goal, using marketing techniques to increase public awareness of their programs (Boldt, 1988; Maddy & Kealy, 1998; Nehiley, 2001; Verma & Burns, 1995; Warner, 1993; Warner, Christenson, Dillman, & Salant, 1996). Many state Extension services, from the mid-1980s on, began constructing a consistent and uniform statewide identity with new names and logos (Verma & Burns, 1995). According to Verma and Burns; however, if Extension, or any other organization, is repeating a brand image or name that does not resonate with its stakeholders, the organization may be wasting its time and resources. As Topor (1986) stated: "A well-executed marketing plan will touch the lives and activities of practically everyone involved at your institution at one time or another. It's important, then, to involve as many people as possible" (p. 52).

One of the ways local promotional and marketing efforts thrive is by incorporating the concept of integrated marketing communication (IMC). IMC is defined as a:

> concept of marketing communications planning that recognizes the added value of a comprehensive plan that evaluates the strategic roles of a variety of communication disciplines - general advertising, direct response, sales promotion, and public relation – and combines these disciplines to provide clarity, consistency, and maximum communication impact. (Thorson & Moore, 1996, p. 18)

The Extension Service can benefit from this integrated approach by focusing on marketing communications that are strategic to the program development process (Maddy & Kealy, 1998). According to Maddy and Kealy, the Extension Service must work on brand equity in order to attract repeat customers. Otherwise, if Extension educators do not effectively communicate the Extension brand, the consumer may not become a regular customer because they do not know how to engage in a relationship with the organization. They also point out that information is important to marketing in the future because due to the diversity of audiences, one medium will not work for all consumers (1998). For example, a study conducted by the Magazine Publishers of America and J. Walter Thompson (Confer, 1992) indicated when print advertising was used with television advertising, the breadth and depth of the communication is enhanced and the advertiser achieves greater profits.

A telephone survey conducted by Warner, Christenson, Dillman, and Salant (1996) – with a random sample of members of the general public – found that 45% of respondents had heard of the Extension Service, while only 26% indicated they or a member of their immediate family had ever used the services of Extension. The researchers noted that Extension continues to have a fragmented image and must do a better job of establishing linkages between individual programs and the overall mission of Extension. In a study conducted by Fett, Shinners-Gray, Duffy, and Doyle (1995),

42% of the respondents, residents of Brown County, Wisconsin, recognized Extension by name. Sixty-four percent were aware of the Extension service, while 85% had received their information about Extension through the mass media. An example of using media to be effective for their audience can be seen in a study conducted by Bouare and Bowen (1990) of Ohio Cooperative Extension Service Extension agents' communication methods. They found that Extension agents' office visits, telephone calls, bulletins, newsletters, on-farm demonstrations, classroom sessions, and individualized instruction on-site were seen as the most appropriate methods to use to communicate with their audience. The researchers reported that mass media methods, such as newspapers and television, were the least appropriate. However, in a similar study conducted by Martin and Omer (1988), young farmers in Iowa preferred group methods of communicating, such as county meetings, and they ranked mass media higher than the Ohio agents in importance.

To find out how prepared agricultural scientists were to work with news reporters, Lundy, Telg, Irani, and Locke (2004) studied members of the Southern Association of Agricultural Scientists. Results indicated that respondents rated themselves as confident to very confident in their capabilities, referring to their relationship to the news media. Sixty-eight percent of respondents in this study would be likely or very likely to receive training on how to be interviewed by a news reporter, 50% would be likely or very likely to learn how to contact news media, 67% would like training on how to handle a crisis situation, and 44% would be likely to learn how to establish a program on news media relations.

Methodology

The research design for this census study was a descriptive survey of a population of active (employed) Extension agents in the state of Florida. The survey was conducted via mail using an adapted form of Dillman's Tailored Design method (2000). The total of accessible Extension agents in the state of Florida after August 10, 2004 – when the survey was initially distributed – was 323. The survey instrument was delivered via mail to all Extension agents in Florida. Respondents were given a period of eight weeks to respond to the survey. Non-respondents were then contacted and sent a second, and final, wave of the survey. The response rate obtained by the survey was 54.18% (n=175).

The questionnaire, consisting of 25 questions, was adapted from two previous questionnaires, used in surveys of politically active agricultural leaders and of agricultural scientists in the southern United States (Lundy, Ruth, Telg, & Irani, 2005; Lundy, Telg, Irani, & Locke, 2004; Ruth, Telg, Irani, & Locke, 2004; Telg, Basford, & Irani, 2005). To insure face and content validity, a panel of experts was utilized to review and finalize the instrument.

The data were analyzed using descriptive statistical analysis. The SPSS® 12.0 for Windows software package was used for the analysis. Frequencies, standard deviation, mean, and cross tabulations were calculated for all of the appropriate questionnaire items (Albright, 2000; Ary, Jacobs, & Razavieh, 2002). Post hoc reliability analysis for the standardized items was calculated using Cronbach's alpha. Standardized item alpha was subsequently calculated at α=.88.

Results

In terms of gender, 58.3% (n=98) of the respondents were female, while 41.7% (n=70) were male. The largest percentage of respondents, 39.2% (n=64), ranged in age from 51-60; 4.2% (n=7) reported being above 60 years in age. (See Table 1.)

Table 1
Number of respondents by age.

Age	n	%
26-30	17	10.5
31-40	24	14.7
41-50	51	31.3
51-60	64	39.2
61-66	7	4.2
Total	163	100.0

In terms of the highest educational level achieved, the majority of respondents, 76.3% (n=129), reported having a master's degree, 13.6% (n=23) hold a bachelor's degree; and 10.1% (n=17) had a doctoral degree. As for the population size where they served, the largest percentage of the agents, 34.9% (n=61), reported working in an urban setting. The majority of respondents classified their current position within Extension to be "County Extension Agent" or "Multi-County Agent" (56.0%, n=94). "County Extension Director" (17.3%, n=29) was the next most common response.

Respondents were asked how many years of overall experience they have working in Extension. The highest number of respondents had been in Extension for five years or less (26.9%, n=45). Only 4.8% (n=8) had worked in Extension for more than 30 years. (See Table 2.)

Table 2
Years in Extension.

Years of Service	n	%
0-5 years	45	26.9
6-10 years	38	22.8
11-15 years	15	9.0
16-20 years	18	10.8
21-25 years	29	17.4
26-30 years	14	8.4
More than 30 years	8	4.8
Total	167	100.0

Respondents were asked to indicate their primary, secondary, and tertiary clientele audiences. Homeowners were cited the most frequently as respondents' primary targeted audience. Volunteers were the second-most targeted clientele group, and the third-most targeted clientele group was youth.

The most used method or material that was used in a typical year to market Extension programs and activities was word of mouth. More than 72% of respondents (n=122) used word-of-mouth 16 times or more in a given year to promote their programs. The second-most popular method used was online methods (46.5%, n=79). Respondents ranked brochures/pamphlets to be the third-most popular method (34.1%, n=58). The least popular method or material that was used was paid newspaper advertisements, where almost 98% (n=163) of respondents used paid newspaper advertisements zero to five times in a typical year. Two other methods or materials that were not used frequently were point of purchase advertisements (91%, n=151), with respondents indicating that they used the method zero to five times a year, and radio programs (89.2%, n=49). (See Table 3.)

Table 3
Times in a typical year a specific method or material was used.

Characteristic	0-5 times		6-15 times		More than 16 times	
	n	%	n	%	n	%
Word-of-mouth	9	5.4	38	22.5	122	72.2
Online methods (Website, email)	49	28.8	42	24.7	79	46.5
Brochures/Pamphlets	29	17.1	83	48.8	58	34.1
Spokespersons (advisory committee members, volunteers, clientele)	66	38.6	50	29.2	55	32.2
Newsletters	56	32.2	89	51.1	29	16.7
Press releases	59	35.0	67	39.7	43	25.4
Demonstrations (booths at fairs, civic meetings)	67	38.7	74	42.8	32	18.5
Signs and posters you design	81	47.4	65	38.0	25	14.6
Pre-produced UF/IFAS Extension materials	83	50.6	41	25.0	40	24.4
Direct mailings (postcards)	93	54.5	40	23.6	37	21.8
Newspaper columns you write	108	64.3	30	17.8	30	17.9
Public service announcements	125	74.8	28	16.8	14	8.4
Television interviews	147	87.0	16	9.5	6	3.6
Radio interviews	150	87.2	18	10.5	4	2.3
Radio programs	49	89.2	12	7.6	6	3.6
Point of purchase ads (grocery store)	151	91.0	13	7.8	2	1.2
Newspaper advertisements (paid)	163	97.6	4	2.4	0	0.0
Other	9	45.0	7	35.0	4	20.0

The respondents ranked word of mouth (M=4.72, n=169) to be the most useful method or material used to promote Extension programs and activities. Rankings were on a Likert-type scale with 5="very useful" to 1="not at all useful." The second-most useful method was direct mailings (M=4.27, n=168). The least useful methods or materials used were public service announcements (M=3.39, n=157), print materials provided at retail outlets (M=3.03, n=144), and paid newspaper advertisements (M=2.91, n=128). (See Table 4.)

Table 4
Usefulness of methods and materials used in the overall marketing/promotion of Extension agents' particular Extension programs and activities.

Method or Material	n	M	SD
Word-of-mouth	169	4.72*	0.58
Direct mailings	168	4.27	0.94
Newsletters	171	4.23	0.93
Demonstrations	171	4.09	0.99
Signs and posters you design	170	3.94	0.96
Press releases	169	3.93	1.02
Newspaper columns you write	148	3.86	1.25
Online methods	164	3.73	1.05
Pre-produced UF/IFAS Extension materials	163	3.55	1.15
Television interviews	148	3.50	1.31
Radio interviews	148	3.41	1.14
Public service announcements	157	3.39	1.15
Print materials provided at retail outlets	144	3.03	1.17
Newspaper advertisements (paid)	128	2.91	1.38

*Five-point scale, with 1="not at all useful" to 5="very useful"

Respondents were asked to rank the methods of promotion that they were most likely to use with the clientele they target the most often. Rankings were on a Likert-type scale with 5="very likely" to 1="not at all likely." Extension agents responded that they were most likely to use word of mouth (M=4.67, n=175). The next most popular method was newsletters (M=4.29, n=174). The least likely methods or materials to be used were television interviews (M=2.43, n=163), point of purchase advertisements (M=2.09, n=160), and paid newspaper advertisements (M=1.79, n=160). (See Table 5.)

Table 5
Likelihood Extension agents are to use particular methods to market/promote an Extension program or activity with the clientele they work with most often.

Method or Material	n	M	SD
Word-of-mouth	175	4.67*	0.70
Newsletters	174	4.29	1.16
Direct mailings	173	4.19	1.17
Signs and posters you design	172	4.03	1.10
Demonstrations	170	3.95	1.18
Online methods	163	3.85	1.24
Press releases	173	3.70	1.38
Pre-produced UF/IFAS Extension materials	168	3.20	1.40
Newspaper columns you write	161	3.20	1.52
Public service announcements	167	2.84	1.37
Radio interviews	165	2.56	1.39
Television interviews	163	2.43	1.38
Point of purchase ads	160	2.09	1.29
Newspaper advertisements (paid)	160	1.79	1.26

*Five-point scale, with 1="not at all useful" to 5="very useful"

Respondents also were asked to rank the methods of promotion that they were most likely to use with the general public or people who do not typically use Extension's services. Rankings were on a Likert-type scale with 5="very likely" to 1="not at all likely." Respondents stated they were most likely to use press releases (M=4.21, n=174) to reach this audience. Respondents tended to use word-of-mouth (M=4.13, n=168) next. Respondents ranked online methods (M= 3.84, n=165) as something they were likely to use, as well. The least popular methods or materials were television interviews (M=2.77, n=164), point of purchase advertisements (M=2.25, n=164), and paid newspaper advertisements (M=1.94, n=161). (See Table 6.)

Table 6
Likelihood agents are to use particular methods to market/promote an Extension program or activity with the general public or people who do not typically use Extension services.

Method or Material	n	M	SD
Press releases	174	4.21*	1.16
Word-of-mouth	168	4.13	1.13
Online methods	165	3.84	1.28
Demonstrations	169	3.78	1.20
Signs and posters you design	171	3.77	1.20
Newsletters	171	3.47	1.42
Newspaper columns you write	165	3.41	1.52
Public service announcements	164	3.38	1.39
Pre-produced UF/IFAS Extension materials	166	3.34	1.35
Direct mailings	169	3.25	1.44
Radio interviews	162	2.91	1.42
Television interviews	164	2.77	1.47
Point of purchase ads	164	2.25	1.33
Newspaper advertisements (paid)	161	1.94	1.39

*Five-point scale, with 1="not at all useful" to 5="very useful"

Respondents were asked to rate their attitudes toward Extension marketing/ promotion using a set of belief statements. Sets of bipolar adjectives, each on a one- to five-point semantic differential scale were used to scale the responses. The sets of descriptors were good (1) to bad (5), positive (1) to negative (5), beneficial (1) to not beneficial (5), favorable (1) to unfavorable (5), important (1) to not important (5), difficult (1) to easy (5), up to me (1) to not up to me (5), and in my control (1) to out of my control (5). Overall, the findings indicated the respondents felt Extension marketing/promotion was good, positive, beneficial, favorable, important, difficult, up to them, and in their control. (See Table 7.)

Table 7
Respondents' attitudes about Extension marketing.

I believe that extension marketing/promotion, in general is...	n	M	SD
*Good (1), Bad (5)	167	2.86*	1.25
Positive (1), Negative (5)	167	2.03	0.87
Beneficial (1), Not Beneficial (5)	169	1.94	1.01
Favorable (1), Unfavorable (5)	166	2.01	0.84
Important (1), Not Important (5)	167	1.40	0.73
Difficult (1), Easy (5)	168	2.51	1.01
Up to me (1), Not up to me (5)	166	2.29	1.09
In my control (1), Out of my control (5)	167	2.77	1.11

*Descriptor word sets were on a five-point scale

Respondents were then asked to rate the marketing/promotion of their specific Extension programs. The same sets of bipolar adjectives, each on a one- to five-point semantic differential scale, were used. Similar to the general attitudes toward Extension marketing/promotion, the findings indicate the respondents felt that Extension marketing/promotion of their specific programs, was good, positive, beneficial, favorable, important, difficult, up to them, and in their control. (See Table 8.)

Table 8
Respondents' attitudes about marketing/promoting their specific programs.

I believe that extension marketing/promotion, of my specific programs, is...	n	M	SD
*Good (1), Bad (5)	167	2.29*	1.05
Positive (1), Negative (5)	168	1.85	0.83
Beneficial (1), Not Beneficial (5)	170	1.69	0.84
Favorable (1), Unfavorable (5)	167	1.77	0.80
Important (1), Not Important (5)	169	1.38	0.72
Difficult (1), Easy (5)	169	2.54	1.04
Up to me (1), Not up to me (5)	169	1.58	0.94
In my control (1), Out of my control (5)	169	1.99	1.04

*Descriptor word sets were on a five-point scale

Participants were asked to indicate how confident they were in their marketing and promotions capabilities in specific areas. Rankings were on a Likert-type scale with 1="very unconfident" to 5="very confident." Respondents were most confident in writing

and designing a newsletter (M=4.26, n=175). The second- and third-highest ranked methods that respondents were most confident with were writing newspaper columns and press releases (M=4.07, n=175). The respondents were least confident in writing a public service announcement (M=3.83, n=175), establishing a marketing/promotions program (M=3.21, n=175), and developing an educational program for radio (M=3.13, n=175). (See Table 9.)

Table 9
Respondents' confidence in their marketing/promotion capabilities.

Characteristic	n	M	SD
Writing and designing a newsletter	175	4.26	0.96
Writing a newspaper column	175	4.07	1.00
Writing a press release	175	4.07	1.01
Designing displays/exhibits	174	3.95	1.04
Designing posters	173	3.94	1.00
Contacting the news media	174	3.93	1.10
Designing brochures	174	3.90	1.06
Being interviewed by a news reporter	175	3.86	1.20
Writing a public service announcement	175	3.83	1.13
Establishing a marketing/promotions program	175	3.21	1.14
Developing an educational program for radio	175	3.13	1.25

*5 point scale, with 1="very unconfident" to 5="very confident"

Respondents were asked to rank their level of agreement with seven belief statements pertaining to marketing and promotion of Extension. Ratings were on a Likert-type scale with 1="strongly disagree" to 5="strongly agree." Respondents agreed the most with the statement, "Marketing/promotion is an important part of my job" (M=4.21, n=168). Respondents also agreed with the statement, "I feel comfortable contacting local news media outlets" (M=4.08, n=172). The least agreed with statement was, "I would consider using paid television commercials to market/promote my next event" (M=2.37, n=167). (See Table 10.)

Table 10
Respondents' level of agreement pertaining to marketing and promotion of Extension.

Characteristic	n	M	SD
Marketing/promotion is an important part of my job.	168	4.21	0.85
I feel comfortable contacting local news media outlets.	172	4.08	0.95
I would like to learn more about the use of marketing to promote my local activities.	170	3.93	1.00
I am very knowledgeable about the use of marketing to promote my local activities.	172	3.54	0.98
I would consider using paid newspaper advertisements to market/promote my next event.	166	2.71	1.41
I would consider using paid radio commercials to market/promote my next event.	147	2.54	1.43
I would consider using paid television commercials to market/promote my next event.	167	2.37	1.36

*5 point scale, with 1="strongly disagree" to 5="strongly agree"

Respondents were asked to indicate how likely they would be to participate in training if it were made available. Rankings were on a Likert-type scale with 5="very likely" to 1="not at all likely." Respondents would be most likely to attend a training on how to establish a marketing/promotions program (M=3.78, n=174), followed how to design displays/exhibits (M=3.62, n=175) and how to design brochures (M=3.55, n=175). The respondents were less likely to attend training programs on writing a newspaper column (M=3.13, n=174), writing a press release (M=3.15, n=174), and being interviewed by a news reporter (M=3.17, n=173). (See Table 11.)

Table 11
Respondents' likeliness to participate in training programs.

Characteristic	n	M	SD
How to establish a marketing/promotions program	174	3.78	1.15
How to design displays/exhibits	175	3.62	1.27
How to design brochures	175	3.55	1.25
How to design posters	175	3.43	1.29
How to develop an educational program for radio	175	3.43	1.30
How to write and design a newsletter	175	3.38	1.37
How to contact the news media	174	3.22	1.25
How to write a public service announcement	175	3.18	1.36
How to be interviewed by a news reporter	173	3.17	1.36
To write a press release	174	3.15	1.34
How to write a newspaper column	174	3.13	1.38

*5 point scale, with 1="not at all likely" to 5="very likely"

Discussion and Conclusions

Results indicated that the majority of respondents in this study use word of mouth 16 times or more in a year to market their programs and activities. Paid newspaper advertisements were the least used method for marketing and promoting Extension programs and activities, used on average zero to five times a year. Word-of mouth was ranked as the most useful, and paid newspaper advertisements were ranked to be the least useful method or material used to promote Extension programs and activities. An implication to these findings is that respondents target current and previous clients when disseminating their information, which may also indicate that Extension agents are more confident in contacting the audience they already have, rather than trying to get information to the general public or an untested audience. The findings on using paid newspaper advertisements also indicate a possible lack of budget for promoting and marketing activities and programs. For both current clientele and the public at large, the least likely method to be used was paid newspaper advertisements.

With current clientele, Extension agents responded that they were most likely to use word of mouth, indicating that respondents depend on their current clientele to help get the information out about Extension. With the general public, however, Extension agents were most likely to use press releases. This may indicate respondents realize that to access the public at large, the information must go through mass media channels reached with a press release. Previous research (Fett, Shinners-Gray, Duffy, & Doyle, 1995) implies that the general public receives information about Extension through mass media channels. If agents desire to reach new audiences, using methods and materials that can be widely dispersed are crucial to the success of an Extension program. However, as press releases are not included as one of the most useful methods or materials used, it can be inferred that the respondents in this study may not be necessarily trying to obtain a new audience.

Overall, respondents perceived Extension marketing to be good, positive, beneficial, favorable, important, difficult, up to them, and in their control. These findings indicate that respondents are satisfied with the job of marketing Extension. Not only do they think it is a necessary part of their job, they also find it to be rewarding. It is interesting to see that in the perceptions of "general" and "specific" Extension marketing, respondents indicated that they found it to be difficult to market Extension, perhaps suggesting that training on how to market Extension may be useful in the future.

An interesting finding of the study dealt with the fact that respondents said they felt confident in writing and designing a newsletter, writing a newspaper column, and writing a press release. Yet, they indicated that they did not use these techniques as often as other

methods. It may be the case that some type of training has been obtained previously on these methods. This training may be either formal training or just on-the-job experience.

It is also interesting that one of the least confident areas for the respondents was establishing a marketing/promotions program. Results indicated that respondents would be likely to participate in training on how to establish a marketing/promotions program, as well as how to design displays and exhibits. Agents were least likely to attend training sessions on how to be interviewed by a news reporter, how to write a press release, and how to write a newspaper column. Extension agents may feel they know how to develop certain promotional materials, but may not have the experience of putting all of these materials into a cohesive marketing message for their local programs.

Recommendations for Research and Practice

The field of agricultural communication would stand to benefit from conducting this study in other states, as well as at a national level. This information could become the basis of a more uniform training program that could be offered to Extension professionals at meetings, conferences, or possibly as online training sessions. More research also needs to be conducted in the state of Florida on Extension clients' needs. This study specifically focuses on Extension agents' use of the media, what they are confident in using, as well as the areas in which they need training. It also would be important to survey both clients and, potentially, non-clients to find out their needs and in what methods they prefer to receive information.

Based on the research, it can be concluded that Florida Extension agents would benefit from the development of marketing and promotional tools that would help them to disseminate information to the public. Communication professionals can use the findings of this study as a basis for developing training sessions to be presented to

Extension agents. It is recommended that training be conducted in the areas in which the respondents were most interested. These areas include how to establish a marketing/ promotions program, how to design displays/exhibits, and how to design brochures. However, it also would be beneficial to offer training in all the areas of marketing/promotion. Based on this study, it is also recommended that more focus may need to be placed on teaching fundamental marketing/promotions skills in Extension education courses and curriculum.

An interesting finding in this study was that pre-produced University of Florida/Institute of Food and Agricultural Sciences materials were not high on Extension agents' list of usefulness. Although not specifically asked, it may be the case that local agents would prefer to use more localized and customized versions of marketing materials, rather than generic institutionally developed offerings. This implication will have to be researched further.

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Evaluating Genetically Modified Food Labels: A Focus Group Study

Research Paper Submission

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Abstract

Genetically modified (GM) organisms are commonplace in modern agricultural practice. However, consumer polls and surveys have indicated a lack of acceptance of GM ingredients in food and a desire to see such products identified through the use of labels. In this study, three focus groups, comprised of consumers in two northwest Arkansas counties, evaluated and discussed four genetically modified food labels developed using the Elaboration Likelihood Model. Findings revealed that participants want labels on food containing GM ingredients. Participants agreed on two features a label on GM foods should have: contact information and an identifying symbol. This label should appear on the front of the package or near the nutrition label. Participants also expressed a strong desire for consumer education about GM foods and any label adopted in the future to identify them. Further research on consumer preference for GM food labels is needed using both qualitative and quantitative methods.

Key words: genetically modified organisms, biotechnology, labeling, Elaboration Likelihood Model, focus groups

Introduction

In 2000, only 1% of the U.S. population was employed on a farm (National Agricultural Statistics Service, n.d.). As more and more Americans move away from rural settings, the consumer's understanding of agriculture practices quickly decreases. Food production techniques and practices are abstract concepts to citizens who have never been exposed to the lifestyle. This lack of knowledge fosters questions and concerns about food safety practices, including crops derived through genetic engineering (Brom, 2000).

Biotechnology includes any technique that uses living organisms to improve plants or animals, to make or modify products, or to develop microorganisms for specific uses (Office of Technology Assessment, 1984). Therefore, genetic engineering or genetically modifying an organism is one aspect of biotechnology. A genetically modified organism (GMO) is developed by taking a desired gene from one organism and transplanting it into the DNA of another organism (Maynard, 2004).

The United States is the world's leading producer of genetically modified (GM) crops. The most commonly planted genetically modified U.S. crop varieties are corn (45% GM), cotton (76% GM), and soybeans (85% GM). Production of GM canola, squash, and papaya varieties is also increasing (Pew Initiative on Food and Biotechnology, n.d.).

Consumer support for labeling products containing GM ingredients has increased in recent years. A 2000 study showed that 86% of U.S. citizens support mandatory labeling on all genetically altered foods, up from 84% in 1999 (Shanahan, Scheufele, & Lee, 2001). Labeling "includes any written, printed, or graphic matter that is present on the label, accompanies the food or is displayed near the food, including that for the purpose of promoting its sale or disposal" (Einsiedel, 2000, p. 231). Consumer advocacy groups argue for labels insisting the

consumer's "right to know" what they are eating. Vegetarians, for example, would want to know if the GM food contained a gene or protein from an animal. Other consumers want to avoid GM food for religious reasons or concerns about the safety of GM foods (Hart, 2004).

Labeling GM foods in the United States would be a complex and potentially expensive process. The common argument of consumer awareness and choice is one factor supporting mandatory labeling. However, labels can be misleading, ignored, misunderstood or useless. To make an informed decision, consumers must be better educated and aware of the options available (McHughen, 2000). The purpose of this study was to evaluate GM food label designs developed through the Elaboration Likelihood Model. Specifically, three research questions guided the project:

- **RQ1:** Did the selected Arkansas consumers want to see labels on foods that contain GM ingredients?
- **RQ2:** What types of information did the selected Arkansas consumers want on a food product that contains genetically modified ingredients?
- **RQ3:** Where on the food package should information about genetically modified ingredients be displayed?

Literature Review and Theoretical Framework

Public Opinion and Labeling

Two-thirds of Americans say it is important to know if a product contains genetically modified ingredients (Pew Initiative on Food and Biotechnology, 2001). In one focus group study (Teisl, Halverson, et al., 2002), almost all participants said they wanted a mandatory labeling program because "consumers have a right to know what goes into their bodies" (p. 8). A

study of New Jersey residents (Hallman & Metcalfe, 1995) found 84% of residents thought foods developed through biotechnology should be labeled as such.

Despite the prevalence of GM foods in the marketplace, surveys of U.S. consumers have shown a rather low understanding of food biotechnology (Heffernan & Hillers, 2002; Shanahan et al., 2001; Teisl, Halverson, et al., 2002). The consumer awareness level of biotechnology remains under 50%, but it is increasing over time (Hoban, 1999). A low level of awareness is demonstrated when a majority (62%) of consumers say they have never eaten GM foods (Falk et al., 2002). This is highly unlikely because 70% of manufactured foods contain GM ingredients (Brown & Ping, 2003).

Recent labeling studies (Teisl, Halverson, et al., 2002; Teisl, Peavey, Newman, Buono, & Hermann, 2002) have illustrated how focus group participants react to certain label designs and helped create the methodology for this research project. Teisl, Halverson, et al. (2002) used six focus groups to discover how consumers responded to different labeling messages. Participants were shown one actual "GMO-free" label and three label props on frozen corn, chicken tenders, and a pasta-with-vegetables meal. The GM labels differed on the type and amount of information given and indicated whether the product did or did not contain GM ingredients.

The majority of participants in the study agreed that the label should clearly indicate if the food product contains any GM ingredients. They also wanted to know why the genetic modification was done (Teisl, Halverson, et al., 2002). These findings indicated the consumers' desire to see a label indicating the presence of GM ingredients, and an additional explanation of why the modification was done. This is important because a popular communications theory known as the Elaboration Likelihood Model (ELM) shows that with repeated exposure to a

message, consumers begin to use the central route (understanding based on message content and quality) to persuasion (Petty & Cacioppo, 1981).

The Elaboration Likelihood Model

The Elaboration Likelihood Model (Petty & Cacioppo, 1981) is used to evaluate how the public reacts to persuasive messages in advertising (Lien, 2001). The theory states that people process persuasive messages with different levels of elaboration. Elaboration involves the level of attention paid to message content (Littlejohn, 1992). Although many studies employing the ELM have focused on advertising, the principles can be applied to other forms of marketing such as food labeling, logos, and branding (Davies & Wright, 1994). Previous focus group studies have shown that the wording on GM food labels has an important effect on consumer understanding and acceptance of biotechnology (Hoban, 1999).

Within the ELM, there are two distinct routes to persuasion – the central route and the peripheral route. The central route is highly dependant on the persuasive message content and quality. "The message recipient attends to the message arguments, attempts to understand them, and then evaluates them" (Petty & Cacioppo, 1981, p. 256). Attitudes developed through the second approach, the peripheral route, are based less on thoughtful evaluation and more on inferred perceptions. Some factors include perceived rewards or punishments related to the message, judgmental distortions when perceiving the message, or opinions why a speaker is advocating a certain point of view (Petty & Cacioppo, 1981).

Studies using the ELM (Andrews & Shimp, 1990; Lord, Lee, & Sauer, 1995) laid a foundation for the use of specific content, sources, and designs of the proposed GM food labels. Andrews and Shimp (1990) conducted an experiment to test the Elaboration Likelihood Model in

a consumer behavior context. This study used the three basic variables of the ELM – message processing involvement (elaboration likelihood), message argument strength, and peripheral cues – to test cognitive responses and attitude changes. The results of the study showed that high-involvement subjects concentrated more on the claims in the advertisement (versus the picture) than low-involvement subjects. High-involvement subjects also remembered a significantly higher number of message arguments than low-involvement subjects. This finding supports the ELM theory that individuals with higher elaboration likelihood will focus more on the central route to persuasion.

Methods

Three consumer focus group sessions were held in northwest Arkansas on three Saturdays in February 2005 (only one session per day). A random telephone sample was used to recruit participants for the sessions from a two-county area (Benton and Washington counties). A screening questionnaire purposively identified candidates who regularly shopped for groceries and were, therefore, familiar with current package labels. Subject selection efforts focused on minimizing sample bias (Morgan, 1997). When a list of 30 suitable candidates was reached (10 for each session), sampling stopped. Final groups had four to eight participants. Participants received a gift certificate and lunch for attending the two-hour session.

Review of past studies (Pew Initiative on Food and Biotechnology, 2001; Hoban, 1996) led to the development of the questioning route. Researchers familiar with qualitative methodology evaluated the questioning route and made suggestions. Following these corrections, representatives of the target population, who were not in the recruited focus groups, participated in a pilot test of the focus group session. This process improved the clarity and effectiveness of

the questioning route and label designs. The moderator's use of a structured questioning route provided more consistency between each session because it lists the same questions and question order for all groups (Morgan, 1997).

The moderator began each focus group session by explaining the purpose of the research, clarifying the participants' roles, and asking introductory questions (Krueger, 1994). Following this, the moderator asked about general attitudes of biotechnology and genetically modification and if foods developed through this process should be labeled. The question of labeling was asked three times, each time after receiving additional information that may have influenced participants' responses. After these responses, four label examples developed using the Elaboration Likelihood Model as a theoretical foundation were shown (see Figure 1). These labels were categorized as: 1) central route weak; 2) central route strong; 3) peripheral route weak; and 4) peripheral route strong. The labels were shown to the participants in respective order. Each label was displayed on a box of generic brand corn flakes, and participants received a printed copy of each label for closer evaluation.

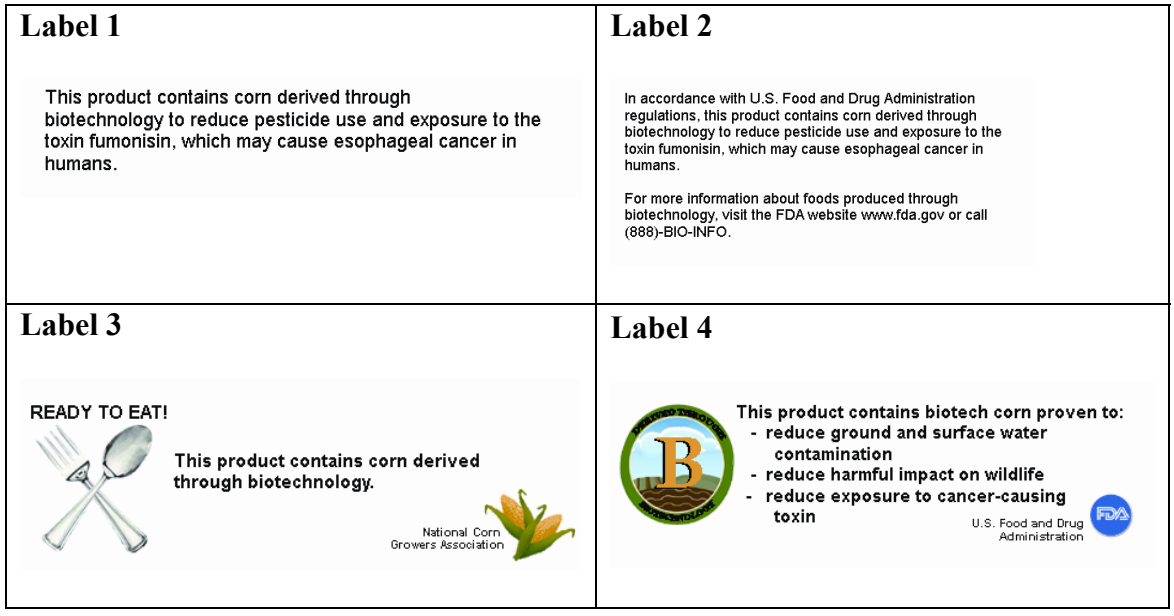

Figure 1. Labels developed through the Elaboration Likelihood Model.

Central elements on Labels 1 and 2 included the actual printed messages pertaining to the product contents and contact information to learn more about the product. The message was fact-based, containing informational and objective descriptions of the product. Peripheral elements on Label 3 and 4 included both relevant and irrelevant graphics and two certifying sources. The label text was very concise on Label 3, and a bulleted list of items on Label 4 allowed for easy reading and counting of the printed messages.

This study followed Guba and Lincoln's (1989) recommendations for credibility, dependability, and confirmability to assure research rigor. This study gained credibility through persistent observation (pilot study and three 90-minute focus group sessions), peer debriefing (committee review), and member checks (final question asked during each session). Dependability was addressed by audio recording focus group discussions and keeping a typed transcript to provide a traceable and documented data. Confirmability is related to objectivity was met by keeping the data in raw form, demonstrating a clear data trail on the printed transcripts, and discussing the conclusions with the research committee to assure that the data, interpretations, and outcomes were actual and not manufactured by the researcher (Guba & Lincoln, 1989).

Analysis of the data was systematic, yet flexible and emergent. Transcript-based analysis was used for all three sessions. Although a great deal of information was collected, only that essential to the research questions was thoroughly analyzed. Categorization and coding were used to aid in the analysis process (Lindlof & Taylor, 2002).

Results

Participants were united in their discussions on several issues, including their desire for GM labeling; their opinions on design, content, and placement of the labels; and their perceived need for public education about genetically modified foods.

Need for GM Labels

To address RQ 1, the question "Should foods containing genetically modified (GM) ingredients be labeled?" was asked three times during each discussion. The question was first asked after an explanation of the term "genetically modified." Participants said that these products should be labeled.

> Even though it's expensive and even though it's a nightmare deciding how much genetic material does there need [to be] to make it genetically modified, I think we need the information.
>
> It should be an informed choice.
>
> I'd like it to say "Whole-grain oats, genetically modified" or whatever the proper term is then go on. It doesn't mean I will stop buying, I just want to know.

Participants shared strong opinions after learning of Brown and Ping's (2003) study that estimated 70% of processed foods currently in the marketplace may contain genetically modified ingredients.

> I don't think we should forget about labeling just because they snuck something in on us. It's still so early in the game, we don't know what the long term effects will be.
>
> I would say that I feel more strongly because that's a high percentage and I would have never known about it if you didn't tell me. It's like, wow, how did we not know that?
>
> Just because they snuck 70% into our products doesn't mean we can't go back and retrofit the system. It's not going to be an overnight thing to change it from 70% to whatever, but it doesn't mean that we can't start to rectify the situation.

The current FDA regulation requires labels on GM food products if the product is significantly different from its conventional counterpart in terms of its nutritional value or because it contains a known allergen (USDA, n.d.). Reaction to this statement focused on the terminology of "significant difference."

> It said known allergens have to be identified, that's a good thing. The percentage, or as you stated, the significant difference, I'd want to know that information.
>
> Significant in my opinion is not an absolute term. I just think instead of making labels a mile long, I'd rather just see genetically modified or are they not.
>
> The word significant – that's a really subjective kind of word. What's significant to you and what's significant to me are two different things possibly.

Participants noted that consumers have not been told if foods contain GM ingredients and that it should be an informed choice. The concept of being informed and educated was a common theme throughout the focus group discussions.

> The consumers have a big responsibility to help police the thing [GM foods] if they feel it's important to them. The only way to do that is to get more educated consumers.
>
> I think that if I know more about it, I don't care if it's labeled or not. Before they start labeling and all that, I think more information should be on TV or radio or whatever about what this really is.
>
> Although I agree that in general, the public needs to be better educated about this issue, I really think people should be allowed to make choices based on the label and information.
>
> First of all, I think there should be more education of the public on what this means. I think all of us are a little nervous just about that term. It would be nice to be educated. If they're wanting us to be more accepting, they need to give us the pros and the cons.

Some discussion focused on the amount of GM ingredients in a product, and if that factor changed their opinion of wanting a label. Most participants indicated that the percentage of GM ingredients in a product was not relevant; it was the fact that it contained GM ingredients at all

that concerned them. Several participants qualified their statements about wanting a label by expressing their uncertainty about the long-term effects of GM products. Again, this issue led to more discussion about the need for consumer education.

Other comments involved the dislike of terms such as "may contain" and indicated they wanted a more concrete statement from the government regarding whether or not the product contains GM ingredients.

> There should be more direct labeling. Take words like "maybe." *Maybe* some genetically modified corn. Well, is it or isn't it? You all created it. I think the vagueness to me is worrisome.
>
> Provide facts that no one is trying to benefit from or ram down your throat; they are just there for you to check out.

Despite learning more from the focus group moderator about the current abundance of GM ingredients in foods and about the current labeling regulations, all the participants strongly agreed throughout the focus group discussions that they want to see foods containing genetically modified ingredients labeled.

> I'm still with labeling. My feeling is there's not enough oversight concerning the foods and drugs that are marketed to the public.
>
> I still prefer the label if it's been modified.
>
> The important thing about labeling is that you'll know they're [GM ingredients] there. Otherwise you don't know.

Design, Content, and Placement of GM Labels

Responses to RQ 2 and RQ 3 emerged throughout the focus group sessions as participants shared their expectations regarding the design, content, and placement of the labels, which they clearly desired. The two most popular and desired features of the labels were the contact information and the use of a biotechnology symbol.

The contact information, such as toll-free number or internet address, an element associated with central-route (strong) processing, was viewed as a proactive way for consumers to learn more about biotechnology and its use in food products.

> I just feel that if they add something that is very different from the natural product it needs to be stated: "This product contains" whatever it is that it contains. Then go to the website if you want to do research on whatever that is. You would have that option.
>
> I love it. I have a way to find out more. I can go there and hopefully find out the processes and the effects of it.
>
> I do like the contact information. That provides the consumer with a source of information if they are interested.

Participants also wanted to know in what way the product was modified; some said this information could be on the web site and not the label itself.

> It's like anything else, if you really want to find information, you can find ways to do it. This is helpful because you don't have to go look it up.
>
> It's almost like it's an honest step.

That participants wanted to base their decisions on this type of information clearly represents central-route processing in the ELM.

In all three focus groups, participants proposed the creation of a biotechnology symbol comparable to common food symbols such as the Real seal on dairy products or the organic symbol that identifies organic produce.

> If they could come up with a logo, a little picture of some kind, that would represent genetically modified and use that for the labeling so people could look at that and see "Oh that's genetically modified."
>
> Similar to the organic symbol.

During the first focus group, a participant noticed the use of a "K" on the generic cereal box to indicate the contents were kosher and wondered aloud whether a similar symbol would work to represent the presence of genetically modified ingredients. The "K" was clearly visible on the front of the box near the label examples.

> Maybe something as simple as something like the K could indicate something is GMO.
>
> I pointed out earlier the K for kosher. It's plainly visible right there on the box for anyone who needs to know that.

Such a symbol would be associated with peripheral-route processing, which demonstrates that participants may employ both routes in the decision-making process related to accepting GM foods.

Although all the participants agreed that developing a common symbol to represent products containing biotechnology ingredients, more than half did not know the meaning of "K" symbol. This underscored the importance of consumer education if a biotechnology symbol were to be introduced.

> Is that a real logo? Is that a national thing?
>
> I'm not Jewish so I didn't know.

To answer RQ 3, participants shared opinions on where a GM food label should appear on a package. Several wanted the label to be on the front of the package to be easily identified while browsing store aisles. Others said it should appear near the nutrition label or ingredients because many consumers look at this information.

> I'd like it located in the same place on every product so you don't have to turn the box to every side.
>
> On the front so I would know whether I want to even take this product off the shelf or not.

> Yeah, maybe right under the ingredients.
>
> The organic label is right on the front.
>
> That's where all the other labels that they use are, like for poisons and chemicals and organic. All of those are always on the front so this one should be on the front also.
>
> You definitely need to have the symbol on the front of the box somewhere it is easy to see. Then I had the side of the box, underneath the nutritional content and ingredients…"contains genetically modified corn," benefits of the corn and "for more information."
>
> Based on the fact that 70% of all processed foods already have it, it if was on the label on the side it would be just fine because almost any product you pick up is going to have it in there.
>
> Maybe it does need to be on the front so that we can go in the grocery store and stand there and see how much food is…it might be overwhelming.

Consumer Education

To insure a systematic analysis of the findings, the moderator provided a short summary of key findings at the end of each discussion and asked them if they had any other comments. Consumer education, a theme that had permeated many aspects of the discussion, but that had never been the primary topic, was reinforced invariably during the summary phase of the discussion.

> They [regulatory agencies] should do an advertising campaign to acquaint people with the label and educate them what the wording means.
>
> They [regulatory agencies] could do TV spots and pick up ads in newspapers. Something other than just slapping the label on there and saying "we've got a label"

Conclusions and Recommendations

These findings led to some clear conclusions and recommendations about the Arkansas consumers who participated in this study.

The consumers were adamant in their desire for GM food labeling. This supports several other public opinion studies (Pew Initiative on Food and Biotechnology, 2001; Teisl, Halverson, et al., 2002) and sends a message to regulators, food companies, and retailers. The overwhelming support for genetically modified food labels indicates that this issue is not going to disappear. Previous studies show consumer support for such labels and the percentage appears to be increasing over time. In fact, it would not be surprising for consumers to become much more demanding about the need to have such products identified through the use of a label.

The consumers also had obvious preferences for the design, content, and location of the label. Suggestions regarding specific label elements included a consistent biotechnology symbol and contact information where consumers can learn more about this type of product. Participants also suggested placing the biotechnology symbol on the front of a package, and any additional information about genetic modification on the front or near the nutrition label. These desires indicate that consumers want to be persuaded through both routes – central and peripheral – about the safety of genetically modified food. The most likely explanation for this is that the consumers want to use a peripheral route (a symbol as required by a certifying regulatory organization) but want access to a central route (a telephone number or web address where detailed information may be found) to use if they so choose.

Additionally, the concept of consumer education was a dominant theme throughout the focus group discussion, and participants indicated their level of education would affect how they viewed any developed GM food label. This conclusion supports McHughen's (2000) recommendation that consumers must be better educated and aware of the options available to be able to make more informed decisions. The availability of this information is important because the ELM shows that with repeated exposure to a message, recipients begin to use the central

route to persuasion (Teisl, Halverson, et al.). Opinions formed through the central route are more permanent than those formed as a temporary attitude change through the peripheral route (Petty & Cacioppo, 1981).

The amount of emphasis participants placed on the concept of consumer education begged the question, who should be responsible for educational efforts – the U.S. government, food companies, or some other group? Participants placed a high level of trust in the U.S. government and said it was the government's responsibility (not food companies') to provide objective information to consumers. Other studies agree with this finding (Baker & Mazzocco, 2002; Hoban, 1996). However, food companies should also evaluate how they can address consumer concerns and should examine how a potential GM food label could be used as a marketing tool.

The most obvious recommendation for practice is to give consumers what they want. Based on previous research, they seem to desire labeling. The Arkansas consumers in this study certainly did. However, ultimately, consumers themselves will determine if labeling ever becomes mandatory by their purchasing behaviors. As long as they continue to buy GM foods without labels, the need for labels will never be practical. Still, regulatory agencies and the food industry alike should be prepared with a plan for labeling in case consumers to take a stand on this issue.

Because the research does not exactly reflect practice on this issue (overwhelming majorities of consumers report wanting labels, yet the same consumers seem to be showing little concern for this issue when they purchase their food), further research on this topic is needed in other locations, using both qualitative and quantitative studies. The use of the Elaboration

Likelihood Model should also continue to be employed and evaluated in future studies to test its effectiveness in developing potential GM food labels.

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Bridging Borders: Organizing Short-Term Agricultural Communication Study Abroad Programs

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Abstract

The purpose of this professional paper is to describe the efforts of the University of Florida and the University of Guelph, located near Toronto, as they jointly developed a pilot exchange program to allow undergraduate and graduate agricultural communication students to think critically about agriculture, agricultural communications, and culture in each other's country. During this exchange, nine University of Guelph students traveled to Florida for one week over their "reading week," and six UF students traveled to Canada during their spring break, in back-to-back weeks. Students met with university administrators and agriculture industry representatives, toured agricultural facilities, and visited cultural locations. Students' critical thinking and perceived international competencies were assessed both before and after the exchange using both qualitative and quantitative instrumentation. This paper details the planning process, culminating in the two-week program, provides students' comments about what they learned during the study abroad experience, and makes recommendations to faculty interested in organizing similar study abroad programs.

Bridging Borders: Organizing Short-Term Agricultural Communication Study Abroad Programs

Introduction

In most businesses today, employers are looking for skills and competencies that extend much further than just technical subject matter. Gorchels, Jambulingham, and Aurand (1999) noted that cultural adaptability and work ethic are traits that could be hired into an internationally related position. Moreover, the authors wrote that adaptability is likely to increase with exposure to different cultures. Others have expressed the need to enhance American colleges' curriculum with international topics and "globalization," in general (Acker, 1999; Fugate & Jefferson, 2001; Moore & Woods, 2003; Redmann, Schupp, & Richardson, 1998; Tritz & Martin, 1997). One typical way to develop international competencies is through an international study tour.

Two other skill sets that employers seek in new employees are effective communication abilities (Herman, 1995) and the ability to make decisions and think critically. The development of critical thinking skills in agricultural audiences has been identified as an especially important need, based on findings which suggest potential deficiencies in terms of students' ability to think critically (Rudd, Baker, Hoover, & Gregg, 2000). Research has suggested a potentially important need to improve the critical thinking dispositions of agricultural communications students (Bisdorf-Rhoades, Ricketts, Irani, Lundy, & Telg, 2005; Telg & Irani, 2005). Pairing an international experience with these skill sets is a strong combination. But how can these important skills be brought together into an effective package?

The University of Florida's Department of Agricultural Education and Communication and the University of Guelph's Ontario Agricultural College, located near Toronto, jointly developed a pilot exchange program that represented a first for each university. The purpose of the exchange was to expose undergraduate and graduate agricultural communication students to

agriculture, agricultural communications, and culture in the other's country, while enhancing their critical thinking abilities. Nine University of Guelph students traveled to Florida for one week over their winter break, and six UF students traveled to Canada during their spring break. Students met with university administrators and agriculture industry representatives, toured agricultural facilities, and visited cultural locations. Students' critical thinking and perceived international competencies were assessed both before and after the exchange using both qualitative and quantitative instrumentation.

The purposes of this paper are:

1. To explain how the University of Florida and the University of Guelph in Ontario, Canada, developed its study abroad exchange program to teach college students about agriculture, culture, and communications in their respective countries;
2. To describe students who participated in the exchange tour, in terms of their critical thinking and perceptions of their experiences; and
3. To provide recommendations for other universities that want to develop similar agricultural communication study abroad tours.

Process

The idea for an exchange – where students from the University of Guelph would travel to Florida, and UF students would travel to Guelph – came about as a result of discussions at a professional conference in 2003 between the Agricultural Communicators of Tomorrow faculty advisers at the two institutions. They believed that both sets of students would be intrigued by the opportunity to travel to a different country – still in North America – where they would be able to interact with the students twice: once in their own country and once in the others' country. A study abroad program also would be the stepping stone to begin a more formal

agreement between the two universities for long-term study abroad programs for students in any college major, not just agriculture or agricultural communication. The advisers talked on the telephone and then face to face at the two professional conferences that they attended in 2003.

As planning progressed, the target date was pushed back from spring break 2004 to spring break (or for Guelph, winter break) 2005. Guelph's one-week winter break was the week immediately before UF's spring break (Feb. 19-26 and Feb. 27-March 4, respectively). Therefore, the exchange would occur in back-to-back weeks. As far as organizers know – after discussions in their universities' international programs offices – this exchange in back-to-back weeks (two consecutive weeks) was a first for either university.

Each instructor secured the help of students to help plan the weeks of activities. UF was responsible for all arrangements (except airfare) for the Guelph students on their trip to Florida. Guelph was responsible for all UF arrangements in Canada (again, not including airfare). These arrangements included ground transportation, lodging, food, entertainment/activities, and educational excursions. Each working group consisted of between three to five students. Each student took one day and planned the activities; therefore, the student was in charge of the overall arrangements for that day: arranging educational speakers/presenters, securing restaurants, and planning entertainment/activities. The only aspect of the day the students were not in charge of was transportation to and from the educational activities and entertainment. Because they were immersed in the planning process for each day's activities, students learned first-hand about special event planning and coordination. During the early planning process, the UF and Guelph planning groups met by telephone conference calls once every three months to discuss where they were in planning the events. About two months before the tour, the groups met about every other week to finalize plans.

Each group wanted to give students from the other university a "taste" of agriculture and communications in the other's country and state/province, in addition to providing some specific cultural experiences. Each day had a different theme; some of which included the following: "Florida tourism," "Florida agriculture and communications," "Guelph agribusiness," and "Niagara region."

The students learned about specific agriculture commodities and met with agricultural communicators and policy makers. Examples of the educational activities follow:

- Agricultural industry tours:
  - Florida: citrus, strawberries, feeder cattle, horticulture
  - Guelph: maple syrup production, horticulture, dairy cows, wineries
  - Learning about agriculture industries indigenous to that province/state (citrus/FL, maple trees/Guelph)
- Policy makers:
  - Florida Farm Bureau directors; Ontario Minister of Food, Agriculture and Rural Affairs
- Campus tours
- Tour of communication facilities (*Toronto Star*, UF/Institute of Food and Agricultural Sciences' Communications Services unit)
- Open discussions with farmers
- Discussions about policies/issues facing both countries, such as urban sprawl and free trade

As for cultural and entertainment activities, both groups included a variety of experiences, while trying to keep costs affordable. A sample of the culture and fun the students had include the following:

- **In Florida**:
  - Disney World's Magic Kingdom
  - Southern seafood
  - Alligator Farm
  - Day in St. Augustine
  - College basketball
  - Stroll on the beach
  - Lots of sun and humidity
- **In Canada**:
  - A "taste" of Canada dinner, with the author of a cookbook of Canadian cuisine
  - Farmer's market
  - Niagara Falls
  - Day in Toronto
  - Semi-pro hockey game
  - Ice skating
  - Lots of snow

Nine students from Guelph traveled to Florida. Of that number, four were graduate students. Eight were students in Guelph's Ontario Agricultural College. From UF, six students traveled abroad; all were from the College of Agricultural and Life Sciences, with five from the Department of Agricultural Education and Communication and one from the Department of Family, Youth, and Community Sciences. One UF student was a graduate student; all others were undergraduates. The advisers also traveled with the student groups.

Many of the students who traveled abroad also helped "host" the other group when they visited, which helped establish a feeling of camaraderie and friendship across the border. Both groups had a welcoming reception on the first day of the respective study abroad tours. Guelph students developed an online newsletter of their travels to Florida, where a student was required to write a short story, along with photographs, and upload the story and photos each day of the trip. Three students from each university took the short-term study tour for academic credit. They were required to research an aspect of the other country's agriculture industry and write a short paper about it. They also made a presentation about the industry they researched.

As for travel expenses, each university developed a firm budget for the other university. The universities tried to keep the expenses – not including airfare – to around $475-$500 (USD). Funds were collected from one university's students and then used to pay for the other university's expenses, so that money would not have to be exchanged. However, because Guelph had three more students involved, Guelph paid UF $1,425 ($475 x 3) more.

Critical Thinking

In the early planning for the study abroad trips, the major advisers and other faculty members identified a need to integrate a research component into the tour. The advisers decided to examine if an international experience would strengthen students' critical thinking

dispositions. The program provided an opportunity to identify, as well as suggest, some ways to directly connect students' international study tour activities and opportunities to think critically about what they learn and experience. After receiving approval from the University of Florida Institutional Review Board, advisers developed a survey instrument, based on previous research in critical thinking (Bisdorf-Rhoades, Ricketts, Irani, Lundy, & Telg, 2005), to gauge the students' critical thinking abilities. The researchers conducted a pretest/post-test – administering the pretest before the two-week exchange program began and after the program ended – to see if students' critical thinking abilities had increased as a result of being exposed to a study abroad experience. Results from the pretest/post-test measurements of critical thinking disposition, however, were not statistically significant.

Critical thinking skill – the expressed competency – was assessed qualitatively though content analysis of open-ended questions derived from the University of Florida-Critical Thinking Skills (UF-CTS) instrument. The UF-CTS, a four-question, open-ended survey was given to the students, asking them for their responses about their experiences and thoughts during the exchange program. Qualitative measures were appropriate since researchers theorized that the critical thinking skill was contextually based. Fourteen students (six at UF and eight at Guelph) completed the pretest and post-test.

Some of the students' responses to the open-ended questions follow. It should be noted that during the two-week program, two major news stories involving U.S./Canada relations took place: the border remained closed for Canadian beef to enter the U.S. market after it was supposed to open on March 7, and Canada opted out of the missile defense system for North America. Overall, students said that this experience opened their eyes to life and agriculture across the U.S./Canadian border.

Canadian students:

There were many important messages garnered from this experience; however, I felt that the most important message was that the problems Florida agriculture is dealing with are very similar to those in affecting Ontario agriculture. The major issues that crossed borders were urban sprawl and lack of public awareness. People tend to think that the problems they are faced with only affect them and are unaware that others elsewhere may be dealing with the same issues. This trip opened my eyes to this problem, and taught me to be less self-absorbed.

The main conclusion that I brought back from this experience is that Florida has a thriving agriculture industry that however faces many of the same issues facing Ontario agriculture. However, I do feel that Florida is more advanced in the education aspect of agriculture. They are already spreading the word, and I believe it would a wise step to analyze in greater detail the successes and failures of their initiatives, so that Ontario can follow suit and bring some of their initiatives to our industry.

One of the most unconvincing things that I saw in Florida is the way that the government is letting farmland be consumed by developers. I think they are thinking way too short-term and need to open their eyes to what Florida is going to look like in another 50 years. This is where I am so satisfied with the initiatives of the Ontario government and their more long-term vision.

My beliefs and opinions have made a drastic shift since my return from Florida. Originally, I had the "Mickey Mouse" idea of Florida, with tourists and a lazy, simple lifestyle. Obviously, I know this was not the case everywhere, but I didn't realize how much of an impact agriculture has on Florida.

I think the most meaningful message sent out was that as agricultural communication students, we must all work harder to increase public awareness about agricultural issues and the product our sector provides.

Florida students:

Throughout the week we visited with the Canadian students and were exposed to their perspectives on the border closure as well as other issues in agriculture. Although we may have differed in our opinions, we listened to each other's views. Being on the other side of the border when the cow trade market was yet again postponed, greatly impacted my way of viewing the trade agreement. Being in another country where livelihoods were at stake caused me to look at the border closure for the global good and in the long run instead of looking at how it was affecting the U.S. cattle producers.

The major conclusion that I have developed is that people do not know about agriculture. Although I already knew it, this trip has reinforced the fact that agricultural communicators are very important in getting the positive word out about agriculture to people who would possibly not know the facts. I also learned that there is not much difference between U.S. and Canadian agriculture. Both countries want to keep their people safe the best way they know how. The issues troubling farmers are also similar.

My beliefs on Canadian agriculture have changed due to the fact that I was not aware of Canada's vast agricultural industry. I now see that Canadian farmers have the same types of problems that American farmers experience.

Before this trip, I really only knew that Canada produced maple syrup and some cattle. I had no idea that Ontario had such good soil and the potential to grow such a wide variety of foods. Especially with regard to the wine industry, I learned that Ontario is producing some of the finest wines in the world. As far as culture goes, I had no idea that the "spirit of the cowboy" could exist anywhere else but America. However, I realized that being a farmer or rancher is about a way of life and an appreciation for the land that goes far beyond the Southern twang.

The most important conclusion I developed was that good agricultural communications is critical to the survival of the ag industry both here and abroad. I realized how unaware the average American/Canadian is about the needs of farmers and ranchers.

Recommendations

Following are recommendations for agricultural communication instructors who are interested in starting similar study abroad programs:

? For a week-long study abroad program, try to keep all expenses (including airfare) $1,000 or less. Much more than that will decrease students' interest in the program.

? Develop a theme for each day. The organizers of this study tour found that a daily theme helped students understand what they were about to learn on a given day.

? Start the planning process early. In this case, the two-week exchange took more than a year – from initial discussion to final execution – to plan. Study abroad tours can be organized in a much shorter timeframe; however, for first-timers, it is recommended to build in plenty of planning time.

? Get help from students and administrators. Students in the planning groups provided massive assistance to the overall program. They organized the days based around this question: "If I had never been to Florida/Ontario, what would I want to know/do?" They then planned the days accordingly. Administrators provided funding for the advisers to travel and meet with the touring groups.

? Call upon recent graduates and agricultural communication professionals to help. A few well-placed telephone calls and e-mails to professional colleagues – many of whom were graduates of the respective universities – allowed them to have the opportunity to help an international student program. The professionals helped the planning groups arrange tours and provided meals free of charge.

? Identify someone in the country you plan to visit to help organize the activities in that country.

- ? Communicate the study abroad experience to others. Guelph students did an online newsletter while they traveled in Florida, and UF students made two presentations to students and faculty about their experiences in Canada.
- ? Tie in many educational experiences and fun activities, but do not overdo it. Give students some "down" time.
- ? If possible, tie in a research angle.
- ? Coordinate the planning. Meet frequently to make sure all issues are addressed before they become problems.

Conclusions

Everyone involved in this project believes it was an overwhelming success. It allowed students to see life from a different perspective. Students developed lasting friendships, learned about agriculture in a different country, learned about international issues (trade, open borders), and learned communication skills and about communication issues. They also applied their two weeks of U.S./Canada relations by analyzing, evaluating, and interpreting their experiences – all hallmarks of critical thinking. Students' eyes were opened to the issues facing both countries and issues facing only one of the countries. Students in both countries were somewhat stunned that policy makers (Minister of Food, Agriculture and Rural Affairs for Ontario and Florida policy makers) would take time out of their busy schedules to talk with college students. They saw first-hand agricultural issues and major news events – border closings, free trade, missile defense, urban sprawl – from the others' standpoint.

Students in both universities already want to do the exchange again. The advisers involved are looking into ways to make that happen. Also, at least three Guelph students have inquired or formally applied to UF for master's or doctoral degrees. In addition, the advisers/faculty in both countries already have begun collaboration on joint U.S./Canada agricultural communication research grants. This synergy likely would not have come about without the study abroad experience.

Probably the most telling component of the program is the friendships that were forged. Under the hot, humid Florida sun or in the frigid, snowy cold of the Canadian "maple sugar bush," students reached out to other students and became fast friends. They danced, laughed, and cried together. At the National Agricultural Communicators of Tomorrow conference, students from the Guelph/UF exchange greeted each other like long-lost friends. By bringing together agricultural communicators from two cultures now, relationships will be established for when they are professionals later, so they can call upon each other for assistance – and bridge borders.

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Running Head: THEMES, AUTHORS, AND CITATIONS IN THE *JAC*

Themes, Authors, and Citations in the *Journal of Applied Communications*, 2000 – 2004

Research Paper Submission for the
2006 SAAS Agricultural Communication Section Meeting

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Abstract

A content analysis of academic and professional literature published in the *Journal of Applied Communications* (*JAC*) from 2000 through 2004, this study reports findings related to research themes, authorship, and citations in the journal. Using qualitative and quantitative content analysis methods, researchers examined 56 articles, 119 authors' names, and 1,249 entries in the articles' reference lists as the units of analysis. Trained coders categorized the collection of articles by research themes and examined frequencies of authorships and citations to report the most prolific authors and the most commonly cited authors within themes. Communications management was the most popular theme (11 articles), followed by Information Technology, Media Relations, Distance Education, and Publications. New themes that have emerged since R.A. Williams' and M.D. Woods' 2002 synthesis of *JAC* research include biotechnology communications, academic programs, and graphic design. Prolific authors identified include K.A. Boone in communications management, S. Banning and J.F. Evans in media relations, T. Irani in distance education, and M. Tucker in professional development. Few significant commonly cited sources were evident, but some notable common citations included T.J. Hoban in biotechnology communications articles, R.A Krueger (a focus group methods expert) in communications management articles, and D.A Dillman (a survey methods expert) in publications articles. Agricultural communications researchers should continue to expand present themes, work toward developing emerging themes, and build upon each other's research more often, looking first within the discipline rather than to other disciplines for research direction.

Keywords: University of Arkansas, agricultural communications, curriculum, academic programs, employer survey

Themes, Authors, and Citations in the *Journal of Applied Communications*, 2000 – 2004

Introduction

Well-respected authors in the academic discipline of agricultural communications agree: Those among the discipline must constantly analyze it, question its purpose, and propose new directions in order for it to grow, progress, and be of use to the profession it serves. Recently, some of these well-respected authors – Whiting (2002), Doerfert (2003), and Tucker (2003) – penned commentaries in the *Journal of Applied Communications* (*JAC*) urging their academic colleagues to examine their discipline and imploring them to develop a common focus, professional cohesion, and a goal-oriented vision. Imbedded in their desires for disciplinary growth and progress is the notion that research foci are the foundation of the discipline and, therefore, of the profession. That is, the results of agricultural communications research should guide agricultural communications practitioners' work, which should set the course for academicians' further research. Since this clearly is the discipline's philosophy, it follows that frequent examination of recent research in the discipline will aid in evaluating growth and progress and will provide direction for future research and practice.

Background and Purpose

This study is a content analysis of research published in the *JAC* from 2000 through 2004. It was undertaken with the service-oriented goal of providing researchers with an updated description of agricultural communications research themes in the discipline's primary journal. The study extended Williams and Woods' (2002) work, which categorized *JAC* research themes from 1992 through 2001.

Veteran and novice researchers alike should be able to examine the findings, conclusions, and recommendations of this study to gather ideas for future research projects and to identify key

sources to support the theoretical frameworks of their studies. This goal is in line with an important movement within the discipline to develop an organized research agenda, typified by the recent work done at the 2004 Agricultural Communications Summit (Association for Communication Excellence [ACE], 2004) and American Association of Agricultural Educators research agenda subcommittee meetings (Irani, 2003).

Three objectives guided this content analysis of the *JAC*:

1. Identify key agricultural communications research themes among research articles published in the *JAC* from 2000 to 2004.

2. Identify the most prolifically published authors in the JAC from 2000 to 2004 and categorize them by research theme.

3. Identify the most commonly cited authors in the JAC from 2000 to 2004 and categorize them by research theme.

Review of Relevant Literature

Boone, Meisenbach, and Tucker (2000) wrote the only college-level introductory textbook on agricultural communications. One of its five chapters is devoted to an overview of research in agricultural communications. The authors quoted University of Florida faculty member Ricky Telg in predicting the future of agricultural communications research:

> Agricultural communications research will become more issues-oriented over the next 10 years. Researchers will focus on how agricultural industries communicate such issues as environmental conservation, waste management, chemical applications, food safety and health concerns to the public. These issues are of great importance not only to agricultural communicators, but also to agricultural industries to determine consumers' understanding of agriculture's role in these vital areas" (p. 75).

Telg may prove to be the Nostradamus of agricultural communications research, but his predictions will only be tested by thorough and periodic content analyses of the *JAC* and research publications in the discipline.

With future research directions in mind and recognizing the need for a stronger link among research and practice, Tucker, Ernst, and Henry (2003) recently authored a unique article introducing a simple model of applied communications research. The article analogized the research process with a jigsaw puzzle. Two of the puzzle pieces, "Problem Identification" and "Theoretical Perspective," commonly become the initial hurdles for novice (and sometimes veteran) researchers in applied communications. To overcome the problem identification hurdle, researchers must narrow a practical problem down to a manageable, well-defined research question, and this requires a thorough examination of previous research. Similarly, defining a theoretical perspective also involves examining previous applications of communications theories and models that can be adapted and employed in new research efforts. So, indeed, the developers of the puzzle model demonstrated that reviewing recent, relevant literature is a pre-requisite to most of the pieces of the research puzzle, including developing a worldview, identifying a problem, choosing a theoretical perspective, and deciding upon a methodological approach, research technique, and measurement strategy.

Another important reason to occasionally review the literature in one's discipline is to ensure that applied research is not unnecessarily duplicated. Doerfert (2003) suggested that an attitude of collaboration is absent among academic and professional projects in agricultural communications. He rightfully chastised the profession for developing state-specific projects with disregard for what researchers and professionals in others states may have already done. Reviews of literature, especially the research and professional development articles in the discipline's primary academic journal, seem to be an obvious solution to this problem.

In a reply to Doerfert's (2003) essay, Tucker (2004) made further comments that supported the need for those in the agricultural communications discipline to take notice of

recent applied research and professional activities in the discipline, but his emphasis was focused more specifically on noticing what *hasn't* been done – important advice for the discipline. As did Doerfert, Tucker provided more fuel for the idea of reviewing recent literature in the discipline as a precursor to communications project and research project planning.

The leaders of other academic disciplines have noted the necessity of reviewing research and tracking citations to maintain a clear sense of a discipline's research agenda. Radhakrishna, Eaton, Conroy, and Jackson (1994), researchers in agricultural education (often considered a sister-discipline to agricultural communications), noted that "a number of researchers in various scientific disciplines have considered citation structure as a good indicator of the nature of scientific activity" (p. 61). Further, they quoted experts on the function of scientific journals to explain that analyses of citation structures "characterize a field of study, define its boundaries, and explain how a discipline is interrelated with other fields of study" (p. 61).

Literature in the *JAC* was first reviewed by Williams and Woods in 2002. The authors prefaced Doerfert's (2003) and Tucker's (2004) sentiments about reviewing literature in the field by hypothesizing "the review and acknowledgement of voids in the current knowledge base is an effective method of fostering the discipline's understanding and will bring focus to future research endeavors" (p. 28). This hypothesis seems more like a statement of common sense, yet agricultural communicators still sometimes avert their eyes from the possibly intimidating and sometimes aristocratic academic journal of their profession, choosing instead to create their own guidelines for practice based on their own experiences and the experiences of others. North (1987) described such guidelines as practitioners' "lore" (p. 23). Though practice based on lore may be effective occasionally, the dangers of choosing lore over science to guide the profession are many. Worse, research based on lore is a recipe for poor science.

Williams and Woods' (2002) synthesis of research presented at the ACE International Conference served as the baseline for this project. Their work clearly identified themes among research articles in *JAC* from 1992 through 2001. The most common themes included Information Technology (14.9%), Electronic Media (13.2%), Communications Management (12.4%), Media Relations (10.7%), Professional Development (7.4%), Distance Education (6.6%), Publications (5.8%), Research (Methods) 5.8%, International (5.0%), Writing (4.1%), and Accountability (3.3%). These themes became the reference points for comparison in the present study focusing on *JAC* issues from 2000 through 2004.

Though Williams and Woods' (2002) work *did* examine research themes and authorship in terms of institutional and departmental affiliation, it *did not* identify specific experts on various topics, nor did it connect specific authors with research themes. It also did not address reference citations, a key characteristic in describing a discipline's research foci (Radhakrishna et al., 1994). Therefore, an updated description of *JAC* contents highlighting emergent topics as well as those that have been abandoned since 2002, along with an explanation of the most prolific authors and most abundantly cited sources associated with these themes, was a logical extension of Williams and Woods' project. Agricultural communications researchers – novices and veterans alike – should find value in having an overview not only of the discipline's recent research topics, but also of the important authors on those topics.

Procedures and Methods

Content analysis is a research technique for making replicable and valid inferences from textual data to their context. Researchers employ this technique to examine texts in a way that provides knowledge, new insights, a representation of facts, and a practical guide to action (Krippendorff, 1980). Content analysis is appropriate for analyzing documents of many types,

including transcripts, historical documents, and publications. Though content analysis is most commonly associated with the qualitative research paradigm, it provides a systematic, objective, and often quantitative method of measuring variables (Kerlinger, 2000). Wimmer and Dominick (2003) provided clear guidelines for conducting content analyses, and this study followed those guidelines specifically.

The population to be studied consisted of all research and professional development articles published in Volumes 84 through 88 of the *JAC* (January 2000 through December 2004). This population excluded commentaries and book reviews. The units of analysis included (1) the articles in their entirety (to address research question one, related to research themes), (2) the authors' names associated with each article (to address research question two, related to prolific authors), and (3) entries in the list of references at the end of each article (to address research question three, related to abundantly cited sources).

Frequencies of themes, authorships, and citations were recorded by two trained coders (agricultural communications undergraduate students). Coders first participated in training sessions where they discussed and agreed upon definitions for each agricultural communications research theme suggested by Williams and Woods (2002). Upon agreement of the coding definitions, initial coding began, which involved assigning a research theme from the Williams and Woods study to each article in the population. The articles were divided evenly between the two coders, and the coders assigned themes and documented authorship and citation lists for each article. As new themes emerged, coders participated in further training meetings to develop agreement on assignment of themes and on the definition of each emergent theme.

The findings were entered into a spreadsheet for further analysis, which consisted of ranking frequency of authorship by research theme as well as frequency of citations by research theme. The results of this analysis constituted the findings of the project.

Results

Fifty-six research and professional development articles were published in Volumes 84 through 88 (2000 through 2004). A total of 119 authors were published in the *JAC* during the five-year span, with many being listed as second and third authors on an article (no differentiation was made in the ranking system among first, second, third, etc. authorships). The reference lists in the 56 articles contained citation of works by 1,249 different authors. An examination of these articles and citations resulted in the following findings.

JAC *Research Themes*

Table 1 represents the 14 theme areas ranked according to the frequency of articles published in *JAC* 2000-2004. The theme areas identified by coders were initially based on Williams and Woods' (2002) themes, but new themes emerged as well.

Communications management was the most common theme in *JAC* with 11 total articles. Although no communications management articles appeared in 2003, articles related to this theme were spread evenly throughout the remaining four years. Information technology articles, which were defined by coders as being focused primarily on internet communications, appeared six times in the five-year span. Distance education, professional development, and publications articles appeared five times each. It is important to note that the three biotechnology communications articles only first began appearing in the latter half 2002. Though there were several international articles, many of them fit into other thematic categories, according to the

emphasis of the article. As a result, coders assigned the international theme to only two articles, both dealing with agricultural communication systems in Russia.

Table 1

Research Themes among *JAC* Articles, 2000 – 2004

Rank	Theme	Frequency
1	Communications Management	11
2	Information Technology	6
3	Media Relations	5
	Distance Education	5
	Professional Development	5
	Publications	5
7	Accountability	4
8	Biotechnology Communications	3
	Electronic Media	3
10	Research	2
	International	2
	Writing	2
	Academic Programs	2
14	Graphic Design	1
	Total	**56**

Published Authors

Because of the relatively few number of articles being examined (56), prolific authorship, relative to the purpose of this study, was defined as having more than one article in the same theme published in the five-year period. Six authors had more than one article published in a specific theme area between 2000 and 2004, with two of those authors – R. Telg and M. Tucker– having more than one article in two themes (Table 2).

K.A. Boone (also listed as K. Boone) wrote three articles related to communications management, while Telg and Tucker each wrote two. Co-authors S. Banning and J.F. Evans were the most prolific authors in the Media Relations theme. T. Irani had three articles published

Table 2

Authors with Articles Published in *JAC*, 2000 – 2004, Categorized by Theme

Theme	Rank	Name	Frequency
Communications Management	1	K.A. Boone	3
	2	R. Telg	2
		M. Tucker	2
Media Relations	1	S. Banning	3
		J.F. Evans	3
Distance Education	1	T. Irani	3
	2	R. Telg	2
Professional Development	1	M. Tucker	2

related to distance education, followed by colleague Telg, whose byline was on two articles. Tucker, in addition to writing media relations articles, also authored two articles focused on professional development within the profession. Electronic media, publications, accountability, biotechnology, research, international, writing, academic programs, graphic design and information technology theme areas in the JAC had no authors appearing more than once during the period.

Cited Authors

The analysis of citations in the *JAC* yielded some results that appeared to be thematic. However, it is important to understand the context of the authors' citation counts in order to make a qualitative assessment about whether or not an author was truly abundantly cited in association with a theme. For example, some authors were cited several times, but only in their own works, and other authors were cited many times only in one work. Therefore, while Table 3 demonstrates the authors who were cited three or more times in association with a research theme, the ensuing discussion of the context of most frequently citations is equally important.

Table 3

Frequently Cited Authors in *JAC* Articles, 2000-2004, Categorized by Theme *

Theme	Rank	Name of Cited Author	Number of Citations
Communications Management	1	A.N. Maretzki	5
	2	J.E. Grunig	4
	3	R.A. Krueger	3
		J.G. Richardson	3
		J.S. Thompson	3
Information Technology	1	J.W. Erdman, Jr.	4
	2	Dev. Countries Farm Radio Network	3
		R.H. Fazio	3
		C.M. Hasler	3
		S. Thompson	3
Media Relations	1	A. Reisner	10
	2	J.F. Evans	7
	3	R.G. Hays	6
	4	J.W. Dearing	4
		E.M. Rogers	4
	6	S.A. Banning	3
		A. Cunningham	3
		Gallup Organization	3
		A. Guebert	3
		M. Hendrickson	3
		T.J. Johnson	3
		B.K. Kaye	3
		R.N. Salcedo	3
Distance Ed	1	J.C. McCroskey	5
	2	C.P. Fulford	3
Publications	1	D.A. Dillman	3
Accountability	1	S.J. Ball-Rokeach	6
	2	M.L. DeFleur	4
Biotechnology Communications	1	T.J. Hoban	4
	2	N.C. Allum	3
		G.E. Briers	3
		J. Durant	3
		G. Gaskell	3
Electronic Media	1	T.A. Olowu	3
Research	1	M.A. Tucker	6
	2	J.E. Grunig	3
International	1	M. Veselovsky	4
	2	V. Bautin	3
		A. Kalinin	3
		L. Kolotov	3
		V. Kozlov	3

**Note*: References to works with no authors (such as newspaper articles) were not included in the citation frequency count. No such references were listed more than once.

In the largest category of research themes, communications management (11 articles), 212 different authors were listed in the references. Of those, A.N. Maretzki and E.B. Harrison were the most commonly cited. However, all of Maretzki's five citations were in a 2001 article she co-authored. J.E. Grunig was cited a total of four times in two different articles. R.A. Kreuger, J.G. Richardson, and J.S. Thomson were cited three times each.

The second largest category, information technology, consisted of eight published articles. Among the articles in this theme, 171 different authors were listed in the reference lists. J.W. Erdman, Jr. was referenced four times. Farm Radio Network , R.H. Fazio, C.M. Hasler, and S. Thompson were cited three times each. However, none of these authors was cited in more than one article.

Citations in the five media relations articles included 165 different authors. However, it is important to note that three of the five media relations articles were written by the same team of authors—S. Banning and J.F. Evans. A. Reisner (also A.E. Reisner) was cited 10 times in Banning and Evans' three articles, more than any of the other cited authors among the research themes. The next most commonly cited source on media relations, J.F. Evans was cited seven times, all in his own works. The third most commonly cited author on media relations was R.G. Hays with six citations. Two authors were listed with four citations and several more authors were cited three times within the category.

Among the five articles in the distance education theme, 139 different authors were cited. J.C. McCroskey was cited five times, all in Kelsey's 2000 article on communication apprehension. Kelsey also cited C.P. Fulford three times in the same article.

Four articles related to public accountability were published, with a total of 121 authors cited. Two names appeared most commonly: S.J. Ball-Rokeach, who was cited six times, and

M.L. DeFleur, who was cited four times. Both authors were cited in only one article by Whaley and Tucker in 2004, which focused on consumers' trust of government and media.

The biotechnology communications category had three articles with 125 different authors cited. T.J. Hoban's work was cited four times and was referenced at least once in all three articles. N.C. Allum, G.E. Briers, J. Durant, and G. Gaskell were each cited three times.

Sixty-seven different authors were cited in the three electronic media articles. T.A. Olowu was the only author to be cited three times. All of Olowu's citations were in Yahaya and Badiru's 2002 article evaluating Nigerian agricultural radio and television efforts.

The research category consisted of two articles, which included citations of 66 different authors' works. M. Tucker was cited six times, and J.E. Grunig was cited three times. All these citations were in Tucker's own 2004 work on applied communications research methods.

The reference lists of the two international articles, both found in the 2002 "special Russian issue," contained multiple citations of several Russian authors, including M. Veselovsky, cited in both articles a total of four times, V. Bautin, A. Kalinin, L. Kolotov, and V. Kozlov.

No author was cited more than twice in the professional development, writing, academic programs, and graphic design themes.

Discussion and Recommendations

JAC *Research Themes*

Communications management, the third-ranking theme in Williams and Woods' (2002) study, has clearly become the most popular research theme in the JAC over the five-year span. However, information technology remains an important theme, as does media relations.

electronic media, which encompasses research related to broadcast media, has become a less frequent theme.

New themes emerging since Williams and Woods' (2000) study include biotechnology communications, academic programs, and graphic design. Biotechnology communications seems to be the fastest growing of these and has only just begun to emerge since 2003. Two articles related to academic programs, and one article on graphic design may indicate new efforts at applied research.

Some themes that might be expected did not emerge in this analysis. Research on crisis and risk communications seems to be a common topic of discussion among practitioners and researchers in agricultural communication, but none of the articles published had these as the primary theme. Though the media relations, accountability, and biotechnology communications themes may have encompassed these topics, risk and crisis communication was not, according the to coders, a primary theme in any article. Marketing communications, especially in relation to Extension efforts, was also an obvious omission to the coders.

Communications practitioners and researchers alike should examine these results and begin a dialogue regarding whether agricultural communications research is focused on the most pressing problems. Future research directions for the discipline should build upon on the most common research themes (e.g., communications management and information technology) and should work to develop newly emerging research themes (e.g., writing, academic programs, and graphic design). Additionally, obvious omissions among the research themes in the *JAC*, including crisis and risk communications and marketing communications, should become areas of emphasis for researchers in the near future.

Published Authors

K.A. Boone, M. Tucker, R. Telg, S. Banning, and J. Evans were the most prolific authors in the *JAC* over the five-year span. All are academicians at land-grant institutions, making them the rightful leaders of research in the agricultural communications discipline. Other researchers, especially novices and graduate students, should follow the lead of these accomplished authors and use the works of these prolific authors as starting points for further research.

Unfortunately, absent from this list of prolific authors are full-time professional communicators, a fact that highlights the need for more applied research from the field. More research by practitioners is necessary, especially because the *JAC* is intended to focus on *applied* communications. Applied research projects, such as audience analyses, program evaluations, and marketing studies, are necessary activities for communications practitioners that occur as a part of day-to-day communications work. These practical projects sometimes contain a wealth of information from which other communications professionals managing similar projects would benefit. Regrettably, though the applied research gets done, it often does not get reported outside the institution. The time involved in getting the results written up and formatted as a *JAC* manuscript may be the problem. If administrators would lead the way, impressing upon their employees that writing a research manuscript can be an excellent professional development activity that builds theoretical knowledge and critical thinking skills, the number of applied research articles in the *JAC* would likely rise.

Cited Authors

The examination of sources cited in the 56 *JAC* articles showed cause for concern within the discipline. The description showed little continuity in the literature on which agricultural communications researchers base their studies. Several of the most prolifically cited authors

were only prolific because they cited themselves often. Others were prolific because one author cited several of their works in one article. With self-citations and multiple citations taken into consideration, few sources seemed overwhelmingly abundant.

The good news is that there were a small number of legitimate commonly cited sources. T.J. Hoban's work on biotechnology communications was clearly important in guiding the three articles on this topic. Additionally, the citations of E.M. Rogers' work in the media relations articles shows that the concept of "diffusion of innovations" has guided some agricultural communications research. D.A. Dillman's guidelines for survey research were commonly cited among the articles focused on publications, and R.A. Krueger's guidelines for focus group research were commonly referenced in the communications management articles. The presence of these references in multiple articles shows at least some continuity of thought related to theory and methods in agricultural communications research.

That agricultural communications researchers do not cite each other often enough is another cause for concern within the discipline. Radhakrishna et al. (1994) noted that citations from within the field are indicators of a healthy, self-sufficient academic discipline. Though a few agricultural communications researchers were cited frequently within specific research themes, the discipline would benefit if researchers would work more conscientiously to build upon each other's works. This is not to say that, in an emerging discipline like agricultural communications, drawing academic knowledge from diverse disciplines can't also be healthy. In fact, it is necessary. But, the discipline's hope should be that when very good—even landmark—articles appear in the *JAC* and other journals that publish agricultural communications research, others in the discipline should recognize those articles and base their studies upon them. Researchers should be mindful of the works in their own discipline first, and

then they should seek input from other disciplines to add to the agricultural communications theory base. This is the essence of an evolving academic discipline.

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Podcasting Agriculture News

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Abstract

An emerging technology called podcasting has been identified as a new source of Web audio news distribution.

Podcasting derives from the words iPod (Apple Computer's .MP3 audio player) and broadcasting. Audio content, such as news, is compressed into .MP3 audio file format and can be automatically downloaded to a computer by subscribing to a Web site's RSS feed. The audio file can be transferred to a portable .MP3 player for listening at the user's convenience, whether traveling by car, airplane, working out at the gym, etc. The audio files can also be burned onto a CD-ROM and played in an automobile.

With the void of agriculture radio news programming in many rural markets, podcasting can help fill that vacancy with a variety of news and educational programming, targeting both agriculture producers and the general public.

Podcasting is an attractive technology to land-grant institutions with news divisions. The technology can be easily implemented without purchasing expensive transmitters and satellite time. Many institutions already have computers and servers, the only essential tools necessary to begin podcasting.

Texas A&M University Agricultural Communications adopted the technology in October 2004, targeting agricultural producers, general news consumers and news media. Though still a new technology, podcasting has been embraced by the mass media as well, including CNN, The New York Times, Wall Street Journal and other national news organizations.

Key words: Podcasting, radio, agriculture, news.

Introduction

The demise of farm radio in many rural markets across the country has left a void of agriculture news. An emerging technology called podcasting has been identified as a new method of audio news distribution, bypassing traditional radio media outlets without significant investment.

Podcasting derives from the words iPod (Apple Computer's .MP3 audio player) and broadcasting. Audio content, such as news, is compressed into .MP3 audio file format to be downloaded to a computer and transferred to a portable .MP3 player for listening. The audio files can also be burned onto a CD-ROM and played in an automobile.

While downloadable audio files have been available for many years on the Internet, the key component to podcasting is its subscription method via Really Simple Syndication (RSS).

Users who download software capable of subscribing to RSS podcast audio feeds can automatically have .MP3 files downloaded to their computers without having to visit a Web site. When the iPod or .MP3 player is synched to the computer, those new audio files are transferred to the player and ready for listening.

Podcasting can help fill the void of farm radio programming and can target both agriculture producers and the general public. With the content available as an audio file on the Internet, podcasts can be downloaded to an .MP3 player or personal computer and consumed leisurely. Many individuals listen to podcasts while commuting to work, traveling by air, or during gym workouts, walking, etc.

Usage of .MP3 players is growing at an extremely fast rate. Apple Computer Corp. reported sales of 20 million iPods in 2005. News organizations in the Northeast and some Public Radio Stations, including *National Public Radio (NPR)*, now offer audio content via podcasts. *The New York Times* and *The Wall Street Journal* have also adopted the technology.

Texas A&M University Agricultural Communications adopted podcasting technology in October of 2004. The main attraction of the technology was the ability to distribute audio news that was portable.

Podcasting is an attractive technology to land-grant institutions with news divisions. It can be easily implemented without purchasing expensive transmitters and satellite time. Many institutions have computers and servers – podcasting's key distribution components.

Methods/Process

Texas A&M Agricultural Communications produces podcasts for its news site (http://agnews.tamu..edu) and a weekly news podcast called Agnews Weekly (http://agnewsweekly.tamu.edu).

The audio content is produced using a laptop or desktop computer, a microphone and headphones. Interviews with Extension specialists and Experiment Station scientists are captured using a portable Olympus D330 digital audio recorder. As an alternative, interviews also are captured using an Apple iPod with an external microphone. The produced audio is downloaded to the computer. Free audio editing software, Audacity, is used to edit the interviews and produce the voiceovers for the news reports. The file is compressed into an .MP3 file using Apple's iTunes software and uploaded to a server.

The program's contents are coded into a RSS file, which stands for Really Simple Syndication, and placed on a server. RSS is becoming a widely adopted technology. Texas A&M Agricultural Communications first began offering RSS feeds of its news in September 2003 - one of the first land-grant institutions in the United States to make this technology available.

RSS feeds are files that reside on a server and resemble coding much like standard HTML used for Web pages. RSS feeds can include enclosures, which contain code linking to audio/video files on the Web. Those running software programs capable of subscribing to RSS podcast feeds can receive audio files downloaded automatically to the desktop. The software program regularly visits a Web site, checking the RSS feed or file to see if a new audio file has been posted. By using RSS, it no longer requires a user to manually check a Web site daily to see if fresh audio content has been added.

At Texas A&M, individuals can subscribe to the RSS podcast feed and automatically

receive audio news content, which can be synched to .MP3 players. Users can also use a traditional method by downloading the .MP3 file and listening on their desktops or burning the programming to a CD-ROM.

Agnews Weekly is a program that spotlights Texas Cooperative Extension and Texas Agricultural Experiment Station research, educational programs, and current issues. The pilot program can be found at http://agnewsweekly.tamu.edu.

Results/Outcomes

As podcasting popularity grew through the end of 2004 and in 2005, a clearing house for Podcast programs was created on the Web at http://www.ipodder.org.Texas A&M became the first land-grant institution to be listed under the Agriculture category with its Agnews Weekly program on Nov. 17, 2004 (see http://www.ipodder.org/directory/4/podcasts/categories/agriculture). Other sites have been created promoting various podcasts. Those sites listing Agnews Weekly include: www.podcastdirectory.com, www.podcastalley.com, www.digitalpodcast.com, www.podcastingnews.com and others. These sites offer free podcast listings, eliminating the need for investment in advertising and marketing on behalf of Texas A&M Agricultural Communications.

In June 2005, Apple Computer debuted iTunes 4.9 that featured a listing of podcasts as part of its iTunes Music Store. The podcast listings allowed site visitors to subscribe and download free audio content through its music store. Agnews Weekly was included as part of Apple's new feature to its music store - yet another marketing avenue for Texas A&M Agriculture Program news. Apple estimates its iTunes Music Store attracts between 6 million and 30 million visitors. The Agnews Weekly listing (http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=73329830) is a free listing offered by Apple's iTunes Music Store.

Statistics have been recorded for the Agnews Weekly podcast dating to when the project

first began in October 2004. The number of requests and the amount of audio files downloaded have gradually increased each month since the inception of the podcasting project (See Table 1)

Table 1: Agnews Weekly Statistics

Agnews Weekly Podcast	Requests	Gigabytes Downloaded
October 2004	1,620	0.74
November 2004	5,059	1.86
December 2004	10,152	4.25
January 2005	7,827	3.29
February 2005	13,195	4.68
March 2005	16,974	10.84
April 2005	15,703	6.82
May 2005	16,759	7.7
June 2005	21,447	8.07
July 2005	24,021	9.89

The request numbers and gigabytes of audio have also steadily increased. Note the month of July was when Apple Computer Corp. listed the Agnews Weekly podcast as part of their iTunes Music Store directory. The following were the most popular Agnews Weekly podcasts downloaded since the project began:

*Oct. 27, 2004 podcast featuring interview with Jose Pena, Extension economist, discussing Texas pecan harvest (1, 408 requests)

*March 11, 2005 podcast featuring interview with Dr. Parr Rosson, Extension economist, with perspective on recent action by WTO and ruling U.S. Cotton subsidies create unfair trade.

*Nov. 24, 2004 podcast featuring Dr. David Anderson, Extension beef economist, providing commentary on negative case of mad cow disease tested in U.S.

The podcasts have also led to listener feedback. The following is e-mail from listeners:

"Huge fan of the podcast. I'm not sure that I'm similar to the rest of your audience since I work in New York City. I was raised in cattle country in California, so I'm familiar with your topics. I mostly enjoy listening at home or on my iPod in the subway on my way to work."

"I'm not sure how far away your regular listeners are, but I'm a pretty far piece from

College Station here in Chicago. Been listening to your podcast and have been enjoying it. My father was a professor-farmer in Southern Indiana, so hearing about hay usage, crop planning and ag extension is a lovely tie to my past. Keep up the good work and interesting programming!"

"What neat possibilities this technology could have for us. We found out about Agnews Weekly after visiting our son who is the Web Development Director at CNN."

"I downloaded the podcast and put on my iPod so my father could listen to it on the way to the deer lease. He is a part-time cattle rancher."

While it's unclear if podcasting technology will become a standard application on the Internet, it's predicted that usage will increase over the next five years. The following table illustrates the number of podcast users through 2010:

Table 2: Forecast of U.S. Podcast Users 2005-2010

Year	Predicted Users (in millions)
2005	4.5
2006	11.4
2007	21.7
2008	32.9
2009	44.1
2010	56.8
Source: The Diffusion Group, May 2005	

Discussion/Conclusions

Podcasts can be listened to at any time whenever the user desires. Today, large media companies often control radio station ownership. Typically, programming is distributed via satellite to large groups of stations, therefore reducing the amount of locally generated news. It's anticipated these large media companies will identify podcasting as a new distribution method in

the future.

Podcasting bypasses traditional media. Instead of Texas A&M Agricultural Communications having to pitch audio news to radio outlets, we send the information directly to our audience via a RSS podcast feed with audio through the Web.

Podcasting opens a new door to target general consumers and agricultural producers with audio news content. Further, this may penetrate younger audiences who are more inclined to use portable .MP3 player devices.

A Semiotic Analysis of Biotechnology and Food Safety Photographs in Time, Newsweek, and U.S. News & World Report

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A Semiotic Analysis of Biotechnology and Food Safety Photographs in *Time*, *Newsweek*, and *U.S. News & World Report*

Abstract

This study evaluated photographs used in *Time*, *Newsweek*, and *U.S. News & World Report* in stories about biotechnology and food safety issues in 2000 and 2001. Semiotic theory provided a framework for a quantitative methodology to determine the messages conveyed by photographs and to group the photos by subject matter. Through an evaluation of 45 images, this research found that the news magazines had relatively balanced coverage of the issues. Five categories of images were determined to be used by the news magazines. These results are consistent with research in journalism about the use of images to create perceptions and support stereotypes.

Based on the results of this study, agricultural communications and journalism programs should emphasize visual media literacy. Media literacy is also important for media outlets generating or providing agricultural photos. It is also important for news outlets to evaluate their use of photographs as supporting stereotypes or influencing public perception rather than providing objective information.

Key Words: biotechnology, food safety, visual literacy, semiotics, agriculture, and mass media

Photographers capture images to communicate agricultural issues to the American public. Research in agricultural communications has shown that the treatment of agricultural issues by the popular press is lacking and that there is a difference in the sources used by agricultural and popular press magazines (Whaley and Doerfert, 2003; Whitaker and Dyer, 2000). However, the photographs used to supplement these stories have not been examined in previous research.

This study examined how photographs were used by the popular press in stories about biotechnology and food safety and will conduct an analysis, framed by semiotic theory, to determine the types of messages the photographs may suggest about the agricultural topics of biotechnology and food safety.

When combined with text, images dominate words and are processed in the brain to create perceptions about the subject (Barry, 1997). The purpose of this study is to identify what messages the visual content of *Time, Newsweek*, and *U.S. News & World Report* could be communicating to the public through a semiotic analysis.

Frick, Birkenholz, and Machtmes (1995) found that inner-city high school students from the Midwestern states were significantly less knowledgeable about agriculture than their rural counterparts. Both respondent groups were reported to have a positive perception of agriculture; however, the urban population's perception was based on something other than knowledge of the subject. The urban population, which does not have experiences to compare the messages to, must rely and trust solely, the information that the media presents. Understanding this relationship is important when considering how to educate and develop an agriculturally-literate audience.

Semiotics is an ancient methodology used to decode a photograph through examination of the signs within the photograph. Signs are indications of how the message is communicated to

the reader and are classified into three different types. An iconic sign represents what the object is. For example, a photograph of a car would represent the actual vehicle. An indexical sign represents a meaning that is implied through the photographed object. For example, an expensive car would indicate that the owner was wealthy. A symbolic sign is when an image represents another object or idea. The same expensive car could represent luxury or wealth.

Statement of the Problem

This study will evaluate if a difference exists in the quantity and nature of photographs used by the popular press magazines: *Time, Newsweek,* and *U.S. News & World Report*. This study was guided by two objectives: to determine what types of messages are conveyed through the photographs used in biotechnology and food safety stories in *Time, Newsweek,* and *U.S. News & World Report* and to compare the messages conveyed through photographs used in food safety and biotechnology by the three news magazines.

Review of Literature

Research in agricultural communications has examined the treatment of agricultural issues in the popular press. Whitaker and Dyer (2000) examined articles in *Time, Newsweek,* and *U.S. News & World Report,* and the top three circulated agricultural magazines—*Farm Journal, Progressive Farmer,* and *Successful Farming.* The study sought to determine if the sources used in a news story affect the balance of the story. The researchers found that the highest percentage of environmental and food safety stories were reported in news magazines (62.1%) and that both the news magazines and the agricultural publications used sources in educational and governmental roles. However, agricultural publications used agricultural sources and did not have any activist sources, whereas data showed that news magazine sources used activist sources, revealing a contrast in the way the two industries report news.

Whaley and Doerfert (2003) sought to quantify the nature of food safety coverage by *Time, Newsweek, U.S. News & World Report,* and *Business Week,* using content analysis. This study found that stories about food-borne illnesses appeared most frequently in the magazines, and stories about technological advances, second. The most quoted sources were governmental officials.

Whaley and Doerfert (2003) wrote

> Understanding how a major mass media channel such as news magazines reports food safety and related risks can enhance the ability of agricultural communicators and university specialists to support the news industry and increase coverage of food safety-related university research (p.18).

These studies showed that different news organizations seek different sources and choose different angles when presenting agricultural news stories. These studies illustrate a need to monitor how the popular press reports agricultural news.

Stringer (1999) found that when surveying managing editors and reporters employed at Pennsylvania newspapers, over 70% of those surveyed considered food safety and human health as agricultural topics, among other topics such as pest and disease control, farmland development, and gardening. Over 90% of those surveyed indicated that they considered environment, business, and water quality to be agricultural topics.

Zillmann, Gibson, and Sargent (1999) found that one-sided photographs were more influential than neutral photographs when a population was exposed to a number of photographs and their perceptions of issues were measured. The populace recalled the compelling photographs more easily.

These studies verify that agriculturally-related stories should be examined for bias and to evaluate journalists' proficiency at relaying these stories to audiences. Grunig, Nelson, Richburg, and White (1988) concluded that agricultural audiences actively seek helpful information and are in turn educating themselves. Frick, Kahler, and Miller (1991) defined agricultural literacy as "the understanding and knowledge necessary to synthesize, and analyze, and communicate basic information about agriculture" (p. 54). There is a need to determine if how information is presented accomplishes the purpose of informing and educating the consumer.

Studies conducted about the nature of agricultural topics in popular press demonstrate a need for further research concerning agriculture in the news media. The lack of visual studies found in agriculture communications indicates a gap in the research.

Lester (1995) quoted Walter Lippmann as saying: "Whether right or wrong…imagination is shaped by pictures seen…consequently they can lead to stereotypes that are hard to shake" (p.100).

To fully understand how images create stereotypes, it is important to understand how media create messages and how one becomes media literate.

Potter (2001) wrote that people exist not only within the physical world, but also within a media world and must therefore understand this second world in which they live. He defined the media literate individual as one who actively interprets media messages and can therefore control the meaning of the message and effects the messages can have in one's life.

The process of interpreting messages is an active process. Lester (1995) wrote that in order to find meaning within a photograph, the viewer must actively concentrate on the subject of the photograph rather than just observing the photograph.

Griffin (2004) examined *Time*, *Newsweek*, and *U.S. News & World Report* to compare the photographic coverage of the Gulf War, the War in Afghanistan, and the War in Iraq. He found that the most frequently used photographs were of the military and that those photographs aligned with the government's position and did not offer fresh perspectives to the viewing audience.

Trumbo (2000) called attention to the importance of researching the visual images used to communicate scientific information, based on research that indicated few people have an understanding of basic scientific facts despite Americans viewing a significant amount of scientific media.

Huxford (2001) wrote that the claims of objectivity by the media were not supported by the evidence in his analysis of visual media used by the press. He found that the media needed to prove stories through the inclusion of pictorial representations. This need drives news media professionals to create photographs, even when the subject does not lend itself to visual portrayal.

Taylor (2000) wrote that the nature of news will keep the public from having an accurate visual portrayal because pictures are used to provide sensationalized images rather than the documentary style photographs that were once highly valued.

Singletary and Lamb (1984) found, through an analysis of National Press Photographers Association winning news photographs that images containing emotion and feature photographs depicting hardship were most frequently chosen as the winning photographs. The researchers concluded that photographs cannot be seen as reality because an expectation of what a photographer should capture exists. In order to become an award-winning photographer, news photographers must be able to capture emotionally charged, negative images of violence, crime,

and disasters, and feature photographers must be able to capture positive images of triumph and courage.

The NPPA code of ethics is to “promote the highest quality in all forms of photojournalism.” The code commits photojournalist professionals to capture accurate and balanced images (www.nppa.org), suggesting that consumers of mass media should be able to view the images as accurate portrayals of reality.

Semiotic theory is one of the many ways the messages of images are evaluated to determine if they portray reality. Chandler (1994) wrote that the shortest definition of semiotics is simply “the study of signs” (para. 1). F. de Saussure and C.S. Pierce are credited with the innovation of semiotics; while Roland Barthes is well known for his work in the semiotic field and credited with bringing the concepts to the visual communication field.

Saussaure (1959) wrote that a person lives in a world shaped by decoded signs found in images, actions, words, and more that he or she has encountered. The purpose of semiotics is to become aware of the construction of reality created by those signs (Chandler, 1994). In doing this, the researcher is able to understand how the audience will decode the message, create that reality, and give insight into the culture (Bignell, 2002).

Chandler (1994) wrote that understanding messages reveals the equality of the messages that create that reality, and Moriaty (1997) wrote that using the semiotic methodology in visual communications is ideal because the cognitive processes and interpretive processes are parallel.

Danesi (2002) found that the semiotician is concerned with what a certain structure means, how it is able to represent what it means, and why it means what it means. In image-based research, identifying these signs within a photograph gives insight into the meaning of the photograph and what that photograph will mean to the average viewer.

Bignell (2002) explained the concept with the example of a Rolls-Royce. The car is a material signifier, a symbol that not only communicates the make of the car, but also communicates a mental concept of wealth and luxury. When the average viewer sees a photograph of this car, several messages are being communicated through this single image. Each of these messages is a different sign.

As shown in Figure 1 there are three types of signs in semiotic methodology: symbolic, iconic, and indexical. An image can be classified as one or more of these signs.

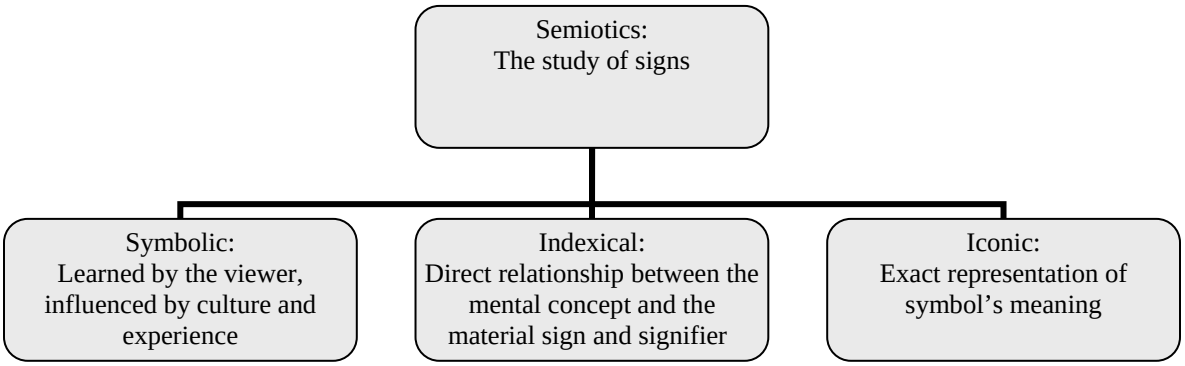

Figure 1 Diagram of Semiotic framework

Chandler (1994) wrote that a symbolic sign is learned by the viewer, as the signified and signifier do not directly resemble each other making them difficult to determine. In Bignell's example of the Rolls Royce, the car is a symbolic sign of luxury or wealth.

Bignell (2002) wrote that indexical signs have a direct relationship between the signified and the signifier. The viewer could draw the conclusion of the indexical sign that the owner was a wealthy person. Iconic signs are the easiest to discern. An iconic sign represents exactly what the sign is and can generally be easily determined, and agreed upon, by the audience. The Rolls Royce used in the example represents an automobile; therefore the iconic sign is an automobile. It is possible to have all three signs, symbolic, indexical, and iconic, in one image.

Deprawt (2002) used semiotics to analyze the photographic representations of the Japanese during the attack on Pearl Harbor and the representation of terrorists after September 11, 2001, in the *Washington Post* and the *New York Times.* He found that the media played a role in developing the perception of the enemy. His findings indicated using semiotic methodology provided researchers with information about the content of the images and an understanding of how the audience would interpret the image and the effect it could have on building perceptions. He reported that the news media work with power structures to create an image of "otherness" about an adversary of the United States. Therefore, just as Deprawt uncovered the perceptions that media can create about other cultures, it is important to understand how images concerning biotechnology and food safety shape public opinion.

Methods

This study employed descriptive methodology and quantitative content analysis methods to analyze the photographs in the 2000 and 2001 issues of *Time (n=10)*, *Newsweek (n=16),* and *U.S. News & World Report (n=19).* A semiotic analysis was employed to meet the research objectives. Bignell (2002, p. 11) wrote: "The same principles underlie the semiotic study of visual sign and linguistic signs. In each case, there is a material signifier, which expresses the sign, and a mental concept, a signified, which immediately accompanies it."

A photograph is both an indexical and iconic symbol and includes such codes as genre, camerawork, editing, lighting, and color (Chandler, 1994). All messages were interpreted based on the United States culture, since in order to read a photograph it is important that the researcher understands the culture of the photograph (Chandler, 1994).

Codes are the rules and constraints that guide the researcher in the meaning making task, as they are used in production of the meaning as well as its interpretation (Chandler, 1994).

Intra-coder reliability was established through repeated measures (Leeuwen and Jewitt, 2001). The coder classified the symbols based on relevant variables and repeated the classification one week later with 90% agreement.

The results of this study are not generalizable to all popular press photographic coverage of biotechnology and food safety. Semiotic theory recognizes that different researchers will interpret signs differently based on their background, culture, and experiences. Therefore the decoding of meaning may vary from the intended or encoded meaning of the image (McQuail, 2005).

The population for this study was all published issues of three national general interest news magazines: *Time*, *Newsweek*, and *U.S. News & World Report*. All three publications are weeklies, distributed on Monday, with circulations of 4,109, 962 (*Time*), 3,125,151 (*Newsweek*) and 2,201,351 (*U.S. News & World Report) (Bacon's, 2004). Time, Newsweek,* and *U.S. News & World Report* were chosen due to their circulation and previous usage in the Whaley and Doerfert (2003) study and the Whitaker and Dyer (2000) study.

Photographs for inclusion in the study were hand-selected by an expert committee after reviewing the contents of the population. Stories were identified as biotechnology or food safety by committee consensus. The usable sample included 45 images: 10 in *Time*, 16 in *Newsweek*, and 19 in *U.S. News & World Report.*

Once a story was located within the publication, the story was examined for photographic content. If it contained photographic images, the pages were scanned into the computer and saved in Adobe Photoshop; the photographs were extracted from the story and saved in a separate folder. Only photographs were considered and other visual elements such as illustrations, graphs, and charts were not included in the study.

Photographs that appeared to be stock images were excluded from the sample. This specifically included images provided by family members of people that had died of mad cow disease. These photos were not taken with the intended purpose of illustrating a magazine article; therefore while they offered insight into image choice they were not compatible with the objectives of this study.

The photographs were classified into categories according to the main subject of the photograph. This provided a numerical description of the biotechnology and food safety photographs used in the magazines.

The researcher used the semiotic methodology in order to gain insight into messages these photographs could communicate to viewers by looking for signs that would communicate a message to the United States populace.

Results

Although captions and headlines can sway the meaning of a photograph, this study looked only at photographic content.

Table 1 depicts the types of message that the three magazines *Time*, *Newsweek*, and *U.S. New and World Report* used in their 2000 and 2001 stories about biotechnology and food safety. *Time* and *U.S. News & World Report* used a majority of positive pictures while *Newsweek* used a majority of negative photographs.

Table 1

Messages Portrayed in Biotechnology and Food Safety Photographs

Source	*Time*		*Newsweek*		*U.S. News & World Report*	
Category	*n*	*P*	*n*	*P*	*n*	*P*
Positive	6	60	6	40	9	47.4
Negative	1	10	8	53.3	6	31.6

Neutral	3	30	1	0.06	4	19
Total pictures	10		16		19	

The researcher looked for iconic, indexical, and symbolic signs within the photographs to determine how the United States public would interpret the photograph to compare the messages. Through examination of each photograph, certain signs were detected and common themes emerged.

The photographs were classified into five categories based on the main subject: food, animals, scientists/food industry workers, producers, and foreign. The total number of photographs is greater than 45 because some photographs were included in more than one category.

Food

There were ten photographs of food in all forms: processed, raw, and cooked. Many of these photographs were positive, based on their healthful appearance. Healthful appearance could be interpreted as an indexical sign meaning the food is safe to eat. Photographs such as Figure 2 captured fresh, safely packaged tomatoes that indicating a healthy product to the viewer. This photograph could trigger a positive response from the viewer about the subject before the article is read. Likewise, Figure 3 is a close-up shot of what appears to be fresh hamburger meat in a clean environment. The meat does not have discoloration or any other visual signs that would indicate to a viewer that the meat would be unsafe to eat.

Figure 2: Positive representation of tomatoes

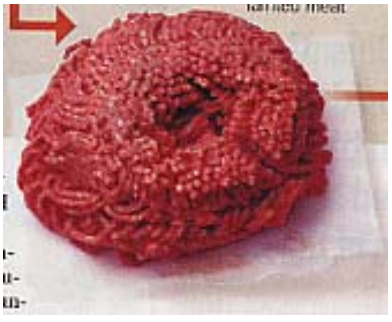

Figure 3: Positive representation of ground beef

Figure 4 indicates a different message. The Porterhouse steak is on a clean stainless steel surface, which would be an indexical sign indicating to the viewer the meat is in a sanitary environment. However it is wrapped in yellow caution tape with the words: caution do not eat. To the reader, this is symbolic of a dangerous situation, which indicates that the meat, although healthy in appearance, should not be eaten.

Figure 4: Negative representation of steak

Animals

Photographs classified as animal photographs included animals both alive and dead. These 15 photographs included people, but the subject of the photograph was the animal.

These photographs included positive and negative classifications. Photographs such as chickens, a shepherd, and sheep without grass are examples of this observation. Figure 5 shows caged chickens with their heads out of the cage. The large number of chickens in the small amount of space is an indexical symbol that would indicate to the viewer that the chickens are in tight quarters and are uncomfortable. Based on cultural propaganda, American viewers may decode this as ill treatment of the chickens.

Likewise, there were photographs of well-cared-for animals, such as Figure 6. These photographs such as doctor with pig and man holding lamb show the animal being held by a person. People hold things that are important or purposeful; therefore it is an indexical sign that the animal is important and is being cared for because it is important to that person.

Figure 5: Example of a negative animal photograph

Figure 6: Example of positive animal photographs

Other photographs showed animals in unnatural situations, such as being used in science experiments. The indexical signs of wires attached to the crab shown in Figure 7 lead the reader to draw the conclusion that this crab is not in its usual environment and is being used in an experiment. The photograph of the scientist with bobcat depicts a woman smiling as she holds a hissing bobcat. The hissing of the bobcat, in Figure 8, is an indexical sign that the animal is in an uncomfortable situation. The leash is a symbolic for a domesticated animal in captivity.

Figure 7: Example of a crab used in experimentation

Figure 8: Example of a negative portrayal of an animal used in science

Scientists/Food Industry Workers

This category included six photographs that involved scientists and food industry workers. The symbol of a white coat indicates to the viewer that the individual has a high amount of education. Generally, professions that require white coats are highly respected and affiliated with medicine.

This prevalent sign was in the majority of the photographs. This is a symbol, in Figure 9, that consistently distinguishes a person working in a science industry.

The photograph of the man leaning over the counter, Figure 10, makes it difficult to determine his role. Although he may be a scientist or in a field of science as indicated by the iconic symbols in the background, not having a white coat, he does not immediately gain the viewers' respect. A viewer may also not immediately trust his information or knowledge.

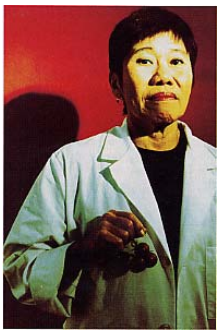

Figure 9: Scientist holding tomatoes

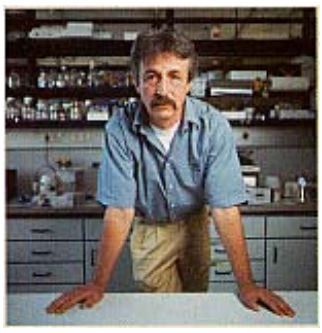

Figure 10: Man leaning over counter

The workers in the meat industry were wearing white coats, but were also wearing protective items such as hairnets, gloves, and safety glasses. This is an indexical sign that would indicate to a viewer that they must be extremely cautious when handling food products. These photographs are considered positive because the safety items would be reassuring to a viewer questioning the safety of the food supply.

Another observation was that the photographs of food safety workers were action shots captured while they performed their jobs inspecting food, as in Figure 11. The photographs of scientists tended to be portrait-style photographs, as in Figures 9 and 10. While this does not directly relate to the determination of the positive or negative value of the photograph, it could be a code to a viewer about what was of greater importance--the individual in the photograph or the action that is taking place.

Figure 11: Example of a food industry worker photograph

Producers

Photographs in the category of producers included agricultural producers. In all three pictures of American producers, the subjects were white, older males, and the photographs were always taken with either an animal or a crop. Each of the subjects was dressed in familiar "farmer" attire. Figure 12 illustrates an example of a producer photograph.

Figure 12: Example of a producer photograph

Foreign

Foreign photographs were classified based on qualities indicating that the photographs were taken in a different country. In these five pictures, the dress and living conditions of the people indicate a low socio-economic status. For example a photograph of the children smiling, an iconic sign indicates they are happy. However, there are holes in their clothes, which is an indexical sign that a viewer would link with not having a lot of money. They are standing in a tall, green field, which is an indexical sign that they could have a good harvest that year. The photographs classified as foreign in general show the people doing manual labor, such as Figure 13, which symbolizes to the reader that they are not wealthy.

Figure 13: Example of a picture in foreign category

Positive and Negative

The researcher used signs within the photograph to judge whether the message was positive, negative, or neutral toward agriculture to measure objective two. A positive photograph was one in which the subject is captured to make the viewer feel positively toward the subject of biotechnology and food safety. Positive photographs in this study included healthy, well-cared-for animals, fresh meats and vegetables, and individuals with positive expressions. An example of a positive photograph is shown in Figure 14.

Negative photographs include such things as protestors, animals in poor conditions, and frightening pictures of piles of burning beef carcasses and Figure 15. These photographs shock, scare, and sadden the reader with the negative messages.

Figure 14: Example of a positive photograph

Figure 15: Example of a negative photograph

Neutral photos do not communicate a message due to a lack of signs or convey both positive and negative emotions. The best example of a neutral photograph is Figure 16. This merely depicts the size difference in the two salmon, but does not portray one as better than the other.

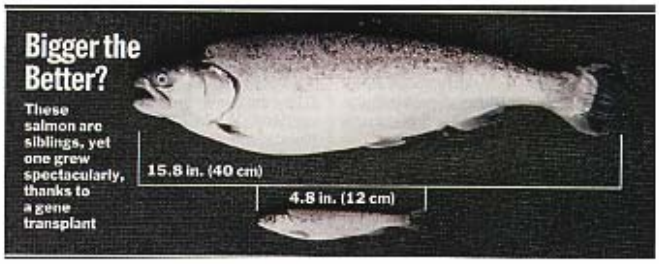

Figure 16: Example of a neutral photograph

Discussion

This study found that although *Newsweek* had more negative photographs, while *U. S. News and World Report* and *Time* leaned more toward the positive side, all three publications were close to having balanced coverage. This is a desirable since balanced news coverage is a value of the news industry. However, the number of positive and negative photographs does not completely reflect the treatment of agricultural issues through photographs or give insight into what messages these images are communicating to the viewers.

Five categories emerged from the semiotic analysis: food, animals, scientists/food industry workers, agricultural producers, and foreign nations. The majority of the photographs fit into one or more of these categories. The small number of categories indicates that

photographers are taking the same types of photographs and capturing the same types of images for biotechnology and food safety stories. Consequently, the media world that is created through the photographs introduced or reinforces stereotypes (Potter, 2001) about agriculture, especially biotechnology and food safety issues.

For example, because of the time frame of this study and the topic of food safety, an abundance of photographs was used with stories about mad cow disease. These photographs were of such things as burning beef carcasses, a headless cow being moved by a pallet jack, and a motherless family. These photographs are graphic and call for an emotional response from the reader. The photographs consistently communicate the same messages about mad cow disease before the viewer reads the article.

The Zillmann, Gibson, and Sargent (1999) study found that compelling photographs are more easily recalled and shape viewers perception more so than non-compelling photographs. The use of negative photographs will shape viewers perceptions more so than neutral or positive photographs. Therefore, the messages of the photographs are the primary indicator of the messages that shape the viewer's perceptions.

This research agrees with Trumbo (2000) that it is important to research visual images used in stories about scientific information. Photographs are encoded to elicit a response from the reader. The decoding of the message, without corresponding factual information, may result in misinterpretation of the image. Therefore photographers and designers must be aware of the possible messages available within their images.

Another observation in this research was the semiotic signs used in the photographs. Iconic, indexical, and symbolic signs were found from among the photographs and utilized to

create images categories. These signs communicated messages to the audience about the agricultural issues.

Although some would say that meaning is made from a photograph only if the viewer is actively reading it (Lester 1995), this research found obvious signs emerge in many of the photographs that convey an obvious message without seeking for a meaning.

The best example of this is seen in the steak with caution tape around it, shown previously in Figure 4. This photograph obviously conveys the message to the reader that eating beef is harmful through the use of the symbolic caution tape. The viewer would obviously know that the message of that photograph indicates that the steak, an indexical sign for beef, is unsafe.

Another example of a negative photograph is the photographs of the forklift moving the dead cow, shown in Figure 15. This photograph, although unusual, illustrates the mad cow epidemic in a very disturbing way. Unlike the photograph of the steak, the forklift photograph captured an actual occurrence and communicates factual information, even though the information is negative. This information would have the most impact on the reader and, as the Zillmann, Gibson, and Sargent (1999) study found, be what the viewer remembers and uses to form their opinions.

These findings show that even though numerically the photographic content is considered balanced, stereotypes and symbols show that photographs could still have negative consequences. The messages that these photographs convey may have a much greater impact on the viewer's perceptions.

Based on the result of this study programmatic and research recommendations can be made. This study found that there is a need for photographers to have more knowledge about the subjects that they are shooting. Their knowledge of the subject may directly impact the ability to

foresee the messages created in their photographs. Therefore, it would benefit the agricultural industry if students were trained in photographic technique and could take magazine-quality photographs to accompany their own materials.

Consumers need to become aware of how to read a photograph. Becoming visually literate will allow individuals to understand how photographs impact their perception of issues

Services that provide agricultural news or train future journalists, in their effort to educate the public, should be aware of image choice and the perceptions and stereotypes these images could create.

News magazines should examine the messages of agricultural photographs. Stereotypes are being created or reinforced through visual content used in the news magazines. In order to communicate agricultural information without bias and accurately, news magazines should closely examine the photographs they use. Photographers should also examine themselves for prejudices and bias in considering shot selection.

Future research should continue to fill the gap in agricultural communications image-based research. This study dealt with the subject of agricultural biotechnology and food safety, but other agricultural topics and issues could yield different results. Controversial and non-controversial issues could yield different results in the messages of the photographs. Research should also examine the images produced by agricultural magazines and news sources, because this is where agricultural journalists have the most input into messages. Agricultural publications and popular press should be compared to determine if there is a difference in the treatment of a subject by the two groups.

Additional research needs to be done to determine the direct effect these images have on perceptions. Viewers interpret messages of photographs based on their own experiences, prior

messages, and stereotypes. The research community would benefit from determining how different groups interpret the messages of photographs.

This study examined solely the photographs to determine if perceptions could be created and information communicated without written word. It is important to understand the stand-alone message of photographs because magazines are generally not read cover-to-cover, but skimmed over a longer period of time.

In our effort to produce a more agriculturally-literate society, this study found that in the sample of food safety and biotechnology photographs used in this study, stereotypical photographs or photograph taken of the same types of images reinforce existing positive and negative stereotypes about agricultural issues.

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TEACHING STUDENTS TO WRITE:
A REVIEW OF HISTORY, MOVEMENTS AND METHODS

Research Paper Submission

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Abstract

The ability of students in the American educational system to write proficiently is fundamental. Yet, too often writing is given a backseat to other traditional subject matter and taught only in the confines of the English classroom. The result yields college students lacking basic writing skills, and struggling in careers upon graduation. This study sought to examine the literature surrounding writing, the various writing movements, process writing as a successful teaching strategy, and the future of writing as a whole. The method of research for conducting this study was a review of literature. Conclusions noted it is imperative that colleges and universities look to the three most prominent writing movements of the past: Writing Across the Curriculum, The National Writing Project, and Writing in the Discipline to shape the teaching of writing at the secondary and post-secondary levels. Additionally, a definitive method for teaching writing must be identified that improves writing performance, and research indicates process writing may indeed be successful. Researchers recommended the effectiveness of process writing in a college classroom be studied, as well as the effect of writer attitude and different writing approaches.

Keywords: process writing, Writing Across the Curriculum, The National Writing Project, Writing in the Discipline

Introduction

The National Commission on Writing in America's Schools and Colleges recently proclaimed, "Writing is not a frill for the few, but a skill for the many" (p. 11). This statement was issued in a 2003 benchmark report by the College Board addressing the need for a writing agenda that would serve the 21st century. More than 30 years ago the importance of writing in schools and colleges became apparent and the inception of Writing Across the Curriculum took hold (Stanley & Ambron, 1991). This national interest paralleled the similar movement of Writing in the Disciplines and forced educators to realize the necessity of writing beyond the doors of the English classroom. Since that time, writing has become a significant component of many disciplines at colleges and universities across the country. As such, the need for skilled writers in all fields of study is clear to academia and industry alike.

Thompson (1987) stated college graduates are often criticized for their poor language skills (as cited in Stowers & Barker, 2003). Many wonder how that can be with Writing Across the Curriculum and Writing in the Discipline in place. The battle for marked writing improvement has been waged, but it has yet to be won. Students and teachers must devote the time and effort necessary to mastering more than rote grammar and punctuation skills. They must truly learn that writing is not merely an act, but rather a process. Because of this national combined movement, researchers have agreed that one of the most effective techniques for teaching writing is process writing (Unger & Fleischman, 2004).

Because process writing entails more than merely producing and publishing a written work, the guidelines that frame the process writing model must be examined. Specifically how these guidelines address writing in a particular context or area of specialization is important to consider when designing effective and successful curriculum. The National Commission on

Writing for America's Families, Schools and Colleges (2004) declared, "Educational institutions interested in rewarding and remunerative work should concentrate on developing graduates' writing skills" (p. 19). Regardless of their chosen field of study, students must be able to write proficiently if they are to be successful in today's business world.

The necessity of writing is apparent to business and academia, yet many college graduates today still lack the fundamental writing skills necessary to succeed. Institutions of higher education are not fully preparing students for success if they do not emphasize and teach the importance of writing across all disciplines and in all fields of study.

Purpose

The purpose of this study was to examine the various writing movements and methods of teaching writing that have shaped secondary classrooms today and determine the need for additional concentration on written communications for college graduates.

Research Objectives

The following research objectives guided the study:

1. To review the history of writing movements at the secondary and post-secondary levels in the United States,
2. To determine how writing skills impact students beyond college and into their professional lives,
3. To examine process writing as an effective means of teaching writing,
4. To recommend future practices for teaching writing.

Methods

To gather data to meet the research objectives, a search was conducted through various sources: (1) Index/Database searches including Proquest, Academic Search Elite and Eric Digest, (2) The National Education Association, and (3) books pertaining to teaching writing. Articles were grouped under four prominent themes: writing and its role in academia, writing movements, process writing, and the future of teaching writing in the United States.

Findings

Defining Writing and its Importance

Dating back to the inception of the Writing Across the Curriculum and Writing in the Discipline movements, writing was defined in 1977 as," Originating and creating a unique verbal construct that is graphically recorded" (Emig, p. 123). Interpreted loosely, this explains that writing involves more than merely putting words on paper; it is the externalization of thoughts (Lavelle & Zuercher, 2001). Biggs (1998) further delineated upon the definition claiming, "It is a complex activity involving attentional demands at multiple levels: thematic, paragraph, sentence, grammatical and lexical" (as cited in Lavelle & Guarino, 2003, p. 295). Alamargot and Chanquoy (2001) declare writing involves choosing the most suitable words for each idea proposed, following very rigorous grammatical guidelines, and using proper punctuation to translate the linguistic relationships linking ideas. Thus, while the process of writing is intricate, the significance of clear and cohesive writing is apparent.

The American Diploma Project reported the ability to write well has emerged as an increasingly important skill in the 21st century (2004). The Project further declared skills involved in writing help prepare students for the real world, where it is imperative they be able to

write quickly and succinctly. However, reports on national education indicate writing skills of high school graduates are less than proficient (Enders, 2001). This indicates higher education may need to undertake the role of training students to write well. If institutions of higher education are to train students to write proficiently, it is logical to assume they must come to the university with basic skills intact. Yet, far too often many students come to college lacking the basic academic skills needed to succeed. Grimes (1997) claimed, “under-prepared students face lower completion rates, greater attrition, and greater anxiety” (as cited in Collins & Bissell, 2004, p. 663).

A survey of business professionals conducted by the National Commission on Writing for America’s Families, Schools, and Colleges (2004) found that good writing is expected in today’s professional world. The survey concluded, “Individual opportunity in the United States depends critically on the ability to present one’s thoughts coherently, cogently, and persuasively on paper” (College Board, 2004, p. 5). In fact, Moss (1995) conducted a corporate study of CEOs, human resources managers, and directors of training and found respondents were generally dissatisfied with college graduates’ communications skills. One respondent stated, “Our experience with college grads concerning communication has been poor. They cannot write, they cannot speak and generally have poor communication skills” (Moss, as cited in Quibble, 2004). Therefore, college instructors must include in their teaching pedagogy the enactment of discipline-specific writing in courses across the curriculum.

A 2003 published survey regarding the relationship between undergraduates’ level of engagement and amount of writing for a course found, “Of all skills they want to strengthen, writing is mentioned three times more than any other” (Light, 2003, p. 28). Light (2003) found students believe that writing plays a central role in their academic and life success. \

The continuous need for improving writing remains apparent three decades after it was first highlighted with the 1975 *Newsweek* cover story highlighting the decline of writing instruction in the public school system and advocating for response to this national crisis (Tchudi, 1986). While the *Newsweek* article indeed exaggerated the declining literacy of college students, it did serve to catapult writing to the forefront of American concern and led to the induction of several national writing movements that shaped how writing continues to be taught in institutions of higher education.

Writing Movements

Three of the most recent and recognizable writing endeavors at the secondary and post-secondary levels in U.S. history that are significant in the writing movement are Writing Across the Curriculum, The National Writing Project, and Writing in the Discipline. The first two movements were established in the 1970s and the latter evolved in the mid 1980s. The Writing Across the Curriculum movement stemmed from a paradigm shift in writing theory in the late 1950s and early 1960s that moved writing from a product-oriented endeavor to a process-oriented undertaking (Stanley & Ambron, 1991). In contrast, the National Writing Project was a direct result of the perceived writing crisis experienced in the mid-1970s and called for a "back to basics" approach in American schools (National Writing Project & Nagin, 2003). The Writing in the Discipline focus evolved from the previous two movements and was linked with composition scholars who advocated student concentration in a specific field of study (Ochsner & Fowler, 2004). All three movements are significant in bringing focus to the importance of writing skills for students in the American educational system.

The Writing Across the Curriculum movement began in the United States in 1974 and 1975 at Carlton College, which instituted the first faculty development workshops for Writing

Across the Curriculum. The idea took root, however, from the work of James Britton and others in England in the 1960s in their study of young children (Ochsner & Fowler, 2004). Britton used the theories of Piaget and Vygotsky to form the tenets of his argument that language was indeed a way of learning (Tchudi, 1986). Janet Emig expanded upon this concept by advancing "the notion that writing is a unique mode of learning because it involves three patterns: enactive (learning by doing), *iconic* (learning through images), and symbolic (learning through representations)" (Tchudi, 1986, p. 15). Stanley and Ambron (1991) make the argument that faculty in all disciplines should therefore assist students with communication in writing because writing plays a central role in the learning process. They further state the faculty workshops at Carlton ultimately led to a college-wide adherence for responsibility of writing. This in turn inspired other institutions to implement similar programs for faculty based upon a uniform pedagogical theory, resulting in the movement we see today that encompasses schools across America as well as abroad. Sorenson (1991) surmises that as a result of Writing Across the Curriculum, "Most students experienced less apprehension about writing and felt they were better writers – writing more varied, more complex, and more mature pieces – after only a year in a school-wide writing-across-the-curriculum project" (p. 2).

While writing at one time was taught strictly in the English classroom, the Writing Across the Curriculum, National Writing Project, and Writing in the Discipline have changed all of this. The National Writing Project and Nagin (2003) report, "It is striking how other disciplines have begun to incorporate research on the composition process into their own teaching strategies" (p. 25). Writing plays a crucial role in all fields of study and this has been affirmed by the addition of writing on standardized tests. "It is an independent category in state and national standards and is assessed on state, national, and international achievement tests"

(Unger & Fleischman, 2004, p. 90). Many faculty have begun to adopt the Writing Across the Curriculum philosophy into their own disciplines and declare "writing initiates students in to the modes of discourse in their disciplines" (Laipson as cited in Stanley & Ambron, 1991, p. 51). This should not be mistaken for meaning that writing is a generic skill, applicable in any classroom. Spear, McGrath and Seymour make the argument:

> If writing is really to count in the classroom, it must be because the intellectual structure of the classroom and the discipline demand it and because writing partly forms the intellectual structure of that classroom and that discipline. Insisting on a generic justification for writing leads to the detachment of reading and writing from the norms and practices of particular disciplines . . . (as cited in Stanley & Ambron, 1991, p.).

Writing can evoke learning in core subjects and is therefore vital it be included in classrooms where its merits are valued and recognized by students and teachers alike (National Writing Project & Nagin, 2003). The National Commission on Writing in America's Schools and Colleges summarized the need for writing across disciplines by declaring that if education in America is to reach its fullest potential, a writing revolution must take place that yields to the power of language and communication and gives it a proper place in the classroom (College Board, 2003). Following closely behind the movement for teaching writing in all disciplines is the movement for improving the teaching of writing in U.S. schools.

Whereas the Writing Across the Curriculum project addresses incorporating writing into all classrooms, the National Writing Project is a professional development network that began in 1973 at the University of California, Berkeley (National Writing Project & Nagin, 2003). The program extends to more than 175 sites in 50 states, Washington, D.C., Puerto Rico, and the U.S.

Virgin Islands. Lieberman & Wood (2002) summarize that the National Writing Project helps teachers improve how they teach writing and fosters student learning through learning communities at the different sites across the country. They elaborate by declaring each site grows from a school-university partnership in which teachers attend a five-week invitational institute staffed by university and school-based personnel. “These opportunities to write and reflect with other teachers help create an ongoing social network of teachers that develops throughout the year” (Lieberman & Woods, 2002, p. 40).

The link between writing and learning established by Writing Across the Curriculum and the National Writing Project naturally led to context-specific writing in varying fields of study. The idea of writing in content areas expanded to become not only a method for teaching writing, but also a means of improving student education (Tchudi, 1986). Tchudi (1986) states, “The college student who writes in the content fields will not only be a better writer, but also a better thinker, a more liberally educated man or woman” (p. 16). While proponents of Writing in the Discipline emphasize the effectiveness of writing in a context-specific area can not only improve writing, but also education overall, the available literature has not emphatically garnered research data to substantiate this logical claim. The challenge for proponents of writing is to find the appropriate technique for teaching writing that facilitates both overall educational learning and improved writing performance of students.

The Writing Across the Curriculum, National Writing Project, and Writing in the Discipline endeavors strive to improve the writing of students in America, yet each approaches the task in a different manner. These writing movements that began more than three decades ago still hold true today as we encounter the same concerns of insufficient student writing skills. However, today the spotlight shines more prominently on higher education and its role in the

process of preparing graduates for the workplace. The U.S. Department of Education's National Center for Education Statistics (p. 70, as cited in the National Writing Project & Nagin, 2003) asserts:

> Effective writing skills are important in all stages of life from early education to future employment. In the business world, as well as in school, students must convey complex ideas and information in a clear, succinct manner. Inadequate writing skills, therefore, could inhibit achievement across the curriculum and in future careers, while proficient writing skills help students convey ideas, deliver instructions, analyze information, and motivate others (p. 3).

While it is abundantly clear writing matters, the dilemma as to how to most effectively make students proficient writers is something educational institutions are still tackling today. Sublett (1993) notes, "A lifetime of professional writing faces many students who we annually launch from our colleges and universities into the world of work. Too many students leave the campus unprepared for this critical aspect of their careers" (p. 11).

Process Writing

As a result of the emphasis placed on writing, researchers have developed a consensus on the most effective approach to writing instruction (Unger & Fleischman, 2004). Flowers and Hayes (1981) termed this method as process writing and developed it as a result of a study that looked at the steps accomplished writers used as they wrote (as cited in Unger & Fleischman, 2004). They identified the process as "planning and organizing ideas, translating ideas into text, and revising the result" (Unger & Fleischman, 2004, p. 90). "Most research today supports the view that writing is recursive, that it does not proceed linearly but instead cycles and recycles through subprocesses" (National Writing Project and Nagin, 2003, p. 25). What has resulted

from Flower and Hayes' research of process writing is a "set of instructional guidelines for five stages of the writing process: (1) engaging in prewriting tasks; (2) creating an initial draft; (3) revising the text; (4) editing for conventions; and (5) publishing or presenting a polished final draft" (Unger & Fleischman, 2004, p. 90).

Hill (1992) advocates encouraging the principles of process writing as one of three issues crucial to improving instructional practices in writing. As a part of the process writing approach, revision is perhaps the key that may unlock the learning potential for students. Lehr (1995) defines it as "the heart of the writing process—the means by which ideas emerge and evolve and meanings are clarified" (p. 1). In addition, Flowers (as cited in Zimmerman, 1998) states, "Reflection is of great importance in the social cognitive view of the writing process because it is where writers gain control over their own writing and reading processes" (p. 31). Sensenbaugh (1990) summarizes by stating that if learning is to be accomplished through writing, the purpose of writing must change. The purpose should not be to summarize, but rather "to encourage the students to interact with each other and with their own ideas," thereby allowing the process writing approach to enable both teachers and students to focus on writing to learn (Sensenbaugh, 1990).

As testimony to this process writing approach and its place in the U.S. educational system, the National Assessment of Educational Progress administers a test of writing to large national samples of students (Unger & Fleischman, 2004). They report (2004) that those students who engage in the process writing approach score higher on the test. Unger and Fleischman (2004) conclude, "By focusing attention on an area of instruction that has often been overlooked, the process writing approach has had a significant impact on U.S. education" (p. 92).

Future of Writing

Just as universities and colleges face enormous pressures and institutional demands, students today are facing new challenges in terms of what transferable skills and abilities they must possess to succeed in life. Parks and Goldblatt (2000) contend that many students incorrectly assume they are striving to master vocational training in preparation for a job, when in fact they must "learn abilities that will sustain them through multiple career changes, new roles in marriage and community life, and forbidding political crises in the environment, economy, and social justice" (p. 586). This outlook paves the way for moving writing from merely *across* disciplines, and suggests moving it *beyond* the curriculum.

The National Commission on Writing in America's Schools suggests that while writing has taken a backseat to other skills learned in the classroom, it is not to say that American students cannot write, they simply cannot write well (College Board, 2003). Stowers and Barker (2003) make this case by claiming that while effective writing skills can propel students in their careers, poor writing skills play a direct role in limiting their chances for success. Renewed emphasis must be placed on writing if we are to ensure today's students succeed in an increasingly competitive and global marketplace. The National Commission on Writing for America's Families, Schools, and Colleges found in a recent study that unless we devote attention to the development of such skills as writing, we are condemning many students to low-wage, hourly employment (College Board, 2004).

If knowledge is power, then writing is knowledge. If students can convey their thoughts effectively on paper there is no limit to what they can accomplish. Abraham Lincoln captured this notion long ago:

> Writing – the art of communicating thoughts to the mind – is the great invention of the world…Great, very great, in enabling us to converse with the dead, the absent, and the unborn, at all distances of time and space, and great not only in its direct benefits, but its great help to all other inventions (College Board, 2004, p. 36).

Conclusions/Recommendations

The literature is abundant with evidence pointing to writing being an imperative component of classrooms from K-16. It is important to understand the writing movements of Writing Across the Curriculum, the National Writing Project, and Writing in the Discipline as they relate to the emphasis placed on writing in the American educational system. Historically, these three movements were the largest efforts in recent time focused on increasing writing ability of students. However, these movements focused on both increasing writing productivity at the secondary level and post-secondary levels. According to the literature, it is assumed students come to a college or university with basic writing. However, research has shown that may not be the case. Therefore, it is recommended research be done focusing on techniques for improving basic writing skills of college/university students.

The literature is rich in supporting the importance of writing skills for career success. Even in today's technological world, writing is still a fundamental key for successfully communicating in the workplace. Therefore, it is recommended that colleges and universities place more emphasis on pushing students to mastery of writing basics. It is also recommended that students work to ensure they have the right tools, including strong writing skills, in the toolbox to be competitive in the job market.

As a result of this study, researchers have concluded process writing offers the most logical and efficient way to address the teaching of writing in the classroom at the secondary

level. In addition, the literature supports the notion that writing far transcends its historical place in the English classroom and is appropriate in any and all courses where learning takes place. Most recently, the College Board embarked on two benchmark studies that indicated writing remains to be entrenched in the classroom today, and if students are to succeed they must win the battle of writing well. It is recommended that research be conducted focused on measuring the effectiveness of process writing in a post-secondary classroom and positioned to ascertain its effect on improving the writing performance of students. Additionally, the effect of different writing approaches as well as writer attitude must be considered and studied.

Writing is a necessary and useful skill for all individuals, regardless of life path or profession. Faculty in all areas at high schools, colleges and universities alike must focus on writing as a part of their curriculum. Obviously it is important to focus on the process of teaching writing to be most effective, but what is probably more important is to focus on setting high standards for writing in the classroom. Therefore, academia must seek to determine how best to prepare individuals to meet the challenge of successfully performing written tasks. Academia must also seek to prepare faculty to be vigilant in expectations of writing performance at all levels in the academic setting.

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