ASSOCIATION FOR
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JOURNAL OF APPLIED COMMUNICATIONS

Official Journal of the Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences

ISSN 1051-0834©
Volume 101 | No. 1 | 2017

JOURNAL OF APPLIED COMMUNICATIONS

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ACE Headquarters

Holly Young, Executive Director
59 College Road, Taylor Hall
Durham, NH 03824
(855) 657-9544
ace.info@unh.edu

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JOURNAL OF APPLIED COMMUNICATIONS

Volume 100 | No. 4 | 2016

RESEARCH

ASSOCIATION FOR COMMUNICATION EXCELLENCE

Poultry Production Messaging in Two National-Circulation Newspapers

Leslie D. Edgar, Donald M. Johnson, and Stuart Estes

ABSTRACT

Consumers are concerned about the use of antibiotics and hormones in poultry. News media is the primary way consumers gain knowledge about this subject. This study assessed articles in an effort to describe and compare coverage of antibiotic and hormone use in poultry production from The New York Times *(NYT) and* The Wall Street Journal *(WSJ) between 1994 and 2014. Content analysis methodology was used to assess selected articles (*N *= 265) to identify key messages about antibiotic and hormone use in poultry production, article type, type by year, and complete a comparison of focus, frames, and emergent themes. Five emergent themes were identified: 1)* consumers awareness of and concern for antibiotic/hormone use in poultry production *(NYT 38.8%, WSJ 51.2%); 2)* the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria *(NYT 43.8%, WSJ 24.4%); 3)* regulation of antibiotic use in poultry production *(NYT 35.0%, WSJ 31.7%); 4)* purpose of antibiotic/hormone use in poultry production *(NYT 32.5%, WSJ 29.3%); and 5)* transparency of antibiotic use poultry production practices *(NYT 15.0%, WSJ 12.2%). Articles were primarily news stories, and there was an increase in articles focused on antibiotic and hormone use in poultry over the 20-year period. NYT was 8.8 times more likely to write an editorial on one of these topics than was the WSJ. Recommendations include increased understanding and addressing consumer concern about antibiotic and hormone use in poultry production, increased transparency, and improved relations with media contacts who cover poultry production issues.*

KEY WORDS

Agricultural Communications, Content Analysis, National Newspapers, Poultry Production Messaging, Qualitative Research

INTRODUCTION

Understanding production of our food is a growing area of concern for the public. One of the greatest areas of consumer concern is the use of antibiotics and hormones in food animal production, including poultry (Brewer & Rojas, 2007; Hwang, Roe, & Teisl, 2005). In the mid-20th century, antibiotic use became prevalent in American agriculture, as researchers began to understand the economic implications of including small amounts of antibiotics in the feed of livestock (Gustafson & Bowen, 1997). In contrast to the use of antibiotics in the three major livestock sectors (beef, swine, and poultry), hormones are only used in the beef industry and are not permitted for use in the pork and poultry industries (American Meat Institute [AMI], 2009). Antibiotics play an important role in poultry production, helping to treat illnesses in a therapeutic fashion and improving the size and quality of poultry in a growth-promoting capacity (Singer & Hofacre, 2006). Consumer perceptions of poultry as a quality food source are important to understand because poultry production is an important part of the agricultural landscape of the U.S. (Poultry Federation, 2014; United States Department of Agriculture [USDA], 2014).

Consumers gather much of their understanding of the food production system from media (Malone, Boyd, & Bero, 2000). Agriculture is not heavily covered in the media, but media coverage of agricultural issues still plays a role in influencing the public's perceptions and voting choices, which ultimately affects legislation (Kuykendall, 2010). Newspapers play an important role in informing the public about agriculture (Reisner, 2005). Information disseminated by newspapers inherently reflects the views of the journalists and editors who write and determine content for the outlet (Reisner, 2005). The way journalists and editors interpret and view a story is the way it is presented to the public in the newspaper (Reisner, 2005). The importance of newspapers in communicating agricultural material makes newspapers articles an appropriate context to study messaging about antibiotics and hormones (Reisner, 2005). A better understanding will lead to recommendations for agricultural communicators who struggle with a public that does not adequately understand the poultry production processes that provide consumers with an inexpensive source of protein (Poultry Federation, 2014).

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Agenda Setting

In research McCombs and Shaw (1972) conducted about the role of mass media in political campaigns, an important distinction is made concerning media effects on how the public learns; namely, the public learns more about the issues on which the media places the most emphasis. This ability of the media to set the pace and emphasis for what the public knows about an issue is known as the agenda-setting function of media (McCombs & Shaw, 1972). This research suggests that individual news media outlets paint an imperfect picture of the actual climate surrounding an issue, but the composite of many media outlets often has an agenda-setting function on media consumers. The effect of agenda setting is prominent especially in regard to influencing which issues the public views as salient (i.e. accessible) (Scheufele & Tewksbury, 2007). Agenda setting is not so much focused on what the issue is about, but more so on the amount of time and attention given to the issue, which carries a more potent effect with the audience (Scheufele & Tewksbury, 2007).

Agenda setting could well be the basis of the business model for newspapers. An important concept to note is the primary concept behind newspapers, namely, to produce readers, not news (Conboy & Steel, 2008). By focusing efforts on tailoring news to meet an audience, newspapers can more effectively generate revenue and/or exert influence over readers (Conboy & Steel, 2008). Through engaging in agenda setting, newspapers cater to what they think their audience will want to hear, thus generating readers.

Previous research has used agenda setting to describe the effect of media on consumer understanding and confidence, and has noted a negative impact on consumer confidence in the preparedness of the food system to deal with food safety events (Bharad, Harrison, Kinsey, Degeneffe, & Ferreira., 2010). Furthermore, an increase in mass media coverage of food safety issues is enough to lead to a decline in consumer confidence and an increase in the belief that the national food supply system is not prepared to deal with any problems that would arise (Bharad et al., 2010). Research results point to the mass media's role as an influential and important component of changing consumer attitudes (Bharad et al., 2010).

Framing

Framing is a way of understanding how an issue is characterized in media and affects how the public views the issue (Scheufele & Tewksbury, 2007). It is based on the assumption that characterization of an issue in a news report can have an influence on how an audience understands it. Framing is used by journalists to "present information in a way that resonates with existing underlying schemas among their audiences," which does not necessarily mean that journalists intentionally spin news stories in a certain way or try to deceive their audiences (Scheufele & Tewksbury, 2007, p.12). Essentially, framing is a valuable tool for presenting complex issues to audience members so they can understand them based on the schema and constructs they already possess (Scheufele & Tewksbury, 2007).

Valkenburg, Semetko, and Vreese (1999) identified four common article frames. The *conflict* frame highlights the tension between individuals, groups, or institutions. The *human interest* frame brings an individual's perspective or emotional angle to the presentation of an event, issue, or problem. The *responsibility* frame presents an issue in such a way as to attribute responsibility, positively or negatively, to a group, organization, or institution. Lastly, the *economic consequences* frame focuses on how an individual, group, organization, country, or region will be affected economically by an issue or event.

The issue of antibiotic and hormone use is especially salient in the poultry industry, where, like other agricultural sectors, consumer opinions affect - purchasing behavior (Brewer & Rojas, 2007; Hwang et al., 2005; USDA, 2014). Often, what consumers do know about agricultural processes they primarily glean from media (Malone et al., 2000; Reisner, 2005), and newspapers are a form of media readily available to communities from which they learn about agricultural practices in their area and across the country (Reisner, 2005; Reisner & Walter, 1994). Newspapers, as well as other media outlets, often provide information about issues through the lenses of agenda-setting and framing (McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007). The way journalists portray agricultural issues may be based more on their understanding of how to make the story into an article than on their understanding of an agricultural practice (Reisner, 2005). Consumers are now more removed from the farm than ever because of urbanization and technology (Leising, Pense, & Igo, 2000), thus they are more willing to accept a journalist's account of an agricultural issue as expert opinion because of their lack of understanding.

Newspaper articles are subject to agenda setting theory and framing theory, which are a media outlet's ability to tell readers *what* are the salient issues and *how* to think about those issues, respectively (McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007). Because the public (consumers) gains most of its knowledge of the use of antibiotics and hormones in the poultry industry from media (Kuykendall, 2010; Panach, 2007), there is a need to examine the messaging to identify and determine the extent of agenda setting and framing present, both of which have the potential to change consumer behavior by influencing what consumers think about and how they think about it.

In addition to informing their own readers, national circulation newspapers often set the agenda for national television and regional and local newspaper coverage of agricultural issues (Denham, 2014). The importance of newspapers in communicating agricultural material and in setting the media agenda makes national newspapers an appropriate context in which to study messaging about antibiotics and hormones (Reisner, 2005). A better understanding will lead to recommendations for agricultural communicators who struggle with a public who does not adequately understand the poultry production processes that provide consumers with an inexpensive source of protein (Entman, 1989; Poultry Federation, 2014).

PURPOSE AND RESEARCH OBJECTIVES

The purpose of this study was to compare coverage of antibiotic and hormone use in poultry production in two major national-circulation newspapers, The New York Times and The Wall Street Journal, between 1994 and 2014. Specific objectives were to:

1. Describe and compare the types of articles (news, feature, or editorial) about antibiotic and hormone use in poultry production appearing in the NYT and the WSJ between 1994 and 2014;
2. Describe and compare the focus (antibiotics, hormones, or both antibiotics and hormones) of articles about antibiotic and hormone use in poultry production appearing in the NYT and WSJ between 1994 and 2014;
3. Describe and compare the frames used in articles about antibiotic and hormone use in poultry production appearing in the NYT and WSJ between 1994 and 2014; and
4. Identify and compare emergent themes in articles about antibiotic and hormone use in poultry production appearing in the NYT and WSJ between 1994 and 2014.

METHODS

This study utilized content analysis to objectively, systematically, and quantitatively describe the overall content of communication. Weber (1990) defined content analysis as a research method that utilizes a set of procedures to make valid inferences from text, and the inferences drawn from content analysis can be about the sender(s) of the message, the message itself, or the audience. The data analyzed were the text of two national newspapers' print stories pertaining to antibiotic and hormone use in poultry production.

The population of articles for this study included news articles, feature stories, and editorial/opinion pieces from the selected national newspapers: *The New York Times* and *The Wall Street Journal*. These newspapers were selected based on their reach and readership, specifically being the two largest-circulation (combined digital and print subscriptions) national newspapers (Pew Research Center, 2013). Only full-length articles were analyzed, and articles written earlier than 1994 were not included in this study. This 20-year time span was selected because it was thought adequate to identify trends in media coverage, changes in poultry production antibiotic/hormone use methods, and increases in consumer concern about food production processes (Brewer & Rojas, 2007; Gustafson & Bowen, 1997).

The population for these newspapers was determined by searching Lexis Nexis Academic (New York Times) and ProQuest (Wall Street Journal) using the search phrase "antibiotic! OR hormone! w/5 chicken OR poultry" for Lexis Nexis and the search phrase "(antibiotic OR hormone) NEAR/5 (chicken OR poultry)" for ProQuest. Using these search terms narrowed findings to articles with the words "antibiotics" or "hormones" within five words of the words "chicken" or "poultry". The initial population searches were completed on 9 January 2015, and returned 265 articles. A sample size of 124 articles was calculated as being sufficient to achieve a 95% confidence level and a 5% confidence interval (Creative Research Systems, 2012).

The sample size for each newspaper was determined based on each newspaper's proportion of total articles in the population. Thus, 68% (n = 99) of the articles were from *The New York Times*; and 32% (n = 47) were from *The Wall Street Journal*. Articles were further stratified by year based on the percentage each year contributed to the population of articles. To ensure that a random selection was made, the article titles and year of publication for the entire population of articles were input into a Microsoft Excel spreadsheet, and the randomization function was used to assign each article a random number. The articles were then filtered in ascending order by year and randomization number using the filter function in Excel, and the specified frequency for each year was chosen from the filtered list. To acquire and store articles, the researcher downloaded and saved electronic versions (Microsoft Word) of the selected articles from Lexis Nexis and ProQuest.

During data collection, it became apparent that some articles fit the search criteria but, when analyzed more closely, did not fit the context or scope of the research. It was not possible to narrow the search terms any further and attain a more precise population, so each article was examined by the researchers to determine if the article met the required study criteria; (1) the article was a true journalistic article (i.e., not a news brief); (2) the article specifically fit within the context of poultry production and/or (3) the article related to poultry production in a broad sense. Twenty-two articles did not meet one or more of these criteria and were deleted from the sample, leaving 124 articles for further analysis.

To guide the content analysis used in this research, as well as to maintain consistency in evaluation, a code sheet was developed by the researchers. The first question of the code sheet assesses the type of article being analyzed, namely, whether the article was a news, feature, or editorial piece. The type of article was determined based on characteristics of the writing. News stories were characterized as such when they followed the inverted pyramid format and were focused on timely, newsworthy topics. Feature stories were named as such when written using block format and were focused on human interest or entertaining aspects of a situation. Editorial pieces were characterized as such when they were letters to the editor or opinion pieces.

The second question was created to assess the frame of the article, namely, conflict, economic consequences, human interest, responsibility, or inconclusive/multiple (Valkenburg et al., 1999). Article frame was determined by matching the

article to the best definition of the four frames noted by Valkenburg and colleagues (1997). If an article exhibited more than one frame it was labeled multiple, and if a frame was not exhibited the article was labeled inconclusive. The third question assessed whether the article focused on antibiotics, hormones, or both.

Prior to data analysis inter- and intra-coder reliability was addressed. To ensure inter-coder reliability the lead researcher and the researcher's committee chair selected five articles from the population and analyzed each of the articles separately. After both coders had completed coding one article, percent agreement was calculated using hand calculations, and the coders compared analyses and reconciled differences through negotiating (Weber, 1990). This was repeated for each article until all five had been analyzed. Typically, an agreement level of 80% is acceptable for inter-coder reliability (McMillan & Schumacher, 2010), and in this instance the two coders' agreement level was between 83.3% and 98.1% when coding the five articles together. Because the lead researcher and committee chair calculated agreement levels greater than 80% on the five articles, the lead researcher completed the coding singlehandedly. Intra-coder reliability was accounted for by the creation and use of a code sheet during analysis, which ensured coding was conducted similarly for each article. To ensure validity for the qualitative portion of this content analysis, the researcher engaged in prolonged and persistent field work, reported findings with low-inference descriptors, and sought agreement on emergent themes present with the committee chair prior to reporting findings. The use of code sheets to analyze the articles also serves as an audit trail of the research.

The content analysis methodology used in this research incorporated both quantitative and qualitative components. Quantitative data was gathered and analyzed for article type, article focus, and article frame; these constructs were analyzed for frequencies using Microsoft Excel.

The qualitative portion of this research dealt with categorizing emergent themes gathered regarding key messaging about antibiotic/hormone use in poultry production. Using keywords in context (KWIC) analysis, the researcher analyzed each article to determine messaging about antibiotic/hormone use in poultry production, which were reported as short phrases on the code sheet (Weber, 1990). Additionally, the researcher used the comments feature in Microsoft Word to highlight keywords and phrases that supported the messaging derived from the article. The phrases entered into the code sheet for each article were input into an Excel spreadsheet. Utilizing the spreadsheet and following the constant comparative method (Lincoln & Guba, 1985), similar phrases used to describe messaging about antibiotic/hormone use in poultry production were grouped together as emergent themes. The occurrences of each of these themes were then reported as frequencies.

RESULTS

Between 1994 and 2014, the NYT and WSJ published 265 articles on the topic of antibiotic and hormone use in poultry production; 68.3% (n = 181) of these appeared in the NYT, while 31.8% (n = 84) appeared in the WSJ. Regression analyses indicated a significant increase by year in the number of articles published in both the NYT [F(1 19) = 11.45, $p < .01$, R2 = .38] and the WSJ [F(1 19) = 19.60, $p < .001$, R2 = .51]. Both regression coefficients were statistically significant ($p < .05$) and indicated an increase of 0.44 articles per year for the NYT and an increase of 0.53 articles per year for the WSJ. Figure 1 displays the trend in number of articles about antibiotic and hormone use in poultry production by year in the NYT and WSJ. A proportional stratified (by year) random sample of articles was selected from the NYT (n = 80, 66.1%) and the WSJ (n = 44, 33.9%) for further analyses.

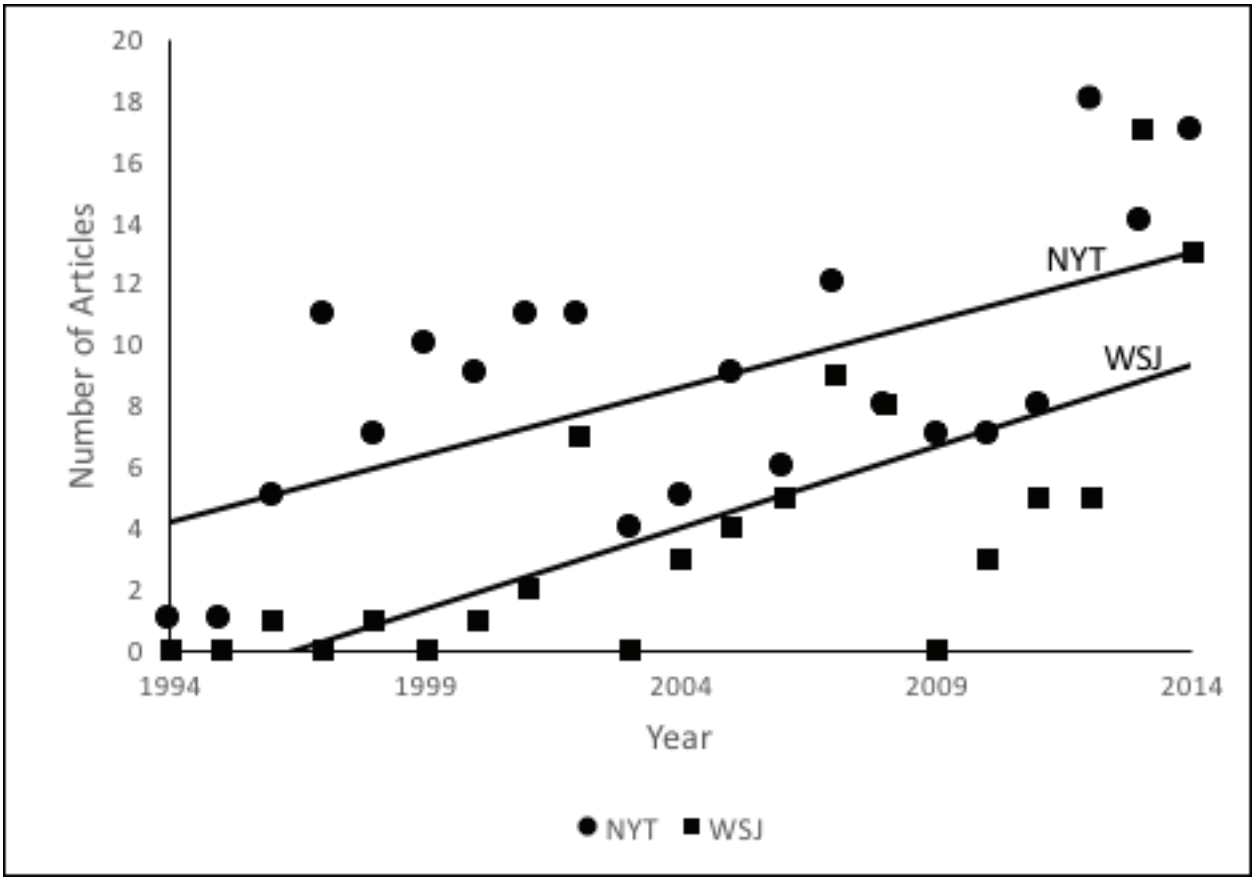

Figure 1.

Trends in Articles per Year about Antibiotic and Hormone Use in Poultry Production Published in the NYT and WSJ, 1994-2014.

In both NYT and WSJ, news articles made up a majority of the articles published, followed by feature articles, and editorials (Table 1). Chi square analyses revealed an overall significant association between and the percentage of news, feature, and editorials published in each newspaper, χ^2 (2) = 7.61, p = .02. The *Cramer's V* of .25 indicated the magnitude of this association was moderate (Rea & Parker, 1992).

Examination of the squared Pearson residuals (Sharpe, 2015) suggested differences between newspapers in the frequency of editorials was the primary factor contributing to the overall association between newspaper and article type, with NYT publishing 17 and WSJ publishing one. A second chi square test comparing the frequency of editorials in the two newspapers, following procedures described by Sharpe (2015) and using an adjusted alpha level of .025, confirmed a significant association between newspapers and the frequency of editorials about antibiotic and hormone use in poultry production, $\chi^2(1) = 7.57$, p = .01. The percentage of editorials was 8.8 times greater in the NYT as compared to the WSJ.

Table 1

Comparison of Types of Articles about Antibiotic and Hormone Use in Poultry Production in the NYT and WSJ, 1994-2014

Type of article	*New York Times*		*Wall Street Journal*	
	f	%	*f*	%
News	43	53.8	28	68.3
Feature	20	25.0	12	29.3
Editorial	17	21.2	1	2.4

$\chi^2(2) = 7.61$, $p = .02$, *Cramer's V* = .25.

The focus of a majority of articles in both the NYT and WSJ was antibiotics only; the second most common focus was both antibiotics and hormones for the NYT and hormones only for the WSJ (Table 2). The association between newspaper and article focus was significant, $\chi^2(2) = 8.60$, $p = .01$. The *Cramer's V* of .27 indicated a moderate association between newspaper and article type (Rea & Parker, 1992).

The squared Pearson residuals suggested differences in the percentages of articles focusing on hormones only and on both antibiotics and hormones were the primary factors contributing to the overall association between newspaper and article focus. This was confirmed by the results of the *Fisher's exact test* ($p = .01$). The NYT was approximately 8.3 times more likely to focus articles on both antibiotics and hormones, while the WSJ was 7.9 times more likely to focus on hormones only.

Table 2

Comparison of Focus of Articles about Antibiotic and Hormone Use in Poultry Production in the NYT and WSJ, 1994-2014

Focus of article	*New York Times*		*Wall Street Journal*	
	f	%	*f*	%
Antibiotics only	61	76.3	28	68.3
Hormones only	3	3.7	12	29.3
Both antibiotics and hormones	16	20.0	1	2.4

$\chi^2(2) = 8.60$, $p = .01$, *Cramer's V* = .27.

NYT used the human interest frame most often (30.0 %) and the economic consequences frame least often (5.0%). WSJ most often used the economic consequences frame (29.3%) while least often using multiple frames (4.8%) (Table 3). Twenty percent of NYT articles employed multiple frames compared to only 4.8% for the WSJ. Articles with frames that could not be categorized were labeled as "inconclusive" and constituted 5.0% and 4.8% of all articles in the NYT and WSJ, respectively. Chi square analysis revealed a significant association between newspaper and the article frames used. $\chi^2(5) = 20.01$, $p = .00$. The *Cramer's V* of .41 indicated a relatively strong association between newspaper and article framing (Rea & Parker, 1992).

The magnitude of the squared Pearson residuals suggested the difference in frequency of use of the economic consequences frame was the primary contributor to the overall association between newspaper and frame use. This was confirmed by the chi square test results, $\chi^2(1) = 13.91$, $p = .00$. WSJ used the economic consequences frame 5.9 times more frequently than did NYT.

Table 3

Comparison of Frames Used in Articles about Antibiotic and Hormone Use in Poultry Production the NYT and WSJ, 1994-2014

Type of article	*New York Times*		*Wall Street Journal*	
	f	%	*f*	%
Conflict	12	15.0	10	24.4
Economic consequences	4	5.0	12	29.3
Human interest	24	30.0	10	24.4
Responsibility	20	25.0	5	12.2
Inconclusive	4	5.0	2	4.8
Multiple	16	20.0	2	4.8

$\chi^2(5) = 20.01$, $p = .00$, *Cramer's V* = .44.

Five emergent themes were identified based on article analysis, and the majority of articles contained at least one, if not more, of these themes. Those emergent themes were: 1) *consumers' awareness of and concern for antibiotic/hormone use in poultry production;* 2) *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria;* 3) *regulation of antibiotic use in poultry production;* 4) *purpose of antibiotic/hormone use in poultry production; and* 5) *transparency of antibiotic use poultry production practices.* Table 4 contains a list of keywords denoted in each emergent theme area.

Table 4

Keywords from Emergent Themes in Articles about Antibiotic and Hormone Use in Poultry Production the NYT and WSJ, 1994-2014

Emergent theme	Keywords
Consumer concern	antibiotic-free, consumers, consumer demand, cuisine, hormone-free, increased demand
Antibiotic resistance	antibiotic-resistant, bacteria, fluoroquinolones, human diseases/ illnesses, immune, nontherapeutic use
Regulation	banning, Food and Drug Administration, government
Purpose of use	nontherapeutic, promote growth, treat or prevent disease
Transparency of use	estimates, monitor, reluctant, skeptical

Antibiotic resistance, at 38.8% of articles, was the most frequently identified emergent theme in NYT articles; consumer concern (51.2%) was the most frequently identified emergent theme in WSJ articles. Transparency of use was the least frequently identified emergent theme in both NYT (15.0%) and WSJ (12.2%) (Table 5). The results of chi square analysis indicated there was not a significant association between newspaper and the frequency of use of the five identified emergent themes, $\chi^2(4) = 3.72$, $p = .44$.

Table 5

Comparison of Emergent Themes in Articles about Antibiotic and Hormone Use in Poultry Production the NYT and WSJ, 1994-2014

Type of article	*New York Times*		*Wall Street Journal*	
	f	%	*f*	%
Consumer concern	31	38.8	21	51.2
Antibiotic resistance	35	43.8	10	24.4
Regulation	28	35.0	13	31.7
Purpose of use	26	32.5	12	29.3
Transparency of use	12	15.0	5	12.2

$\chi^2(4) = 3.72$, $p = .44$, *Cramer's V* = .14.

SUMMARY AND CONCLUSIONS

This study noted an increase in articles focused on poultry antibiotics or hormones and the articles were primarily news stories (NYT 53.8% and WSJ 68.3%). Further analysis noted a significant association between the percentage of news, features, and editorial articles. This moderate magnitude of association was due to the large variability in editorials published by outlet (NYT: 17 and WSJ: 1). *The New York Times* was 8.8 times more likely to print editorials focused on poultry antibiotics or hormones compared to *The Wall Street Journal*. Whereas, the WSJ was 7.9 times more likely to write a story focused on hormones only. Since editorials are opinion-based pieces it is important for the poultry industry and agricultural communicators to work with journalists writing these articles to ensure they are knowledgeable on these subject areas.

The most prevalent frame used in the articles assessed was the human interest frame for NYT (30%) and economic consequences for WSJ (29.3%). Framing is used by journalists to construct messages. Scheufele and Tewksbury (2007) discussed framing as the basis for the way media outlets cause readers to define *how* they think about topics, such as antibiotic and hormone use in poultry production. With this in mind, these outlets represented human interest and the economic consequences frames, meaning they influenced readers to think about antibiotic or hormone use in poultry production through an emotional or financial perspective (Valkenburg et al., 1997). The second most prevalent frames were responsibility in NYT (25%) and conflict and human interest in WSJ (24.4%, respectively). The responsibility framed articles attributed responsibility to a group, organization, or institution, thus leading readers to think that antibiotic and hormone use in poultry production—and the issues surrounding it—are the responsibility of one of the groups represented in the articles (Valkenburg et al., 1997). While articles identified in the conflict frame led readers to see the tension between groups, which in the case of this research were consumers, government, integrators, non-agricultural groups, and poultry producers (Valkenburg et al., 1997). Collectively, the characterization of these three frames in over half of the articles analyzed influence readers to understand that antibiotic and hormone use in poultry production is an issue that should be viewed emotionally, with responsibility for issues attributed to one or more groups, who may or may not be in conflict with each other (Scheufele & Tewksbury, 2007). These frames represent underlying schemas held by

the audiences that journalists use to present information so that it easily resonates with readers (Scheufele & Tewksbury, 2007). Considering newspapers need to generate readership, the inclusion and spread of these frames represent the media outlets' efforts to reach diversified audience members (Conboy & Steel, 2008). However, these frames will have an impact on readers so it is important to ensure that the information being presented is accurate.

Although the analysis did not identify a significant association between newspaper and frequency of emergent theme, the themes are important. The first emergent theme, *consumer awareness of and concern for antibiotic/hormone use in poultry production* (NYT 38.8%, WSJ 51.2%), coincides with previous research, which shows that consumers were concerned about the use of antibiotics and hormones in food production (Hwang et al., 2005). With the idea that newspapers focus on producing readers, not necessarily news, as their business model (Conboy & Steel, 2008), the fact *consumer concern* was a prevalent theme is understandable. As the research by Hwang and colleagues (2005) demonstrated, consumers are aware of and concerned with the use of antibiotics and hormones in poultry production and *The New York Times* and *The Wall Street Journal* tailored articles to this audience. Focusing on what is important to the reader enables media outlets to exert an agenda-setting function (McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007), which coincides with previous research that perpetuates a lack of consumer confidence in the U.S. poultry industry (Bharad et al., 2010). Furthermore, these media outlets chose to increasingly cover antibiotic and hormone use in poultry production in a way that evoked a consumer awareness theme was likely enough to decrease consumer confidence in the poultry industry based strictly on frequency of media coverage of this issue (Bharad et al., 2010).

The second emergent theme revealed was the *role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria*. As Gustafson and Bowen (1997) noted, the general public is mostly concerned with the question of whether or not antibiotic use in poultry production contributes to increased antibiotic-resistant bacteria that could affect humans. Again, the emphasis the media outlets placed on this theme, due to its importance to readers, points to their agenda-setting power (McCombs & Shaw, 1972). While the emphasis of this theme informed readers *what* to think about, the fact that these articles pointed toward nontherapeutic uses (i.e. growth-promotant) as the primary cause for increased antibiotic-resistant bacteria informed the readers *how* to think about this issue. This theme also highlighted the conflict between agricultural and non-agricultural measures of the quantity of antibiotics used in poultry production, which served to exacerbate the distrust in poultry production methods readers incurred from reading the articles (Bharad et al., 2010). The fact that articles with this theme referenced both agricultural and non-agricultural research about this issue likely leaves readers unsure of how to evaluate implications of the science and of what the best course of action is based on the results (Malone et al., 2000).

The third emergent theme that represented key messaging was *regulation of antibiotic use in poultry production*. Research conducted by Kuykendall (2010) noted the media's ability to affect not only the general public's conception of agriculture but the specific legislation surrounding the issue. The presence of this theme, which emphasized the need for regulation of antibiotic use in poultry production, sets an agenda for readers to consider the implementation of these stricter regulations (McCombs & Shaw, 1972). The effects of this agenda-setting function can be seen in the articles over the course of time analyzed, as this theme's context evolved from calling for stricter regulation to referencing legislation or government oversight banning the use of an antibiotic in poultry production in 2005.

The fourth emergent theme was *purpose of antibiotic/hormone use in poultry production*. This theme highlighted the media outlets' agenda-setting capacity to inform readers of the use of antibiotics and hormones in poultry production; by placing emphasis on this issue the articles increased consumer distrust in the purpose of antibiotic use in poultry production (Scheufele & Tewksbury, 2007). Hormones were represented in this theme less frequently than antibiotics, but conflicting information was presented in articles in this thematic area regarding hormones as some articles cited the illegality of their use (USDA, 2014) and others pointed to the higher quality of hormone-free poultry. The antibiotics portion of this theme was conflicting as well, either noting the purpose as therapeutic only, nontherapeutic only, or a combination of both. The portrayal, and thus framing, of the purpose of antibiotic use was dependent largely on the context of the article and what the journalist understood to be the most important aspects of the situation (Reisner, 2005).

The fifth emergent theme was *transparency of antibiotic use in poultry production practices*. These media outlets lacked consistent data representing actual antibiotic use in poultry production. The presence of this agenda fuels consumer distrust of agricultural practices (Scheufele & Tewksbury, 2007), but more importantly it has the potential to create reader distrust since non-agricultural groups pointed to higher estimates of the amount of antibiotics used in poultry production. As a part of this theme, poultry producers were held directly responsible for the lack of transparency, which could be attributed to the lack of complete and adequate coverage of this issue (Reisner & Walter, 1994). This lack of complete and adequate coverage is exacerbated by lack of research and lack of transparency from producers, which were both exemplified in articles with this emergent theme.

RECOMMENDATIONS

The general public gains most of its understanding of agriculture from news media (Malone et al., 2000), and agricultural communicators are uniquely equipped to inform the public about these issues. The data and conclusions outline a need for improved agricultural communications practices including a deeper understanding of consumer concerns and awareness, increased transparency in coverage of the antibiotic and hormone use practices of poultry producers, and stronger relationships with communicators outside of agriculture. Recommendations for public relations in the poultry industry include increased transparency surrounding the subjects of the purpose of antibiotic and hormone use in poultry production, especially since hormones have not been used for decades. Additionally, the poultry industry and agricultural communicators should play a more integral role in helping consumers to understand antibiotic use in poultry production and the increased levels of antibiotic-resistant bacteria and improved relations with media sources outside of agriculture. This should come via improved relations with media contacts who cover poultry production issues. Recommendations can be made for journalists outside of agriculture; namely, to improve their knowledge of the poultry industry and provide them with credible scientists who can serve as sources for accurate information when writing their stories. It is also important for NYT and WSJ journalists who write about antibiotic and hormone use in poultry production to develop stronger relationships with poultry industry contacts.

Based on the findings and conclusions, future research should focus on gaining deeper understanding of how journalists and gatekeepers set agendas and frame articles about antibiotic and hormone use in poultry production, determining best practices to increase agricultural entities' relations with media outside of agriculture, and examining the relationship between the agenda-setting function regarding antibiotic and hormone use in poultry production and consumer behavior. Additionally, research outside the field of agricultural communications should delve deeper into understanding the link between antibiotic use in poultry production and increased levels of antibiotic-resistant bacteria. First, qualitative research in the form of focus groups or interviews should be conducted to understand how journalists and gatekeepers decide on what agenda will be set about antibiotic and hormone use in poultry production and how those articles will be framed. Also, agricultural communicators and public relations personnel in the poultry industry should build relationships with media outside of agriculture, and future research should focus on the best ways for this to be accomplished. With a focus on the theory of agenda-setting, experimental research designs could assess effect antibiotic and hormone use in poultry production have on consumer behavior when purchasing poultry. Finally, this study pointed to the need for research to further clarify the contribution of antibiotic use in poultry production to increased levels of antibiotic-resistant bacteria, and this should be a focus of research for poultry scientists; more revealing data about this subject could help future efforts to improve transparency in the poultry industry.

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ABOUT THE AUTHORS

Dr. Leslie D. Edgar is a professor at the University of Arkansas in the Department of Agricultural Education, Communications and Technology. She also serves as the Assistant Dean of Student Programs for Bumpers College. Dr. Edgar has been an ACE member since 2006.

Dr. Donald M. Johnson is a professor in the Agricultural Education, Communications, and Technology at the University of Arkansas at the University of Arkansas Johnson teaches specialized and advanced courses in agricultural mechanization and served as a committee member on this research.

Mr. Stuart Estes is a MS graduate from the Department of Agricultural Education, Communications and Technology, and currently works as an Instructional Designer I in Talent Development for Walmart.

Water use in Florida: Examing perceptions of water use based on visual images

Joshua M. Epstein, Lisa K. Lundy, and Alexa J. Lamm

ABSTRACT

Residents and decision makers often perceive information regarding water use differently. This is an issue in Florida where water quantity is a concern, and the distribution of accurate knowledge will be necessary to assist in effective conservation efforts. This study used two online surveys to gain insight into Florida residents' and decision makers' (county commissioners, county clerks and county managers) perceptions of water use based on visual images. Using non-probability opt-in sampling methods a total of 525 Florida residents' responses were collected, and in a second survey 169 decision makers' responses were collected. Respondents were asked to associate a specific water user, based on a visual, with high, moderate, or low water usage. A series of chi-square tests were used to compare and test for differences between Florida residents' and decision makers' perceptions, revealing that significant differences in perception did exist. The identification of these differences was used to develop recommendations for enhancing education and communication regarding water use.

KEY WORDS

Framing, Social semiotics, Visuals, Water-use

INTRODUCTION

What Water is arguably the planet's most important natural resource in that it is necessary to sustain life, is responsible for many important biochemical and environmental processes, and supports many aspects of the economy. Florida, a state known to have an abundant supply of water, is beginning to deplete its supply of freshwater due to a long history of draining wetlands, population increase, and agricultural demand (Barnett, 2007; Leal, Rumble, & Lamm, 2015). Lack of knowledge and communication regarding water quantity and quality issues often influence perceptions of water use. In return, these misguided perceptions can have direct implications on individual and large-scale water use actions, often characterized by overuse of the resource. Understanding these perceptions and where differences in perception arise are critical in implementing effective water conservation efforts. Agriculture is often associated with large-scale water use based on societal perceptions and media portrayal of industrial agriculture (Gaines, 2014; Lamm, Lamm, & Carter, 2015; Whitaker & Dyer, 2000). In response, the agricultural industry perceives that the public views it collectively as a heavy water user that does not preserve the quality of water, although many farmers do follow best management practices (BMPs; Lamm et al., 2015).

Not only are members of the general public lacking in their understanding of water use in Florida, but decision makers (lawmakers and local leaders) often misunderstand the issue (Molden, 2007). Decision makers (defined in this study as county commissioners, county clerks and county managers) differ from residents in that they are responsible for passing

legislation regarding water use. As such, it is imperative that they are provided with the proper resources and knowledge to do so (Molden, 2007). Florida's water resources are regulated and managed by the state's five water management districts (Northwest Florida, Suwannee River, St. Johns River, South Florida, and Southwest Florida) under the Department of Environmental Protection (DEP), but ultimately state and local decision makers make water regulation decisions (Florida DEP, 2014). The communication among water management experts, decision makers, and managers of water consumptive practices is often inadequate (Leal et al., 2015). There is a need for shared understanding and cooperation in addressing future water conflicts (Barnett, 2017; Huang & Lamm, 2015b; Lamm et al., 2015; Turner, 2016). Residents and decision makers' perceptions of water use are influenced by a myriad of sources. One type of source is visual portrayals of water users. These visuals are embedded in media messages, surrounding residents and decision makers. But how do residents and decision makers perceive these visuals of water use?

THEORETICAL FRAMEWORK

This study took a social semiotic approach (Eco, 1979) looking at images as framing devices (Entman, 1991). Cheregi and Adi (2015) took a similar approach in their study of the visual framing of Romanian migrants. Social semiotics examines the use of images to create meaning (Eco, 1979; Saeed, 1997). Social semiotics posits that visual images cause individuals to make connections to their cultural histories and cognitive information (Jewitt & Oyama, 2011).

Images as symbols and sign systems have been extremely useful in gaining insight on individual perspectives of concepts or ideas inherent in the images. Visual semiotics has been applied in analyzing individual perceptions on images in the context of political campaigns (Mcilwain, 2007), marketing and consumer research (Mick et al., 2004), public health promotion (Brookes & Harvey 2015), and education (Kim, 2008). Recently, images have become useful in gaining information on what individuals perceive about agriculture. It has been suggested that a "farm-to-plate" knowledge gap is prevalent in the United States because citizens often do not have satisfactory knowledge of agriculture (Rumble & Buck, 2013; Smart, 2009). Through viewing two images on traditional and conventional livestock housing methods and answering a series of questions, study participants in Ohio often had inaccurate perceptions of livestock housing (Rumble & Buck, 2013). This knowledge gap not only existed in terms of agricultural livestock, but also in terms of how water was used. Perceptions of water use were explored in this study.

Semiotics examines the meaning and interpretation of an image by way of examining the relationship between the symbol and what it signifies. Researchers have sought to understand how individual meaning is created from simply viewing an image and why meaning differs among individuals. The theory of framing gives insight into this phenomenon. Generally, a frame is the way that an idea or concept is communicated or portrayed (Entman, 1991). According to Entman (1993) "to frame is to select some aspects of a perceived reality and make them 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" (p. 52). Framing is the presentation of a limited message meant to entice a particular perspective and interpretation (Entman, 1993). The way that a message is framed yields the activation of different mental frameworks that can have a strong influence on attitudes and decision making (Perloff, 2014).

The process of framing, however, does not solely refer to what is termed *media framing*, or audience responses to framed messages (Entman, 1991; Scheufele, 1999). Framing also can be viewed in the context of individual frames that are brought to message evaluation. From a semiotics standpoint, the specific meaning taken from an image is dependent on the pre-established frames that an individual brings in analyzing the image. This distinctive type of framing is referred to as *individual framing*, and Entman (1993) defined these frames as the collective group of mental ideas that guide an individual's information analysis. These mental ideas or *frames of reference* are drawn from past experiences, knowledge, and personal biases. Individual frames of reference can significantly influence how individuals perceive, organize, and interpret incoming information to make sense of news and draw inferences (Scheufele, 1999). Rather than emphasizing

the speaker's framing schema, the focus is on what an audience member believes to be the most salient component of the message (Chong & Druckman, 2007). In recent years, agricultural communication researchers have examined framing in the context of food labels (Abrams, 2015; Jeong & Lundy, 2015) and food safety (Irlbeck, Akers, Baker, Burris, & Brashears, 2014).

PURPOSE AND OBJECTIVES

The purpose of this study was to examine the influence of visual frames on Florida residents' and decision makers' perceived quantity of water associated with agricultural water users in order to provide recommendations on how to appropriately communicate about water use. The following objectives were used to guide the study:

1. Examine Florida residents' perceptions of water use based on visual images.
2. Examine Florida decision makers' perceptions of water use based on visual images.
3. Describe differences between Florida residents' and decision makers' perceptions of water use based on visual images.

METHODS

Two online surveys were used to gain insight into both Florida residents' and decision-maker perceptions of various water uses. For this study, only the section pertaining to perceptions of water use associated with specific images was utilized in the analysis. The targeted population was Florida residents age 18 or older and decision makers consisting of, but not limited to, local county commissioners, county clerks, and county managers. The focus of the study was water because water quantity and quality issues have been exacerbating with increases in wetland draining, saltwater intrusion, and reductions in groundwater wells (Odera, Lamm, Dukes, Irani, & Carter, 2013).

Sampling

The researchers employed two different sampling methods: one for Florida residents and another for decision makers. In sampling the Florida residents, a non-probability opt-in sample was obtained from a public opinion survey research company. Public opinion research often uses non-probability samples as an effective way to gain insight on population estimates (Baker et al., 2013). Non-probability samples require corrections for nonrandom selection and nonresponse, but multiple studies have shown that non-probability samples have the potential to generate results of equal or greater rigor than probability-based samples (Abate, 1998; Twyman, 2008; Vavreck & Rivers, 2008).

A link to the survey was sent via a public opinion survey research company to a sample of selected individuals in the Florida resident category found to be representative of the state population based on the 2010 Census data. A response rate of 89% (n = 525) was obtained. Weighting procedures were implemented to account for potential exclusion, selection, and non-participation biases, which are inherent setbacks to using a non-probability sample (Baker et al., 2013). For this data, weighting was conducted using post-stratification methods (Kalton & Flores-Cervantes, 2003) based on age, gender, race, ethnicity, and geographic location to ensure that sample demographics were distributed according to the actual composition of the adult Florida population using the 2010 Florida census data. The weighting process provided a sample profile intended to approximate the population of interest in statistical analysis.

In sampling decision makers in Florida, a list of email addresses for all county commissioners, county clerks, and county managers (N = 1,212) was assembled through a web search and direct contact with decision makers' offices. There were three counties in the state that did not have available email addresses; therefore, representatives from these counties were not be included in the survey and is a limitation. For those obtained email addresses, a link to the survey instrument was sent requesting their participation in the study. After the initial email and three reminders, 194 responses were received, resulting in a response rate of 16%. After removing respondents with a substantial amount of missing data (25

respondents), 169 responses were used in the analysis. The respondents were compared to the general decision maker population using chi-square tests based on age, geographic location, and political affiliation. There were no statistically significant differences; therefore, the respondents were deemed to be representative of the population of interest. Demographic characteristics of both Florida resident and decision maker respondents can be seen in Table 1.

Table 1

Demographics of Florida Residents and Decision Makers

Characteristic	Florida Residents (*N* = 525) %	Decision Makers[a] (N = 169) %
Sex		
Female	51.6	29.8
Male	48.4	70.2
Race		
African American	15.8	5.4
Asian	6.5	0
Caucasian/White (Non-Hispanic)	75.6	89.2
Hispanic Ethnicity	17.0	5.4
Native American	0	3.2
Other	2.1	2.2
Age		
18 - 29	21.5	.60
30 - 39	17.0	6.0
40 - 49	15.5	19.3
50 - 59	20.5	28.9
60 - 69	18.2	29.5
70 - 79	5.9	13.9
80 and older	1.3	1.8
Years Living in FL		
0 - 9	21.9	6.5
10 - 19	25.0	13.0
20 - 29	25.3	13.0
30 and above	27.8	67.5

Note. Percentages have been rounded and may not total to 100. aMissing data from decision makers was not included in the demographic analysis.

Instrumentation

The survey instrument was developed from the 2012 RBC Canadian Water Attitudes Study (Patterson, 2012), and reflected a Florida-specific audience, with the addition of new questions specific to agricultural water use and Florida water issues. The instrument was reviewed by a panel of experts on water quality and quantity issues, agricultural water issues, and public opinion research. Members of the panel included the associate director of the Office of Agricultural Water Policy at the Florida Department of Agricultural and Consumer Services, the director of Government and Community Affairs at the Florida Farm Bureau, the chief executive officer of the Florida Dairy Farmers, and an evaluation specialist with knowledge in survey design and construction. This research was part of a larger study; this paper focused on the sections of the survey instrument related to perceptions of water use and demographics.

Clarifying ingredients. Throughout the videos, a discussion was created about the food production system to clarify which ingredients were included in McDonald's food products. For example, in the Chicken McNugget video the narrator, Grant, asked, "Are those ingredients secret?" (2:48). Amy, a principle meat scientist at Tyson Foods, Inc., replied,

Figure 1.
Images of water users presented to residents and decision makers in the surveys.

To measure respondents' perceptions of water use, respondents were shown a series of 12 images pertaining to common water uses in Florida (Figure 1), some agricultural (i.e., irrigating cattle pasture) and some general (i.e., home landscape). While the images were carefully selected to be representative of each water use based on common understanding, the images themselves may have had some effect, as could the labels, and, therefore, should be recognized as a limitation. However, any study examining semiotics, or using diverse visual frames, accepts this as a recognized limitation (Lester, 2000). Respondents were asked to indicate how much water they believed was being used in each of the visuals by dragging each image to one of three boxes labeled "uses a lot of water," "uses a moderate level of water," and "uses a small amount of water." Respondents were also asked a series of demographic questions.

Data Analysis

Descriptive statistics were calculated in Rv 3.1.2 were used to determine frequencies of responses. A series of Chi square tests were used to compare and test for differences between Florida resident and decision makers' perceptions.

RESULTS

The purpose of this study was to examine Florida residents' and decision makers' perceptions of water use associated with practices depicted in visual images. Some important differences in perception were found.

Florida Residents' Perceptions of Water Use

Florida residents were presented with 12 images (Figure 2) pertaining to water use practices and asked to categorize them based on the amount of water use they associated with each image. A summary of the percentages of Florida

residents' water use perceptions can be seen in Figure 3. Florida residents perceived the visuals of golf courses (69.7%), vegetable farms (66.7%), public use (65.0%) to use a lot of water. These three visuals were the only ones where more than half of residents said they perceived them to use a lot of water. Hay fields were perceived by 35.4% of Florida residents to use a small amount of water. Horse farms (53.1%), cattle pastures (50.9%), dairy farms (49.1%), and flower gardens (44.8%) utilized a moderate amount of water.

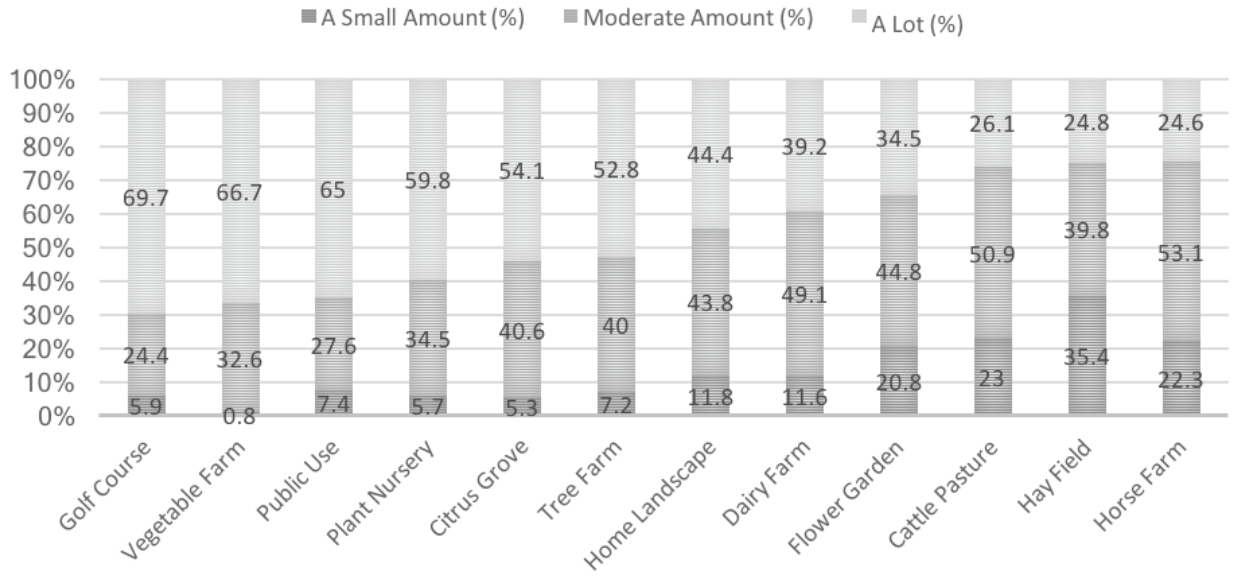

Figure 2.
Perceptions of water use for Florida residents (n = *525).*
Note. Percentages have been rounded and may not total to 100%.

Decision Makers' Perceptions of Water Use

Florida decision makers were presented with the same 12 images pertaining to water use and asked to delineate the amount of water use they associate with each image. A summary of the percentages of decision-maker water use perceptions can be seen in Figure 3. Similar to residents, decision makers associated the visuals of golf courses (75.7%), vegetable farms (64.5%), and public use (55%) with using a lot of water. In contrast, however, decision makers associated the visuals of cattle pastures (59.8%), horse farms (55.0%), and hay fields (52.1%) with using a small amount of water. Other uses, including flower gardens (46.2%) and citrus groves (45%) were associated with using a moderate amount of water.

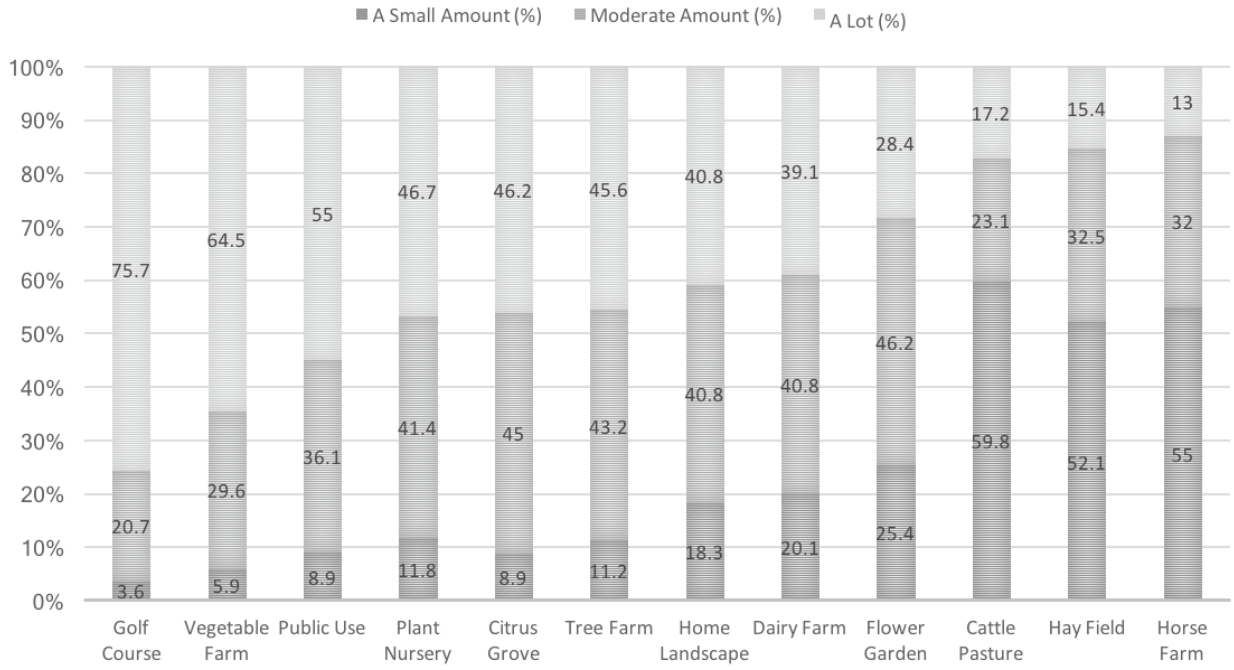

Figure 3.
*Perceptions of water use for decision makers (*N *= 169).*
Note. Percentages have been rounded and may not total to 100.

Comparison of Florida Residents' and Decision Makers' Perceptions

A series of Chi square tests were used to compare and test for differences between Florida resident and decision makers' perceptions. The largest differences in perceptions were in cattle pastures' and horse farms' use of water, with decision makers believing both use a smaller amount of water than the general public. For example, 26.2% of residents perceived cattle pastures to use a lot of water; a perception shared by only 17.2% of decision makers. Decision makers also perceived both hay fields and tree farms used less water than the general public. When it came to personal and/or recreational uses in the home landscape, flower gardens and golf courses, decision makers and the general public agreed in their perceptions of water use. Golf courses were believed to use the most water by both groups.

Table 2
Frequency of Perceived Water Use by Residents and Decision Makers

	Residents %			Decision Makers %			
	A lot	Moderate	Small	A lot	Moderate	Small	X^2
Cattle Pasture	26.2	51.7	22.2	17.2	23.1	59.8	85.51**
Horse Farm	24.9	53.6	21.5	13.0	32.0	55.0	68.66**
Hay field	26.9	38.7	3.4	15.4	32.5	52.1	18.74**
Tree farm	53.7	38.4	7.9	40.8	40.8	18.3	18.07**
Public Use	63.1	28.9	8.1	45.6	43.2	11.2	16.41**
Vegetable Farm	67.8	31.2	0.9	64.5	29.6	5.9	14.86**
Citrus Grove	54.5	40.4	5.1	46.7	41.4	11.8	9.94**
Dairy Farm	38.7	49.9	11.4	39.1	40.8	20.1	9.34**
Plant Nursery	58.4	35.1	6.5	46.2	45.0	8.9	7.80*
Home Landscape	46.7	41.0	12.3	55.0	36.1	8.9	3.82
Flower Garden	34.8	45.2	20.0	28.4	46.2	25.4	3.32
Golf Course	70.7	23.4	5.9	75.7	20.7	3.6	2.24

Note. $p^* < 0.05$; $p^{**} < 0.01$.

DISCUSSION

The results provide an interesting discussion regarding semiotics and framing based on differences in signification (Saeed, 1997). Prior to offering implications and recommendations, it is important to recognize the limitations of the study. The survey and subsequent statistical analyses indicated significant differences between what Florida residents and decision makers perceive about Florida water use. The low response rate of the decision maker group should be recognized; however, statistical tests were run to ensure the sample was representative of the population, in terms of age, geographic locations, and political preference. Another important consideration is the use of the terminology in assigning water quantity perceptions. The phrases, "uses a lot of water," "uses a moderate level of water," and "uses a small amount of water," might imply different connotations to different individuals. However, perceptions of the amount of water use are important in shaping public opinion and must be simplified as the public votes on their overall thoughts, rather than actual knowledge of application (e.g. gallons used by industry).

Recognizing the limitations, both Florida residents and decision makers saw the same images pertaining to water use in Florida, but different interpretations were made when assessing the amount of water consumption associated with the specific user depicted in the image. The standardization of the images shown in the study provided an unbiased depiction of how individuals perceive water use. If the images were different, or if images were not provided, it would be more difficult to draw direct conclusions from the data because individuals might have different thoughts about water use based on differences in their presentation in the survey. In addition, if different images were shown representing the water users, it is likely that the results would be different. Components in the new images may resonate differently with individuals providing different perceptions specific to that image. Even small changes, including, but not limited to color, size, and dimension, could alter perceptions. For this reason, the images shown were carefully designed to draw conclusions relevant to water use in Florida.

IMPLICATIONS AND RECOMMENDATIONS

Based on the findings of this study, Florida residents and decision makers vary in their perceptions of water use. This is important because both parties play an important role in support of water conservation efforts and legislation of water use. If residents perceive certain water uses to be more demanding on Florida's water supply, they may support legislation or restrictions on water use for that industry or group above others. If decision makers perceive certain water uses to be more demanding on Florida's water supply, they may propose legislation of or restrictions on water use that impact particular industries or water users above others.

All Floridians have an important role to play in conserving water and implementing best practices to encourage water conservation. All parties impacted by water issues in Florida must communicate information with one another, otherwise false information will earn validity, affect judgement, and create contradicting perceptions (Huang & Lamm, 2015a; Leal et al., 2015). These differing perceptions can complicate this communication. It is important for agricultural communicators to understand differences in perceptions and seek to share accurate information about water use to residents and decision makers. Communicators should work with journalists to share accurate and timely data on water use in local areas. Communicators should listen to the questions asked by decision makers in order to discern what information about water use is needed. Additionally, agricultural communicators should pay attention to conversations about water use via social media channels in order to understand resident perceptions of water use. They can then engage in these social media conversations to share accurate information about water use.

One group of agricultural communicators that plays an important role in communicating about water conservation is Extension professionals. Extension professionals can serve as liasons in this communication process to disseminate information and provide knowledge from a local and statewide perspective. Extension professionals are a great resource because they work in every county in Florida and are viewed as representing both federal and state agencies (Huang & Lamm, 2015b; Lubell, Niles, & Hoffman, 2014); therefore, they are accessible and have the capability to unite all stakeholders. For these reasons, they serve as an effective tool for breaking the communication barriers that normally exist between policymakers and laypersons (Leal et al., 2015). Extension professionals also remain informed on changing water policies, regulations, and issues; therefore, they have accurate and unbiased knowledge to counteract misconceptions surrounding water use and deliver relevant knowledge when necessary (Huang & Lamm, 2015b; Lubell et al., 2014). Additionally, they can serve as a direct contact for questions, advice, and information regarding water policies, help decision makers understand important water regulation topics, and provide them with the resources to make meaningful and pertinent decisions (Huang & Lamm, 2015b; Lamm et al., 2015; Leal et al., 2015).

Ultimately, facilitating consensus and cooperation among all competing stakeholders will be necessary in administering the most effective regulations to satisfy all parties and maximize water conservation (Lamm et al., 2015; Lubell, 2004). To address Florida's water issues, it's important to foster shared understanding among residents and decision makers. This study illuminates differences in perceptions of water use among residents and decision makers. Where water quantity is concerned, the distribution of accurate knowledge to both groups will be necessary to assist in effective conservation efforts.

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ABOUT THE AUTHORS

Joshua Epstein is a doctoral student in the School of Forest Resources and Conservation at the University of Florida.

Lisa Lundy is an Associate Professor, teaching Agricultural Communication. Her research focuses on the role of narrative and storytelling in agricultural communication.

Alexa Lamm is an assistant professor and Associate Director of the UF/IFAS PIE Center. She specializes in conducting research on agricultural and natural resource public policy implementation and the use of evaluation methodology as it applies to programmatic and organizational change theory.

Poultry Production Messaging: Frames and Emergent Themes in Three National Newspapers, 1994 to 2014

Stuart Estes, Leslie D. Edgar, and Donald M. Johnson

ABSTRACT

Content analysis was used to assess selected articles (n = 139) from USA Today, the New York Times, and the Wall Street Journal to identify frames and emergent themes about antibiotic and hormone use in poultry production over a 20-year period. Overall, human interest (27.5%), responsibility (21.6%), and conflict (18.7%) were the most frequently used frames. Five emergent themes were evident in the analysis of these articles: Consumers Awareness of and Concern for Antibiotic/ Hormone use in Poultry Production *(41.0%, n = 57);* Role of Antibiotic Use in Poultry Production in Increased Levels of antibiotic-Resistant Bacteria *(40.3%, n = 56); Regulation of Antibiotic Use in Poultry Production (36.0%, n = 50);* Purpose of Antibiotic/ Hormone use in Poultry Production *(32.4%, n = 45); and* Transparency of Antibiotic Use Poultry Production Practices *(13.7%, n = 19). Recommendations include a stronger focus on understanding and addressing consumer concerns about antibiotic and hormone use in poultry production, increased transparency, and improved relations with media contacts who cover antibiotic and hormone use in poultry production.*

KEY WORDS

Agricultural Communications, Content Analysis, National Newspapers, Poultry Production Messaging, Qualitative Research

INTRODUCTION

Poultry is an important part of the agricultural landscape. In fact, the U.S. poultry industry is the world's largest meat producer and the second largest meat exporter in the world (Poultry Federation, 2014). Americans consume poultry at a considerably higher rate than beef or pork, with a per person consumption average of 80 pounds of chicken and 17 pounds of turkey each year. In 2013, the value of poultry production and sales was $44.1 billion, an increase of 15% from the previous year (USDA, 2014). In the last half century, poultry production in the U.S. has evolved from disparate, locally-oriented businesses to a highly efficient industry (National Chicken Council, 2012).

Understanding the production methods that provide the public with food is of growing importance and concern for the modern consumer. One area of consumer concern is the use of antibiotics and hormones in food animal production, including poultry (Brewer & Rojas, 2007 Hwang, Roe, & Teisl, 2005). Although the use of hormones in poultry production is not allowed in the U.S., many consumers are unaware of this prohibition (National Chicken Council, 2012).

Newspapers play an important role in informing the public about agriculture (Reisner, 2005). Information disseminated by newspapers inherently reflects the views of the journalists and editors who write and determine content for the outlet (Reisner, 2005). The way journalists and editors interpret and view a story is the way it is presented to the public in the newspaper (Reisner, 2005). This framing of newspaper articles tells readers *what* are the salient issues and *how* to think about those issues (Scheufele & Tewksbury, 2007).

THEORETICAL FRAMEWORK

In research McCombs and Shaw (1972) conducted about the role of mass media in political campaigns, an important distinction was made concerning how media affects how the public learns; namely, the public learns more about the issues on which the media places the most emphasis. This ability of the media to set the pace and emphasis for what the public knows about an issue is known as the agenda-setting function of media (McCombs & Shaw, 1972). This research suggests that individual news media outlets paint an imperfect picture of the actual climate surrounding an issue, but the composite of many media outlets often has an agenda-setting function on media consumers. The effect of agenda setting is prominent especially in regard to influencing which issues the public views as salient (i.e. accessible) (Scheufele & Tewksbury, 2007). Agenda setting is not so much focused on what the issue is about, but more so on the amount of time and attention given to the issue, which carries a more potent effect with the audience (Scheufele & Tewksbury, 2007). Agenda setting could well be the basis of the business model for newspapers. An important concept to note is the primary concepts behind newspapers, namely, to produce readers, not news (Conboy & Steel, 2008). By focusing efforts on tailoring news to meet an audience, newspapers can more effectively generate revenue and/or exert influence over readers (Conboy & Steel, 2008). Through engaging in agenda setting, newspapers cater to what they think their audience will want to hear, thus generating readers.

Previous research has used agenda setting to describe the effect of media on consumer understanding and confidence, and has noted a negative impact on consumer confidence in the preparedness of the food system to deal with food safety events (Bharad, Harrison, Kinsey, Degeneffe, & Ferreira. 2010). Furthermore, an increase in mass media coverage of food safety issues is enough to lead to a decline in consumer confidence and an increase in the belief that the national food supply system is not prepared to deal with any problems that would arise (Bharad et al., 2010). Research results point to the mass media's role as an influential and important component of changing consumer attitudes (Bharad et al., 2010).

Framing is a way of understanding how an issue is characterized in media and affects how the public views the issue (Abrams, 2015; Scheufele & Tewksbury, 2007). It is based on the assumption that characterization of an issue in a news report can have an influence on how an audience understands it. Framing is used by journalists to "present information in a way that resonates with existing underlying schemas among their audiences," which does not necessarily mean that journalists intentionally spin news stories in a certain way or try to deceive their audiences (Scheufele & Tewksbury, 2007, p. 12). Essentially, framing is a valuable tool for presenting complex issues to audience members so they can understand them based on the schema and constructs they already possess (Scheufele & Tewksbury, 2007).

Valkenburg, Semetko, and Vreese (1999) identified four common article frames. The *conflict* frame highlights the tension between individuals, groups, or institutions. The *human interest* frame brings an individual's perspective or emotional angle to the presentation of an event, issue, or problem. The *responsibility* frame presents an issue in such a way as to attribute responsibility, positively or negatively, to a group, organization, or institution. Lastly, the *economic consequences* frame focuses on how an individual, group, organization, country, or region will be affected economically by an issue or event.

The issue of antibiotic and hormone use is especially salient in the poultry industry, where, like other agricultural sectors, consumer opinions of antibiotics and hormones affect consumer purchasing behavior (Brewer & Rojas, 2007; Hwang et

al., 2005; USDA, 2014). Often, what consumers do know about agricultural processes they primarily glean from media (Malone et al., 2000; Reisner, 2005), and newspapers are a form of media readily available to communities from which they learn about agricultural practices in their area and across the country (Reisner, 2005; Reisner & Walter, 1994). Newspapers, as well as other media outlets, often provide information about issues through the lenses of agenda-setting and framing (McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007). The way journalists portray agricultural issues may be based more on their understanding of how to make the story into an article than on their understanding of an agricultural practice (Reisner, 2005). Consumers are now more removed from the farm because of urbanization and technology (Leising, Pense, & Igo, 2000), thus they are more willing to accept a journalist's account of an agricultural issue as expert opinion because of their lack of understanding.

Newspaper articles are subject to agenda setting theory and framing theory, which are a media outlet's ability to tell readers *what* are the salient issues and *how* to think about those issues, respectively (McCombs & Shaw, 1972; Scheufele & Tewksbury, 2007). Because the public (consumers) gains most of its knowledge of the use of antibiotics and hormones in the poultry industry from media (Kuykendall, 2010; Panach, 2007), there is a need to examine the messaging to identify and determine the extent of agenda setting and framing present, both of which have the potential to change consumer behavior by influencing what consumers think about and how they think about it.

In addition to informing their own readers, national circulation newspapers often set the agenda for national television and regional and local newspaper coverage of agricultural issues (Denham, 2014). The importance of newspapers in communicating agricultural material and in setting the media agenda makes national newspapers an appropriate context in which to study messaging about antibiotics and hormones (Reisner, 2005). A better understanding will lead to recommendations for agricultural communicators who struggle with a public that does not adequately understand poultry production processes that provide consumers with an inexpensive source of protein (Poultry Federation, 2014).

PURPOSE AND OBJECTIVES

The purpose of this study was to assess the content of three national newspapers about antibiotic and hormone use in poultry production for key messaging so that recommendations could be made to improve media coverage of antibiotic and hormone use in poultry production. There were two objectives that guided the study:

1. Describe article types (news, feature, or editorial), focus (antibiotics, hormones, or both), and frames used in three national newspapers' coverage of antibiotic and hormone use in poultry production; and
2. Identify emergent themes in three national newspapers' coverage of antibiotic and hormone use in poultry production.

METHODOLOGY

This study utilized content analysis to objectively, systematically, and quantitatively describe the overall content of communication. Weber (1990) defined content analysis as a research method that utilizes a set of procedures to make valid inferences from text, and the inferences drawn from content analysis can be about the sender(s) of the message, the message itself, or the audience. The data analyzed were the text of three national newspapers' stories in print pertaining to antibiotic and hormone use in poultry production.

The population of articles for this study included news articles, feature stories, and editorial/opinion pieces from three selected national newspapers; the New York Times, USA Today, and the Wall Street Journal. These newspapers were selected based on their reach and readership, specifically selecting the largest newspapers nationally. Only full-length articles were analyzed, and articles written earlier than 1994 were not included in this study. Only print articles were used since initial investigation discovered that online stories matched those of their print counterpart. This 20-year time span was selected because it was thought adequate to identify trends in media coverage, changes in poultry production

antibiotic/hormone use methods, and increases in consumer concern about food production processes (Brewer & Rojas, 2007; Gustafson & Bowen, 1997).

The population for these three newspapers was determined by searching Lexis Nexis Academic (New York Times and USA Today) and ProQuest (Wall Street Journal) using the search phrase "antibiotic! OR hormone! w/5 chicken OR poultry" for Lexis Nexis and the search phrase "(antibiotic OR hormone) NEAR/5 (chicken OR poultry)" for ProQuest. Using these search terms narrowed findings to articles with the words "antibiotics" or "hormones" within five words of the words "chicken" or "poultry". The initial population searches were completed on 9 January 2015, and returned 316 articles. A sample size of 174 articles was calculated as being sufficient to achieve a 95% confidence level and a 5% confidence interval (Creative Research Systems, 2012).

The sample size for each newspaper was determined based on each newspaper's proportion of total articles in the population. Thus, 57% (n = 99) of the articles were from The New York Times; 16% (n = 28) were from USA Today, and 27% (n = 47) were from the Wall Street Journal. Articles were further stratified by year based on the percentage each year contributed to the population of articles. To ensure that a random selection was made, the article titles and year of publication for the entire population of articles were input into a Microsoft Excel spreadsheet, and the randomization function was used to assign each article a random number. The articles were then filtered in ascending order by year and randomization number using the filter function in Excel, and the specified frequency for each year was chosen from the filtered list. To acquire and store articles, the researcher downloaded and saved electronic versions (Microsoft Word) of the selected articles from Lexis Nexis and ProQuest.

During data collection, it became apparent that some articles fit the search criteria but, when analyzed more closely, did not fit the context or scope of the research. It was not possible to narrow the search terms any further and attain a more precise population, so each article was examined by the researchers to determine if the article met the required study criteria; (1) the article was a true journalistic article (i.e., not a news briefs); (2) the article specifically fit within the context of poultry production and/or (3) the article related to poultry production in a broad sense. Thirty-five articles did not meet one or more of these criteria and were deleted from the sample, leaving 139 articles for further analysis.

To guide the content analysis used in this research, as well as to maintain consistency in evaluation, a code sheet was developed by the researchers. The first question of the code sheet assesses the type of article being analyzed, namely, whether the article was a news, feature, or editorial piece. The type of article was determined based on characteristics of the writing. News stories were characterized as such when they followed the inverted pyramid format and were focused on timely, newsworthy topics. Feature stories were named as such when written using block format and were focused on human interest or entertaining aspects of a situation. Editorial pieces were characterized as such when they were letters to the editor or opinion pieces.

The second question was created to assess the frame of the article, namely, conflict, economic consequences, human interest, responsibility, or inconclusive/multiple (Valkenburg et al., 1999). Article frame was determined by matching the article to the best definition of the four frames noted by Valkenburg and colleagues (1997). If an article exhibited more than one frame it was labeled multiple, and if a frame was not exhibited the article was labeled inconclusive. The third question assessed whether the article focused on antibiotics, hormones, or both.

Prior to data analysis inter- and intra-coder reliability was addressed. To ensure inter-coder reliability the lead researcher and the researcher's committee chair selected five articles from the population and analyzed each of the articles separately. After both coders had completed coding one article, percent agreement was calculated using hand calculations, and the coders compared analyses and reconciled differences through negotiating (Weber, 1990). This was repeated for each article until all five had been analyzed. Typically, an agreement level of 80% is acceptable for inter-coder reliability (McMillan & Schumacher, 2010), and in this instance the two coders' agreement level was between 83.3% and 98.1% when coding the five articles together. Because the lead researcher and committee chair calculated agreement levels greater than 80% on the five articles, the lead researcher completed the coding singlehandedly. Intra-coder reliability was accounted for by the creation and use of a code sheet during analysis, which ensured coding was conducted similarly for

each article. To ensure validity for the qualitative portion of this content analysis, the researcher engaged in prolonged and persistent field work, reported findings with low-inference descriptors, and sought agreement on emergent themes present with the committee chair prior to reporting findings. The use of code sheets to analyze the articles also serves as an audit trail of the research.

The content analysis methodology used in this research incorporated both quantitative and qualitative components. Quantitative data was gathered and analyzed for article type, article focus, and article frame; these constructs were analyzed for frequencies using Microsoft Excel.

The qualitative portion of this research dealt with categorizing emergent themes gathered regarding key messaging about antibiotic/hormone use in poultry production. Using keywords in context (KWIC) analysis, the researcher analyzed each article to determine messaging about antibiotic/hormone use in poultry production, which were reported as short phrases on the code sheet. Additionally, the researcher used the comments feature in Microsoft Word to highlight keywords and phrases that supported the messaging derived from the article. The phrases entered into the code sheet for each article were input into an Excel spreadsheet. Utilizing the spreadsheet and following the constant comparative method (Lincoln & Guba, 1985), similar phrases used to describe messaging about antibiotic/hormone use in poultry production were grouped together as emergent themes. The occurrences of each of these themes were then reported as frequencies.

RESULTS AND FINDINGS

Over one-half of the articles analyzed were news articles (56.8%), followed by feature articles (27.3%); only 15.8% of the total articles were editorial pieces (Table 1). USA Today and the New York Times had higher percentages of editorial pieces about antibiotic/hormone use in poultry production (22.2% and 21.3%, respectively) than the Wall Street Journal (2.4%). The Wall Street Journal ran a higher percentage (68.3%) of news articles about antibiotic/hormone use in poultry production than either of the other two outlets (53.8% New York Times; 44.4% USA Today).

Overall, a majority (77.7%) of articles focused on antibiotics. A small percentage of the total sample of articles dealt directly with hormones as their focus (8.6%), and 13.7% focused on both antibiotics and hormones in poultry production. The Wall Street Journal and USA Today both had higher percentages of articles about only hormones (17.1% and 11.1%, respectively) than articles that were about both antibiotics and hormones (7.3% and 0%, respectively). The most prevalent frame for the full sample was the human interest frame (27.3%), followed by the responsibility (21.6%) and conflict frames (18.7%). The Wall Street Journal used the economic consequences frame in the largest percentage (29.3%) of its stories; conversely, both USA Today and the New York Times used this frame in the smallest percentage of their stories with identifiable frames (at 0.0% and 5.0%, respectively).

Table 1
Article Types, Focus of Articles, and Frame of Articles

	Sample (*N* = 139)		New York Times (*n* = 80)		USA Today (*n* = 18)		Wall Street Journal (*n* = 41)	
	f	%	*f*	%	*f*	%	*f*	%
Article Type								
News	79	56.8	43	53.8	8	44.4	28	68.3
Feature	38	27.3	20	25.0	6	33.3	12	29.3
Editorial	22	15.8	17	21.2	4	22.2	1	2.4
Focus of Article								
Antibiotics	108	77.7	61	76.3	16	88.9	31	75.6
Hormones	12	8.6	3	3.7	2	11.1	7	17.1
Both	19	13.7	16	20.0	0	0.0	3	7.3
Frame of Article								
Conflict	26	18.7	12	15.0	4	22.2	10	24.4
Economic consequences	16	11.5	4	5.0	0	0.0	12	29.3
Human interest	38	27.3	24	30.0	4	22.2	10	24.4
Responsibility	30	21.6	20	25.0	5	27.8	5	12.2
Inconclusive	6	4.3	4	5.0	0	0.0	2	4.8
Multiple	23	16.5	16	20.0	5	27.8	2	4.8

Each article was analyzed for emergent themes to determine types of messages being delivered about antibiotic or hormone use in poultry production. Five emergent themes were identified and the majority of articles contained at least one, if not more, of these themes. The emergent themes were: 1) *consumer awareness of and concern for antibiotic/hormone use in poultry production;* 2) *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria;* 3) *regulation of antibiotic use in poultry production;* 4) *purpose of antibiotic/hormone use in poultry production;* and 5) *transparency of antibiotic use poultry production practices.* For the USA Today and the New York Times, antibiotic resistance (61.1% and 43.8%, respectively) was the most frequently identified emergent theme; consumer concern was the most frequent (51.2%) emerging theme. The transparency of practices emerging theme appeared in the smallest percentage of articles, both overall and within each newspaper. Table 2 includes emergent theme frequencies and percentages for the full sample and individual outlets.

Table 2
Emergent Themes about Antibiotic and Hormone Use in Poultry Production

	Full Sample (*N* = 139)		New York Times (*n* = 80)		USA Today (*n* = 18)		Wall Street Journal (*n* = 41)	
	f	%	*f*	%	*f*	%	*f*	%
Theme								
Consumer concern	57	41.0	31	38.8	5	27.8	21	51.2
Antibiotic resistance contribution	56	40.3	35	43.8	11	61.1	10	24.4
Regulation	50	36.0	28	35.0	9	50.0	13	31.7
Purpose of antibiotic/hormone use	45	32.4	26	32.5	7	38.9	12	29.3
Transparency of practices	19	13.7	12	15.0	2	11.1	5	12.2

Theme 1: Consumer awareness of and concern for antibiotic/hormone use in poultry production.

The most prevalent emergent theme found in the sample of articles was *consumer awareness of and concern for antibiotic/hormone use in poultry production* (41.0%, *n* = 57). This theme was found in 38.8% (*n* = 31) of articles in the New York Times, 27.8% (*n* = 5) of articles in USA Today, and 51.2% (*n* = 21) of articles in the Wall Street Journal. Keywords that denoted this theme included "antibiotic-free, consumers, consumer demand, cuisine, hormone-free, and increased demand." Articles that displayed this theme typically implied that consumers are or should be aware of the use of antibiotics or hormones in the poultry they purchase. An article from USA Today embodied this aspect of the theme: "Everyone said the antibiotic-free chicken was doomed to fail, Shaich says. They said it was too expensive and too difficult for consumers to understand the value of paying more. Wrong." (Horovitz, 2009, p. 1B). Additionally, these articles implied that consumers should desire poultry raised without antibiotics or hormones more than poultry raised with antibiotics or hormones. Oftentimes, articles with this emergent theme pointed to the superior quality of poultry raised without antibiotics or hormones as the primary reason why consumers are or should desire antibiotic- or hormone-free poultry. The superior quality was based on the health benefits of poultry raised without antibiotics or hormones or on the culinary benefits of using antibiotic- and hormone-free chicken. Both of these topics are exemplified in this quote from a New York Times article:

> The fans of free-range champion the bird's wholesome diet, which generally includes no hormones or antibiotics. They also praise its old-fashioned chicken flavor and its character, which is another way of saying toughness. Such people are willing to pay up to three times more per pound for taste, nostalgia and the possibility of a more healthful meal. (O'Neill, 1996, p. 83)

Another context involved in this theme is the portrayal of antibiotic- and hormone-free poultry as more natural than poultry raised with antibiotics and hormones. This aspect of the theme was listed as another reason why consumers are or should be aware of antibiotic and hormone use in poultry production. An example of this aspect can be found in this section from an article in the New York Times:

> Chipotle believed it had the right message already in its emphasis on more natural food. The company had shifted to more naturally grown produce and to beef, pork and chicken produced without antibiotics. It then set a goal of trying to make its customers more aware of sustainable ways to farm. (Olson, 2012, p. 2)

Theme 2: The role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria.

The consumer awareness theme was followed closely in prevalence by *the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria* (40.3%, *n* = 56). This theme was found in 43.8% (*n* = 35) of articles in the New York Times, 61.1% (*n* = 11) of articles in USA Today, and 24.4% (*n* = 10) of articles in the Wall Street Journal. Keywords that denoted this theme included "antibiotic-resistant, bacteria, fluoroquinolones, human diseases/illnesses, immune, and nontherapeutic use." When this theme was present in articles the writing evoked the idea that the use of antibiotics in poultry production contributed to increased levels of antibiotic-resistant bacteria in the U.S. The theme can be seen in this article from USA Today:

> The government wants meat and poultry producers to stop giving antibiotics to their animals to make them grow faster. The reason: Dangerous bacteria that can kill people have been growing resistant to the drugs, which can leave humans at risk of getting infections that can't be controlled. (Weise, 2012, p. 3A)

When an article exhibited this theme the writing attributed responsibility for the increase in antibiotic resistance primarily to the use of antibiotics in poultry production instead of the overuse of antibiotics in human medicine. This aspect of the theme can be seen in an article from the New York Times: "The Union of Concerned Scientists has estimated that as much as 70 percent of antibiotics used in the United States is given to healthy chickens, pigs and cattle to encourage their growth or to prevent illnesses" (Harris, 2009, p. 18).

While this theme was prevalent, some articles acknowledged that measures for the amount of antibiotics used in poultry

production were in conflict between agriculture and non-agriculture groups. An article from USA Today that referenced the Union of Concerned Scientists estimate of 70% also noted: "The report's estimate is far higher than the 17.8 million pounds of antibiotics used in livestock that was reported a year ago by the Animal Health Institute, which represents veterinary drug companies" (Manning, 2001, p. 8D). Despite the theme pointing to the role of antibiotic use in poultry production as a cause for antibiotic-resistant bacteria, some articles highlighted the dearth of scientific information about the subject. One article from USA Today stated:

> The FDA in 1978 proposed removing penicillin and tetracycline from the list of antibiotics approved for nontherapeutic use, but the effort was thwarted by Congress, which cited a review by the National Academy of Sciences that found the potential hazards to human health were "neither proven nor disproven". (Manning, 1999, p. 6D)

Theme 3: Regulation of antibiotic use in poultry production.

The third emergent theme identified in this study was *regulation of antibiotic use in poultry production* (36.0%, *n* = 50). This theme was found in 35.0% (*n* = 28) of articles in the New York Times, 50.0% (*n* = 9) of articles in USA Today, and 31.7% (*n* = 13) of articles in the Wall Street Journal. Keywords that denoted this theme included "banning, Food and Drug Administration, and government." When this theme was found in an article, it typically highlighted current regulation practices or pointed toward the need for regulation of antibiotic use in poultry production. The presence of this theme often coincided with *the presence of the role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria*. Essentially, articles with this theme called for the regulation of antibiotic use in poultry production because the negative effects these practices have on human health and wellbeing. This section of an article from the New York Times depicted this aspect of the theme: "The government proposes to ban two antibiotics given to poultry, citing evidence that their use is causing people to become ill from drug-resistant bacteria" (AP, 2000, p. 32). Often, articles that exhibited this theme pointed toward the need for more regulation of antibiotic use in poultry production. Some articles cited scientific sources that called for more regulation, as seen in this editorial piece in the New York Times: "Last month, the New England Journal of Medicine reported that drug-resistant bacteria were present in meat purchased at supermarkets in the Washington, D.C., area. An accompanying editorial recommended the use of nontherapeutic antibiotics in farm animals be prohibited" (Silbergeld & Walker, 2001, p. 23). Sometimes the articles cited non-agriculture groups that called for stricter regulation of antibiotics in poultry production. This section of an editorial from USA Today was written by the executive director of the Animal Legal Defense Fund:

> This potential nightmare scenario is precisely why the Animal Legal Defense Fund recently submitted a first-of-its-kind legal petition asking the U.S. Department of Agriculture to protect animals and consumers by mandating proper labels on meat and poultry products derived from animals given antibiotics. (Blank & Wells, 2013, p. 9A)

Articles that exhibited this theme sometimes referenced legislation or government oversight that dealt with antibiotic use in poultry production. This excerpt from a Wall Street Journal article highlights a ban of an antibiotic in 2005:
Fearing that the animal drug Baytril – used to fight infections in chickens – could pose health risks to humans, the Food and Drug Administration decided to ban its use in poultry. The decision yesterday to restrict the Bayer AG antibiotic, which takes effect Sept. 12, marks the first time that the agency has ended the use of an animal drug because of worries that it could lead to antibiotic-resistant pathogens in humans. (Matthews & Goldfarb, 2005, p. B.1)

Articles that mentioned legislation or government oversight often criticized governmental agencies for not acting quickly or purposefully enough, as noted in this excerpt from a USA Today article: "At a hearing this week, a congressional committee will consider legislation that would help phase out the excessive use of antibiotics in animals. Government would do well to move ahead before new superbugs emerge" (USA Today, 2010, p. 8A). Articles that exhibited a call for increased regulation also placed little faith in producers to change antibiotic use tactics without the institution of some regulation other than self-regulation. The article from USA Today goes on to say:

> The history of such calls for self-regulation shouldn't make anyone optimistic that food producers will act on their own. Giving animals antibiotics in their feed makes them grow bigger more quickly, which cuts producers' costs. As long as producers can claim that the evidence of harm to humans is murky, they're not likely to voluntarily raise their cost of doing business. (USA Today, 2010, p. 8A)

Theme 4: Purpose of antibiotic/hormone use in poultry production.

The fourth theme that emerged from the sample of articles about antibiotic and hormone use in poultry production was *purpose of antibiotic/hormone use in poultry production* (32.4%, *n* = 45). This theme was found in 32.5% (*n* = 26) of articles in the New York Times, 38.9% (*n* = 7) of articles in USA Today, and 29.3% (*n* = 12) of articles in the Wall Street Journal. Keywords that denoted this theme included "nontherapeutic, promote growth, and treat or prevent disease." Articles that exhibited this theme provided readers with a definition of the purpose of antibiotic or hormone use in poultry production. Few articles dealt with the purpose of the use of hormones in poultry production. But there was conflict between the articles that were written about hormone use; one side can be seen in this article from the Wall Street Journal:

> The fact is, no poultry sold in the U.S. has any hormones added to it. The use of added or artificial hormones isn't allowed in the production of chickens, turkeys, eggs or other poultry in this country. The notion that poultry producers give the animals hormones is a myth. If consumers are looking for "hormone-free" chicken, they could look at any brand in any store. (Lobb, 2006, p. A.15)

The conflicting viewpoint can be seen in another article from the Wall Street Journal:

> And oh, that bird! Big as a fox terrier, dumb as a post (turkeys don't know enough to come in out of the rain and can, in effect, kill themselves from exposure if not forced to take shelter). They put battery chickens to shame, in size, in hormone consumption. (Sokolov, 2007, p. W.1)

The majority of articles with this theme were focused on the purpose of antibiotic use in poultry production. The role of antibiotics in poultry production fell under one of three classifications: 1) to prevent or treat disease, 2) to promote growth, or 3) both. Some articles with this theme characterized the purpose of antibiotic use in poultry production as solely for the prevention or treatment of disease, as seen in this Wall Street Journal article excerpt:

> Ron Phillips, a spokesman for the Animal Health Institute in the U.S., said antibiotics use in the American poultry and livestock industry, when administered properly, are key in keeping the animals disease free and an important part of meat production. (Murphy, 2012, p. B.7)

This article from the Wall Street Journal characterized the purpose as for both reasons: "Livestock owners feed millions of pounds of antibiotics such as penicillin each year to cattle, hogs, chickens and turkeys to prevent disease and promote rapid growth" (Tomson, 2011, p. D.1). Other articles with this theme represented the purpose of antibiotic use in poultry production as solely for growth promotion, such as this section of a New York Times article: "About 80 percent of all antibiotics used in agriculture, roughly one-third of all the antibiotics used in the United States, are fed to livestock and poultry to promote growth, not to treat illness" (Goldburg, 1999, p. 26).

Theme 5: Transparency of antibiotic use in poultry production practices.

The fifth emergent theme embodied in the selected articles was *transparency of antibiotic use in poultry production practices* (13.7%, *n* = 19). This theme was found in 15.0% (*n* = 12) of articles in the New York Times, 11.1% (*n* = 2) of articles in USA Today, and 12.2% (*n* = 5) of articles in the Wall Street Journal. Keywords that denoted the presence of this theme included "estimates, monitor, reluctant, and skeptical." Those articles that exhibited this theme primarily indicated there is a lack of transparency about antibiotic use in poultry production. This was evident in articles that referenced different measures of the amount of antibiotics used in poultry production offered by agriculture and non-agriculture groups. In this excerpt from a New York Times article, data was referenced from the Union of Concerned Scientists as reporting differing amounts than agricultural groups: "A public interest group warned that antibiotics are being used on farm animals much more heavily than the drug and livestock industries have reported" (Grady, 2001, p. 2). One article from the New York Times made reference to the lack of any government monitoring system that would provide accurate measurements of antibiotic use: "The government does not monitor antibiotic use and the companies are often reluctant to publish details or label their products" (Barboza & Day, 2003, p. 1). The latter half of the previous quote also exemplifies another aspect of this theme; namely, poultry producers were often held responsible for the lack of transparency surrounding this issue.

CONCLUSIONS AND DISCUSSION

The most prevalent frame used in the articles assessed in this research was the human interest frame (27.3%), followed by the responsibility (21.6%) and conflict frames (18.7%). Framing is used by journalists to construct messages and is the basis for the way these media outlets caused readers to define *how* they think about antibiotic and hormone use in poultry production (Scheufele & Tewksbury, 2007). With this in mind, the three outlets represented the most articles under the human interest frame, meaning they influenced readers to think about antibiotic or hormone use in poultry production through an emotional perspective (Valkenburg et al., 1997). The responsibility framed articles attributed responsibility to a group, organization, or institution, thus leading readers to think that antibiotic and hormone use in poultry production—and the issues surrounding it—are the responsibility of some group (Valkenburg et al., 1997). Finally, the articles framed under conflict led the readers to see the tension between groups, which in the case of this research were consumers, government, integrators, non-agricultural groups, and poultry producers (Valkenburg et al., 1997). Collectively, the characterization of these three frames in over half of the articles analyzed influence the audience (Scheufele & Tewksbury, 2007) to understand that antibiotic and hormone use in poultry production is an issue that should be viewed emotionally, with responsibility for issues attributed to one or more groups, who may or may not be in conflict with each other.

The first emergent theme, *consumer awareness of and concern for antibiotic/hormone use in poultry production*, coincides with previous research, which shows that consumers were concerned about the use of antibiotics and hormones in food production (Hwang et al., 2005). With the idea that newspapers focus on producing readers, not necessarily news, as their business model (Conboy & Steel, 2008), the fact consumer awareness of and concern for antibiotic/hormone use in poultry production was a prevalent theme is understandable. As research by Hwang and colleagues (2005) demonstrated, consumers are aware of and concerned with the use of antibiotics and hormones in poultry production, thus the New York Times, USA Today, and the Wall Street Journal tailored their news to the audience. Essentially, the prevalence of this theme informed readers that antibiotic and hormone use in poultry production is something consumers should be aware of and concerned for, and the content of this messaging implied that consumers should be wary of the use of antibiotics and hormones in poultry.

The second emergent theme was the *role of antibiotic use in poultry production in increased levels of antibiotic-resistant bacteria*. As Gustafson and Bowen (1997) noted, the general public is mostly concerned with the question of whether or not antibiotic use in poultry production contributes to increased antibiotic-resistant bacteria that could affect humans. Again, the emphasis these three media outlets placed on this theme, due to its importance to readers, point toward their agenda-setting power. While the emphasis of this theme informed readers what to think about, the fact that these articles pointed toward nontherapeutic uses (i.e. growth-promotion) as the primary cause for increased antibiotic-resistant bacteria informed the readers how to think about this issue. This theme also highlighted the conflict between agricultural and non-agricultural measures of the quantity of antibiotics used in poultry production, which served to exacerbate the distrust in poultry production methods readers incurred from reading the articles (Bharad et al., 2010). The fact that articles with this theme referenced both agricultural and non-agricultural research about this issue likely leaves readers unsure of how to evaluate implications of the science and of what the best course of action is based on the results (Malone et al., 2000).

The third emergent theme that represented key messaging was *regulation of antibiotic use in poultry production*. This theme, which emphasized the need for regulation of antibiotic use in poultry production, sets an agenda for readers to consider the implementation of these stricter regulations. The effects of this agenda-setting function can even have been seen in the articles over the course of time analyzed, as this theme's context evolved from calling for stricter regulation to referencing legislation or government oversight banning the use of an antibiotic in poultry production in 2005. Additionally, this theme carried a subtheme: *European regulation of antibiotic use in poultry production*. Journalists write based on their perception of what are the most important aspects of a situation to include in the story (Reisner, 2005), and the presence of this subtheme points to the idea that some reporters find it important to reference the more progressive (i.e. stricter) regulation of antibiotics in poultry production in European countries when setting the agenda for increased regulation in the U.S.

The fourth emergent theme was *purpose of antibiotic/hormone use in poultry production*. This theme highlighted the

three outlets' agenda-setting capacity to inform readers of the use of antibiotics and hormones in poultry production; by placing emphasis on this issue the articles increased consumer distrust in the purpose of antibiotic use in poultry production (Scheufele & Tewksbury, 2007). Hormones were represented in this theme less frequently than antibiotics, but conflicting information was present in this theme regarding hormones as some articles cited the illegality of their use (USDA, 2014) and others pointed to the higher quality of hormone-free poultry. The antibiotics portion of this theme was conflicting as well, either noting the purpose as therapeutic only, nontherapeutic only, or a combination of both. The portrayal, and thus framing, of the purpose of antibiotic use was dependent largely on the context of the article and what the journalist understood to be the most important aspects of the situation (Reisner, 2005).

The final emergent theme was *transparency of antibiotic use in poultry production practices*. The crux of the transparency issue set forth as an agenda by these media outlets is the lack of consistent data representing actual antibiotic use in poultry production. Again, the presence of this agenda fuels consumer distrust of agricultural practices (Scheufele & Tewksbury, 2007). As a part of this theme, poultry producers were held directly responsible for the lack of transparency, which could be attributed to the lack of complete and adequate coverage of this issue (Reisner & Walter, 1994).

RECOMMENDATIONS AND IMPLICATIONS

The results of this study point to the need for improved agricultural communications practices including a deeper understanding of consumer concerns and awareness, increased transparency in coverage of the antibiotic and hormone use practices of poultry producers, and stronger relationships with communicators outside of the agricultural discipline. Future research should examine other media, such as television and social media, regarding the use of agricultural messaging in today's consumer focused world. The recommendations for public relations in the poultry industry include increased transparency surrounding the purpose of antibiotic and hormone use in poultry production and the role of antibiotic use in poultry production and improved relations with media sources outside of agriculture. Finally, recommendations for future research include a focus on determining best practices to increase agricultural entities' relations with media outside of agriculture and on examining the effects of media's coverage of antibiotic and hormone use in poultry production and subsequent consumer behavior.

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ABOUT THE AUTHORS

Mr. Stuart Estes is a MS graduate from the Department of Agricultural Education, Communications and Technology, and currently works as an Instructional Designer I in Talent Development for Walmart.

Dr. Leslie D. Edgar is a professor at the University of Arkansas in the Department of Agricultural Education, Communications and Technology. She also serves as the Assistant Dean of Student Programs for Bumpers College. Dr. Edgar has been an ACE member since 2006.

Dr. Donald M. Johnson is a professor in the Agricultural Education, Communications, and Technology at the University of Arkansas at the University of Arkansas Johnson teaches specialized and advanced courses in agricultural mechanization and served as a committee member on this research.

Community-Based Grazing Marketing: Barriers and Benefits Related to the Adoption of Best Management Practices in Grazing Systems

Audrey E. H. King, Lauri M. Baker, and Peter J. Tomlinson

ABSTRACT

Environmental impacts of less than optimal grazing management choices can be intense and widespread. Improved communication of responsible grazing practices known as best management practices (BMPs) may increase adoption of these practices and increase sustainability of grazing systems. Community-based social marketing (CBSM) is a tool that can be used by communicators to generate behavior changes. This strategy emphasizes the identification of barriers to goal behaviors and the development of strategies to overcome them. This study sought to identify barriers and benefits associated with the adoption of grazing BMPs. Barriers identified include water availability and quality, and leasing and renting land. Benefits identified were increased resiliency through rotational grazing, improved watering and burning practices.

KEY WORDS

Agriculture, Barriers, Best Management Practices, Community-based Social Marketing, Grazing, Sustainability

INTRODUCTION

Communicators have been facilitating the adoption of sustainable behavior for years. Community-based social marketing (CBSM) is one tool communicators use to generate environmental behavior changes (McKenzie-Mohr, 2000). CBSM involves: 1) selecting the behavior to promote; 2) identifying the barriers and benefits associated with the behavior selected; 3) developing a strategy with behavior-change tools to address the barrier; 4) piloting the plan; and 5) evaluating the plan once implemented (McKenzie-Mohr, 2011). CBSM helps motivate people to make changes towards more sustainable behaviors through strategic plans involving social networks and manageable steps. The purpose of this study was to address the second step in CBSM through the identification of barriers and benefits to best management practice (BMP) adoption.

CBSM may provide means to increase adoption of BMPs in agriculture. Agriculture has the potential to have both a positive and negative effect on its surrounding environment, communities, and people. BMPs for agricultural producers have been developed from many years of research and are intended to minimize potential environmental impacts of various agricultural production practices while increasing the profitability of producers' operations (Paudel, Gauthier, Westra, & Hall, 2008). In contrast, poor stewardship of grazing lands and farm ground can result in water pollution, soil erosion, and land degradation. Increased adoption of BMPs in an area benefits the environment, citizens, and economies of the region.

CONCEPTUAL FRAMEWORK

Community-based social marketing.

Information-based campaigns assume that a behavior change will take place if enough information is provided. However, education alone has little to no effect on creating long-lasting behavior changes (McKenzie-Mohr, 2000). Community-based social marketing (CBSM) has proven successful at generating socially desirable behavior change. CBSM pulls from social psychology research that has established behavior change campaigns are most effective when targeted at the community level, while focusing on the barriers associated with adopting the desired behavior (Pallack, Cook, & Sullivan, 1980). Behavior-change initiatives are more effective when they come from the community level with personal contact rather than the global level with little personal contact (McKenzie-Mohr, 2011). CBSM does not rely as heavily upon mass-media advertising as social marketing. CBSM is frequently used to encourage behavior change pertaining to environmental issues like decreasing waste to landfills, saving energy, and conserving water (McKenzie-Mohr, 2011; Vigen & Mazur-Stommen, 2012).

In order to create a lasting behavior change, it is important to execute CBSM in the proper order. After a behavior has been selected, barriers should be identified. Despite the importance of correctly identifying barriers to behavior adoption for CBSM to be successful, program planners often skip this step (Pallack, Cook, & Sullivan, 1980). Some of the most common reasons for skipping this essential step are that program planners think barriers are already known, and time and funding constraints prevent adequate barrier research (Pallack et al., 1980). Identifying barriers begins with reviewing relevant literature related to the selected behavior. Next, research should be conducted to understand attitudes about the behavior (McKenzie-Mohr, 2000). This can be done through focus groups or interviews.

Once barriers have been identified, the strategies developed to address these will impact the effectiveness of the behavior-change message. Strategies are more likely to succeed when communication is concrete and personalized to the audience (McKenzie-Mohr, 2011). The more vivid information is the more it stands out against all the other information bombarding audiences daily (McKenzie-Mohr, 2011). When audiences are analyzed, communicators should consider all people affected by the message. Multiple audiences should be considered when messages are developed (McKenzie-Mohr, 2011).

The source of communication also influences the effectiveness of the message (McKenzie-Mohr, 2011). As Extension agents are seen as credible information sources already engaged within their communities they are potential liaisons for BMP communication (Patton & Blaine, 2001). Once initial contact had been made, CBSM calls for developing a strategy, by using several options, such as commitment seeking, delivering prompts, and establishing social norms (McKenzie-Mohr, 2011). CBSM focuses on utilizing connections people already have, and using those to change social norms and promoting sustainable behaviors, such as BMPs (McKenzie-Mohr, 2011). Therefore, pre-existing relationships with Extension professionals make agents an effective message source.

State of the Industry

Agriculturists manage pastures and rangeland in all 50 states (Natural Resources Conservation Services, n.d.). Range and pasture lands make up over 27% (528 million acres) of the total acreage of the contiguous 48 states (NRCS, n.d.) with more total acreage than both forest and cropland. According to the 2012 Census of Agriculture, there were 22.1 million acres of grazing lands in Oklahoma (2014). Grazing lands in Kansas were equal to 16.2 million acres (USDA, 2014). Effective management is related to sustainability. Cox (2013) defined sustainability as a three-legged stool, where each leg must be considered for sustainability to be achieved, the three legs to consider are environment, economics, and equity or social justice. Proper management of grazing lands is important to prevent degraded land quality (Ohlenbusch & Watson, 1994), which affects both the environment and economics.

The drought of 2011 and 2012 left pasture and rangeland across the Southern Great Plains overgrazed and damaged (USDA, 2013). The following year, 2013, marked the eighth year of decreasing beef cow numbers in the United States. By 2014, drought conditions negatively affected the quality and quantity of forage available for cattle production (Hurt, 2014), increased feed prices and caused beef cow numbers to reach the lowest since 1951. In the Southern Great Plains alone, there was a loss of 1.6 million head of cattle (Hurt, 2014). In 2011 alone, drought resulted in more than $1.6 billion lost from the agricultural sector in Oklahoma, with over $6.6 million of loss in the livestock sector (Wessler, 2011). The areas affected by this drought encompassed many different forage types, regions, and people. Negative impacts to both environmental and economic aspects of sustainability during periods of drought could have been partially mitigated through the adoption of BMPs.

Public perception of agriculture has changed from a reputation of good land and animal stewardship to that of pollution and abuse (Rahelizatovo & Gillespie, 2004) with the public becoming increasingly concerned about the effect of modern agriculture on the environment (Wachenheim & Rathge, 2000). The degraded land appearance caused by the droughts did not help improve the public image of agriculturalists. Nevertheless, members of the agricultural community, continue to view themselves as good stewards (Rahelizatovo & Gillespie, 2004).

Best Management Practices

Following the negative consequences of environmental degradation during the Dust Bowl in 1934-1940, farmers and ranchers began to understand the importance of preserving the land for future use. BMPs are backed by research as the most effective, environmentally sustainable, and long-term economically efficient way to manage an operation (Feather & Amacher, 1994; Gillespie, Kim, & Paudel, 2007; Paudel et al., 2008). BMP adoption increases the resiliency in not only individual producers' operations, but also the overall sustainability of the environment, cattle industry, and the economies of rural areas. Yet, scientists, policy makers, and Extension professionals have all conveyed frustration at the low level of BMP adoption among farmers and ranchers (Pannell et al., 2006).

BMPs specifically suggested in the Southern Great Plains for increased sustainability of grazing based beef cattle production are rotational grazing (moving cattle periodically to protect grass), prescribed burning of grass, setting proper stocking rates of cattle, managing drought, and implementing improved watering systems. These practices increase the profitability of operations and decrease the environmental impact.

BMP Adoption

Several Extension documents reviewed for this study suggested potential barriers to adoption of BMPs such as fear, water availability, and drought (Ohlenbusch & Harner, 2003; Ohlenbusch & Hartnett, 2000). However, these have not been explored in research. Existing research has, however, looked at many characteristics of BMP adopters. When Oklahoma stocker cattle producers were studied, operation size, income dependency on the operation, and working off the farm all positively affected the likelihood a producer knew how to set stocking rates at recommended levels (Johnson et al., 2010). Producers who depended entirely upon cattle for their income were 10.2% more likely to be knowledgeable about setting stocking rates. This study also showed that producers who utilized wheat as a forage perceived stocking rate to be critical; these Oklahoma producers would rather stock at lower rates rather than risking inadequate forage (Johnson et al., 2010). Similar results were found for adoption of BMPs in cow-calf production. Dependence upon income from cattle and education were positive indicators for adoption of BMPs. Age was a negative indicator for adopting most BMPs (Ward, Vestal, Doye, & Lalman, 2008).

Some research has explored motivations for adopting conservation practices and BMPs. Ryan, Erickson, and De Young (2003) found that intrinsic motivations were the strongest motivators towards adopting BMPs. These intrinsic motivators included feeling connected to the land and a desire to maintain fruitful land for future generations; economic motivation was the lowest-rated category. In contrast to long-standing ideas that agricultural producers are primarily motivated by cash, profit, or other extrinsic gains, land-management decisions were driven mainly by personal goals.

Understanding the motivation behind adoption of BMPs was essential to explain the adoption for each producer (Pannell et al., 2006). Producers utilized a decision-making process to determine whether or not they wanted to adopt a BMP (Pannell et al., 2006). The end decision was based on expectations and perceptions and depended on "the process of learning and experience, the characteristics and circumstances of the landholder within their social environment, and the characteristics of the practice" (Pannell et al., 2006, p. 1408). This process yielded a different kind of knowledge for each producer. Many different factors affected this process: past experiences, scientific knowledge, and cultural factors. The more information producers had available on a particular practice, the more likely they were to adopt it (Prokopy, Floress, Klotthor-Weinkauf, & Baumgart-Getz, 2008).

In a study surveying Louisiana beef producers, the highest percentage of non-adopters felt the practices, i.e. grassed waterways, rotational grazing, and nutrient management, were not relevant to their operations (Gillespie et al., 2007). The second most common reason for non-adoption was a lack of familiarity with BMPs; information about BMPs still had not reached all producers. It was likely that these reasons overlap, in that many of these producers lacked an overall understanding of BMPs and, therefore, how BMPs could be applied on his or her operation leading to a lack of motivation to adopt them. Producers with lower BMP adoptions also tended to have less contact with Extension services (Gillespie et al., 2007). The number of producers who chose not to adopt BMPs because of cost was relatively low. A substantial number of producers simply did not adopt because they preferred not to (Gillespie et al., 2007). This phenomenon has yet to be explained.

Past research suggests government policies aiming to change producer behavior should be developed based upon the motivations of the producers in specific areas (Greiner, Patterson, & Miller, 2009). Many of these motivations have yet to be fully understood. Understanding these motivations and the reasons producers choose not to adopt would make tailoring programs easier, therefore, making programs or policies more likely to be adopted (Greiner et al., 2009). Understanding mental models and motivations behind a producer's management strategy could help understand how producers make choices (Russell & Bewley, 2013).

PURPOSE AND OBJECTIVES

The purpose of this study was to determine the barriers and benefits producers faced in the process of choosing whether or not to adopt BMPs for grazing systems, the second step in CBSM. The following research questions guided the study:

RQ1: What are the barriers to the adoption of BMPs in grazing systems?
RQ2: What are the benefits to the adoption of BMPs in grazing systems?

METHODS

Sample and Measures

In order to address the research questions, qualitative, semi-structured interviews were conducted with 42 beef cattle producers in Kansas and Oklahoma in the summer of 2014. Participants were recruited initially through Extension agents and snowball sampling was used after initial participant interviews. The purposive sampling frame sought to interview producers who had varying levels of adoption in order to get a clear picture of the adoption or non-adoption in the area. Interviews were conducted at each participant's location of choice. These locations included pickup tailgates, county Extension offices, farm kitchens, local restaurants, and oilfields.

The questioning route was designed to guide participants through the research questions in a way that was more relatable to the participant and was helpful to researchers while ensuring consistency between interviews as recommended by Creswell (2007). Questions were asked in order to gain an in-depth understanding of the producer's operations and

practices (Rubin, 2005). Participants were asked specific questions about barriers to the adoption of BMPs and how they processed information regarding BMPs. Institutional Review Board approval was obtained before recruitment of participants.

Internal consistency and validity was assured by comparing the interviewer's notes, assistant interviewer's notes, and participants' recorded and transcribed responses. The notes by the primary interviewer consisted of handwritten notes on hardcopies of the interviewer's guide for each interview. The assistant interviewer took field notes while the interviews were taking place. All data were collected from interviews via audio recorders and from the interviewers' notes, creating an audit trail. This audit trail served as a description for the research that took place from start to finish (Flick, 2009). The data were transcribed by the professional transcription service, TranscriptionStar (Diamond Bar, CA). All identifying information was removed for confidentiality purposes, and each participant was given a pseudonym. Participants were also assigned a level of adoption by the interviewer and assistant interviewer. Many factors were considered when assigning BMP levels. Those factors included the adoption of rotational grazing, prescribed burning, and watering systems. The interviewer and assistant interviewer discussed each producer to determine their relative level of adoption. The protocol was reviewed by a panel of experts for face and content validity. The experts included professors from agricultural communications, agronomy, and animal science.

Analysis

The researcher first listened to each interview to confirm the transcribing was done correctly by the professional transcription service and made edits to family names and created the pseudonyms. The software Nvivo 10 was used to code each interview using the constant comparative method. Codes are labels attached to words or phrases within qualitative data to give description or meaning (Bhattacharya, 2007). While coding interviews, the researcher compared it with previous interviews that had been coded. The comparison between interviews was based upon memory and did not require looking back for every comparison (Glaser, 1965). Codes were then sorted into categories of related codes. These categories of codes were sorted by word or concept similarities. For example, each limiting factor was grouped together under a parent code. Those categories were then used to establish themes (Bhattacharya, 2007). Themes were then reviewed and confirmed with the assistant interviewer, who was present at every interview, to increase credibility and validity. All barriers and benefits mentioned in more than one interview are reported, with major themes being identified as those that were mentioned in at least half the interviews (21) (Ray, Baker, & Settle, 2015).

Participants' operations were sorted into sizes of small, medium, and large, based on the designations from the 2012 Census of Agriculture. One to 49 head of cattle were classified as "small," 50 to 499 head of cattle were classified as "medium," and 500 or were was classified as "large". Land area that ranged from 1 to 139 acres were classified as "small," 140 to 999 acres as "medium," and 1,000 or more as "large". These classifications were based purely upon information volunteered by each producer. There were no specific questions asked about farm or herd size.

The level of adoption of BMPs of each producer's operation was determined by the interviewer and assistant interviewer. When determining the level of adoption many factors were considered such as: adoption of rotational grazing, alternative forages, introduced grass, watering systems, and cover crops. Producers' practices were compared to university-recommended BMPs. High adopters used all or nearly all BMPs, medium adopters used some BMPs, and low adopters used one or none of the BMPs. The interviewer and assistant interviewer discussed each producer to determine their level of adoption. In this study, there were 14 high adopters, 18 medium adopters, and 10 low adopters

FINDINGS

RQ1: What Are the Barriers to the Adoption of BMPs in Grazing Systems?

To explore the barriers associated with the adoption of BMPs, participants were asked questions related to the challenges they face in grazing strategies. Interview responses yielded the following themes: water availability and quality deters producers from adopting BMPs; leasing and renting land presents unique challenges, particularly in Oklahoma; and other limiting factors, like school land, exist for adopting BMPs. Oklahoma school lands are government-owned lands that are leased to producers with the proceeds going towards the support of public schools in the State (Hainer, 1893).

Water availability and quality deterred producers from adopting BMPs.
Art, a medium-sized Kansas producer with a high level of adoption, mentioned algae-infected ponds as a limiting factor for utilization and rotational pasture grazing.

> Big pond down here at the bottom of the hill up until last year we had quite a bit of, about three years of blue-green algae in that pond. And so, that was limiting that pasture as far as use on it. We have since got rid of it, got some rain, got it filled back up and so it will hopefully be all right.

Blake, a large Kansas producer with a medium level of adoption, mentioned the lack of a watering system as a major barrier to an ideal rotational grazing system.

> You know in this country, if you – unless you have a watering system you have to work with what the Lord provides for you and it hasn't been much. So a lot of your rotational grazing might not be exactly what you want to do; it's what you can do…It's been tough these last five years…I don't have a watering system.

Caleb, a large Oklahoma producer with a high level of adoption, said water was the biggest limiting factor from continuing his existing rotational grazing strategy in his operation. "Number one, there's no water. The ponds had all dried up." Andy, a large Kansas producer with a low level of adoption, shared the sentiment. "A lot of it is on moisture, and how much regrowth I've got on it from the year before…I was hauling water since January…We had cleaned ponds out." Blake, a large Kansas producer with a medium level of adoption, was limited by drought. "I have a few places that are watered but without good pond water, it's just hard on what your rotation has been in the past." Cal, a medium-sized producer from Oklahoma with a low level of adoption, also struggled with water and worked hard to acquire it for his herd to continue his implementation of rotational grazing.

> I suppose water supply on some of that would be a big factor. You know, having access to get them to water. We have dug several ponds, dug ponds out or had a couple on trial and error basis whether they hold water or not.

Leasing and renting land presented unique challenges, particularly in Oklahoma.
While both Kansas and Oklahoma producers expressed challenges and barriers related to renting or leasing land, there were distinct differences separated by state lines. Oklahoma had unique challenges related to school-land leases. Kansas does not have that system, but producers still struggled with barriers associated with leased land. The theme of leased land presenting challenges for producers in both states, broke down into two sub-themes: a lack of lease land and a lack of control of leased land.

Lack of Land
Adam, a large producer from Kansas with a high level of adoption, saw a distinct difference between renting grass for cows and stockers. "It's very hard for guys to rent cow grass," because of the higher quality of grass and extended grazing season needed for cows. Without having access to grass resources, BMPs cannot be adopted. He also said that

absentee landowners were an obstacle for Kansas producers "…dealing with the next-generation land owner, maybe the investment land owner. You know, they just see it as you're taking something off of that ground."

Clyde, a medium-sized producer from Kansas with a medium level of adoption, talked about the unavailability of grass in his area:

> And in our area, it's hard to—grass is hard to—you know, it's hard to come by. And if you can find it, it's hard to get it rented. It's not as bad now as it was a few years ago, but until just the last couple of years, not only that you have to compete with other people that had cattle, the recreational use on grass is—I mean—and most of the people that want it for recreation have unlimited money.

A lack of land limited the ability to rest pastures from grazing or to implement rotational grazing. If more land had been available to Clyde, he would have implemented these practices.

Lack of Control

Carter, a large Oklahoma producer with a high level of adoption, discussed the issues with urban landowners and the problems he had.

> I leased a new pasture and the people are really concerned about it being overgrazed…the lady asked me, she said "What is the best three months for this native grass to grow?" And I said, well, April, May and June are the primary growth months for the grass. "Well you're not to graze it during those three months." But I don't really like being restricted, you know.

These kind of limitations restricted producers from grazing the way they wanted. Producers mentioned other challenges related to burning, installing watering systems, or other BMPs on leased ground.

Oklahoma school land.

Cliff, a large Oklahoma producer with a medium level of adoption, specifically mentioned leased land as a direct barrier to the adoption of rotational grazing, and described the way school land can affect the choices made by producers.

> So [school land leases] kind of dictates how much you can put into it as far as fencing it for rotational grazing or, you know, you hate to go in and spend $40 or $50 an acre when your rent is $20 an acre and you may not have it, you know, down the road.

There were four total producers that leased school land. Three of those producers shared this view.

Adoption of rotational grazing was restricted by many barriers.

Producers across all regions expressed issues they had with adopting the practice of rotational grazing including infrastructural improvements needed, increased labor demands, and the availability of water. Andy, a large Kansas producer with a low level of adoption, expressed his limitations.

> Oh yeah, like rotational grazing. But, our system isn't really set up for that. All those things sound really great if it sets up and works for you, but the way we're constantly buying cattle, shuffling and sorting cattle, so we don't have a set of cattle that we're gonna move around everywhere. It just doesn't work for us that great.

Caleb, a large producer from Oklahoma with a high level of adoption, said there were reasons other producers may have for not adopting practices.

> Why? Average producers, you know, the average producer is older, they don't have the time to do it or they don't have resources to do it, they put their cows out there and wean their calves, take them to the sale barn, you know, those kind of things.

There were also physical boundaries producers identified as issues for adoption of rotational grazing. Cole, a medium-sized Oklahoma producer with a medium level of adoption, talked about the benefit and boundaries associated with rotational grazing. "We try to practice rotation on all pastures except for two where water is an issue where we just can't. Rotation pays for itself." Brett, a medium-sized producer from Kansas with a medium level of adoption, discussed the different kinds of rotational patterns and the boundaries of his operation. "They have five day, 14 and 21 day. They require electric fences, and I just don't have time to check a hot wire."

Time and Labor Constraints

Time and labor constraints were not considered major themes as not enough producers mentioned each one. However, since the goal of this study was to find the barriers to BMP adoption, all barriers are mentioned. These are categorized as time and labor constraints.

Seven producers mentioned time and labor as a constraint to the adoption of BMPs. Carter, a large Oklahoma producer with a high level of adoption, mentioned time as the reason behind a less intensive rotational system. "I don't have time to go build a thousand electric fences all over the place. And I do rotate my cattle on my native grass but not any intensive system." Brice, a large Kansas producer with a medium level of adoption, echoed this point. "But I just don't have the time to spend with my cattle that maybe some other people that are in this farming might."

Clint, a large Kansas producer with a high level of adoption, discussed that labor and the physical set up of the land, rather than time, limited the adoption of BMPs. However, he also mentioned that perhaps it would not be worth his time either. "Our wheat fields are scattered so the rotation is a little bit lot more work than it be worth probably."

RQ2: What are the benefits to the adoption of BMPs in grazing systems?

To understand how producers perceived BMPs and the way they are beneficial or relate to resiliency, producers were asked about their practices, practices of other producers, and about how they dealt with drought. Interview responses yielded the theme: BMPs increased the resiliency of operations. Rotational grazing, improved watering systems, and burning practices were all practices that helped operations maintain resiliency.

Rotational Grazing Allowed for Resiliency

When asked about their practices, producers talked about the justification for their practices. It was evident that those who utilized rotational grazing clearly saw benefits to it. Bruce, a large Oklahoma producer with a high level of adoption, had recently adopted some rotational grazing practices and planned to expand those practices to the rest of his operation.

> I grazed nine different pastures ranging in size from a section to 40 acres was probably my smallest, and I saw the benefits from that last year that this year I'm going to do it a lot better, and I'm going to manage it a little more and try to take care of it.

Chuck, a medium-sized producer from Kansas with a high level of adoption, found that rotational grazing made him better at making choices during drought; it was easier to gauge the number of grazing days left on a patch of grass.

> And that was [the] big thing about adding paddocks is we had an idea of how many days of grazing we had, prior to putting the paddocks…when we ran out of grass it's just gone you know…I can't judge that just by looking but if you have paddocks, you kind of have an idea, "Okay I know this will last them three days or seven days." You can kind of…have an idea but without that [paddocks] it's just a shot in the dark so for me.

Clark, a medium-sized Oklahoma producer with a medium level of adoption, found rotational grazing to be beneficial when it came to the utilization of grass in his pastures and overall management "…allowed so much better opportunities

for pasture to recover and not overgraze to the extent that we used to do with everything."

Improved Watering Systems Allowed Producers to be More Resilient

Producers recognized the benefits to installing improved watering systems in their operations, which is a BMP that can aid in resiliency. Chuck, a medium-sized Kansas producer with a high level of adoption, had recently installed pipeline and planned on installing tanks in his pastures within days of completing our interview.

Clyde, a medium-sized Kansas producer with a medium level of adoption, saw his cattle benefit from the addition of improved watering systems in his operation.

> Cattle actually do better on clean water, and then drinking out of some of the ponds and stuff, they get so stale in the middle of the winter…

Clem, a medium-sized Kansas producer with a high level of adoption, had also seen improvement in the health of his cattle from improved watering. "One thing that I didn't mention that the water tanks and everything like that, that has been so beneficial to me. Because my cattle – the health of those cows are so much better with that water than drinking out of a pond."

Burning Practices Enabled Resiliency

While eight producers mentioned that drought discouraged prescribed burning practices, 23 producers saw the benefits burning could offer their operation. Chris, a medium-sized Kansas producer with a medium level of adoption, burned pasture for the health of the grass:

> I had leased this place, and it had a lot of undergrowth on it, it had a lot of brush, a lot of thatch, and I thought it would make it a little healthier situation if we could burn it, and that's why I did it.

Cliff, a large Oklahoma producer with a medium level of adoption, also burned grass "to kind of keep things clean and freshen up pastures." Clint, a large Kansas producer with a high level of adoption, saw a side-by-side comparison of the increased palatability of grass once exposed to fire.

> One year, we tried some within the same pasture, we burnt some on one side of the creek and we didn't get some on the other side of the creek. And the old cows, they just kept on that we burned, grazed into the ground. And the other side, they didn't hardly go over there.

Chip, a medium-sized Kansas producer with a medium level of adoption, did not like burning, but saw the benefits, particularly with controlling cedar trees that he burned regularly.

> And part of that getting those pastures and that little devil [cedar trees] under control is burning so every three years to four years we burn you know and I really don't like to burn but we do. You just have to; you just have to do it.

Curt, a large Oklahoma producer with a medium level of adoption, also used fire to control brush and saw it as a more profitable and less time-consuming alternative to other forms of eradicating cedars and brush from his pastures.

> [We burn] generally to kill the brush...It saves on poisoning; we've got poison which kill the cedars and everything. It's pretty expensive, pretty time consuming, so [instead] we can burn in two hours and if we get a 20% kill and burn next year, or two years, three years and you haven't dumped $5,000 in poison.

CONCLUSIONS, IMPLICATIONS, LIMITATIONS, AND FUTURE DIRECTIONS

This study sought to identify the barriers and benefits of BMP adoption in grazing systems. Barriers identified in this study were water availability, water quality, leasing and renting land, and skilled labor. Some of these identified barriers confirm what previous studies have suggested (Ohlenbusch & Harner, 2003; Ohlenbusch & Hartnett, 2000). The benefits of BMP adoption as expressed by producers who used BMPs on their operations were increased resiliency as a result of rotational grazing, improved watering systems, and burning practices.

Given these barriers to BMP adoption, the implications of this research indicate a need for communication strategies to alleviate barriers and may include facilitating information processing by agricultural producers related to the adoption of BMPs. While one cannot simply communicate more water into the region, farm advisors (i.e. Extension and NRCS) can better communicate the options for improving water accessibility; and the benefits of improved water access and quality may help producers think differently about their options to overcome water availability.

There are many people seeking to communicate with agricultural producers: Extension, NRCS, industry publications, commodity organizations, peers, social media, universities, and other private organizations (i.e. the Noble Foundation). Through the implementation of CBSM, these information sources used by producers could be leveraged to help producers overcome the barriers unique to their operations. These sources have the potential to be instrumental in the strategic behavior change process related to BMP adoption. It is suggested that these influencers be trained in CBSM and work together to promote the adoption of BMPs in grazing.

To promote the adoption of BMPs in grazing, it is suggested that future research address how producers process information related to BMPs and the social constraints associated with the adoption of BMPs. This study focused on BMPs for producers in Kansas and Oklahoma. It is suggested that similar research be conducted in other states.

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ABOUT THE AUTHORS

Audrey E. H. King is an instructor in agricultural communications and journalism at Kansas State University. She teaches introductory courses and new media technology classes. Her research focuses on Extension, best management practice adoption and environmental issues effecting agriculture.

Dr. Lauri M. Baker is an associate professor in agricultural communications and journalism at Kansas State University where she is the co-creator of the Center for Rural Enterprise Engagement which focuses on new media marketing research to improve the economic viability of rural communities.

Dr. Peter J. Tomlinson is an assistant professor in agronomy at Kansas State University. Peter is an Extension specialist on environmental quality. His research focuses on air, water, and soil quality.

RESEARCH

A Case Study of Using Metacognitive Reflections to Enhance Writing Skills and Strategies in an Agricultural Media Writing Course

Tobin Redwine, Holli R. Leggette, and Brooke Prather

ABSTRACT

Writing is a foundational skill in agricultural communications, and metacognition the learning and understanding of such skill. Integrating reflection into a writing course is one way to enhance students' metacognition and metacognitive awareness as reflection provides writers an opportunity to become a critic of their writing experiences. However, what happens when students reflect on their metacognitive awareness during and throughout the writing process? Using a qualitative and quantitative content analysis, we interpreted 16 students' metacognitive writing reflections at four points in an advanced media writing course. We identified and analyzed emergent themes from the reflections and measured the frequency of each theme over the duration of the course. Three major themes emerged: a) metacognitive awareness of writing skills, b) metacognitive awareness of writing strategies, and c) metacognitive awareness of knowledge transfer. A total of 13 sub-themes were identified further characterizing the themes. Interviewing (a writing skill) emerged more in the third reflection than any other time, and revision (a writing strategy) emerged more at the beginning and end of the course than in the middle. Additionally, participants reflected less about outcomes (a component of knowledge transfer) at the end of the course and more about their plans for the future. Findings support the value of metacognitive reflections as a transformational instruction tool. Practitioners and writing instructors in agricultural communications should be cognizant of skills, strategies, and knowledge transfer as they plan and implement writing education and be adaptive and flexible to meet students' changing metacognitive awareness.

KEY WORDS

Media Writing, Metacognition, Reflection, Writing Skills and Strategies

INTRODUCTION

Writing is a "complex integrated activity" (Leggette, Rutherford, & Dunsford, 2015, p. 250) that serves as a foundational skill for college graduates in agricultural communications and "requires more knowledge and skills than it does talent, especially when it comes to creating informative texts" (Kuzu, 2016, p. 39). Yet, many new graduates lack fundamental writing skills, thereby, finding themselves misunderstood, inadequate, unmotivated to write, and hating the writing process (Kavcar, Oguzkan, & Sever, 2012).

Some variations exist, however, in what researchers have classified as important media writing skills and strategies. Lingwall and Kuehn (2013) divided writing into five categories—elaborative/surface, reflective/revisionist, writing self-efficacy,

writing apprehension, and social media/professional. Three of the five directly apply to the current study: elaborative/surface (thoughts about writing and its importance), reflective/revisionist (willingness and desire to review, edit, and revise), and writing self-efficacy (perceived confidence in writing skills, such as spelling, punctuation, grammar, organization, paragraph development, and audience). In Poniatowski's (2012) study of preparing students for writing-intensive programs, she included basic grammar and punctuation, spelling and word usage, applying Associated Press style, and evaluating stories for clarity, appropriate style, and grammatical correctness as important course outcomes. Additionally, Carpenter, Grant, and Hoag (2016) identified "'telling stories,' 'asking questions,' 'informing people,' and being 'a voice for the underprivileged and underrepresented groups'" as essential reporting skills for effective journalists (p. 18).

At the center of learning and understanding any type of skill is metacognition or the "refer[ence] to one's knowledge concerning one's own cognitive processes or anything related to them" (Flavell, 1976, p. 232). Instrumental to metacognition is self-regulation and reflection (National Research Council, 2000), but students often lack opportunities to apply such practices (Nist & Simson, 2000). Metacognitive skills and strategies instruction (e.g., reflection, self-regulation, self-direction) can help students increase their transfer of knowledge and understanding across contexts, settings, and events, providing students with flexibility in learning (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010; Bransford, Brown, & Cocking, 2000; Benander & Lightner, 2005; Downs & Wardle, 2007; Zimmerman & Schunk, 2011). In some settings, knowledge transfer refers to outward and external connections and dissemination of information, but in the context of this study, transfer of knowledge refers to deepening the applicability of material, which may be considered more of an internal or cognitive process.

Metacognition promotes students' "understanding [of] … cognitive and linguistic process[es]" (Bower, 2003, p. 49) and facilitates professional thinking within and about their discipline (Tanner, 2012). For example, "reflective practice offers the opportunity for thinking about thinking, learning about learning, self-monitoring and regulation" (Mair, 2012, p. 148). To enhance students' metacognition, Tanner, a biology scholar, recommended teaching structured strategies for developing metacognition. Structured strategies, for example, are based on asking questions related to planning, monitoring, and evaluating a project at four points in the course: pre-assessment, the muddiest point in the course, retrospective post-assessment and reflective journaling.

One aspect of metacognition is metacognitive awareness, which "seems to have a reciprocal relationship with self-regulation and students' development of individual writing approaches" (Negretti, 2012, p. 143). As students' metacognitive awareness shifts, they tend to "take more initiative in writing and to self-regulate their writing by developing a personal writing process" (p. 171). Metacognitive awareness has three domains: declarative knowledge (awareness of strategies), procedural knowledge (awareness of how to apply strategies), and conditional knowledge (awareness of when and why to apply strategies; Schraw, 1998; Schraw & Dennison, 1994; Sperling, Howard, Staley, & DuBois, 2004). Therefore, metacognitive writing may also lead to awareness of three domains of metacognition in a given context.

If we look at the context of a journalistic writing course, the conditional knowledge domain of metacognitive awareness becomes of special interest. Instrumental to conditional knowledge is students' ability to adapt their writing strategies to meet writing requirements (professional or journalistic style and rules) and to understand why they should adapt their strategies (Negretti, 2012). As such, applying written metacognition in a writing-instruction context may have impacts on learning to write in journalistic or professional contexts. For example, adding purposeful, focused, and specific reflection to the writing process (Parks, 2014; Yancey, 1998) enhances the revision process and the depth of thought during the process. Revision forces students to think about the writing process and the strategies they used to complete the process, providing an avenue of metacognitive awareness (Beach & Friedrich, 2008).

"Writing is applied metacognition" as thinking is integrated into every part of the writing process (Hacker, Keener, & Kircher, 2009, p. 160). Implementing metacognitive exercises into writing courses helps students understand and articulate their decision making during the writing process (Cohn & Stewart, 2016). For example, using metacognitive strategies in a developmental reading and writing course, students "internalize[d] the value" of the writing process and its significance in their college careers (Pacello, 2014, p. 135). Such strategies include generating questions, monitoring

comprehension, summarizing, rereading when comprehension breaks down, thinking about prior knowledge, establishing a purpose for learning, making predictions, and self-questioning (El-Hindi, 1997; Gourgey, 2003; Laverpool, 2008).

Metacognition can also help students realize their areas of writing incompetence—helping them begin to adjust their strategies to gain competence in their writing ability (Negretti, 2012). Implementing metacognitive instructional strategies into a developmental writing course facilitated students' ability to transfer their understanding of the drafting, revising, and editing processes to other contexts beyond those of the course (Pacello, 2014). The metacognitive reflection in Pacello's study helped one understand writing as a process while becoming more aware of how she writes a message, who she writes to, and how the audience receives the message. Thus, emphasizing "pedagogical methods stressing a metacognitive strategy approach to college reading, writing, and learning might help students to experience the course as being connected to navigating the literacy demands of various academic, professional, and personal contexts" (Pacello, 2014, p. 119).

Reflection links metacognitive awareness with writing practice (Tarricone, 2011). Reflecting on experiences is often as significant to students' growth as the experience itself (Dewey, 1933). As students reflect, they take time to "focus on the cognitive aspects (thinking, problem solving and so on) that led to particular actions, the outcomes and lessons learned from those actions, and how these inform what they might do in the future" (Mair, 2012, p. 148). Students reflect as a way to learn and continuously review tasks and their performance (e.g., Dewey, 1939; Boud, 2001). The reflective process is "a complex one in which both feelings and cognition are closely interrelated and interactive" (Boud, Keough, & Walker, 1985, p. 11)—it must be intentional and involve the students because reflection has to include the one learning.

Posner, Strike, Hewson, and Gertzog (1982) recognized the importance of retrospective post-assessments, or post-assignment reflection, in helping students' process course material. For example, students completing a reflection after each assignment and at the end of a course is a retrospective post assessment of students metacognitive writing awareness because students are charged with thinking about their writing before and after the assignment. As a result, they are forced to see the changes in their writing ability. Thus, integrating reflection into a writing course is one way to investigate metacognition and metacognitive awareness. Reflection provides the writer an opportunity to become a critic of his or her writing experiences. To be a reflective writer, however, one must be a reflective thinker, which is indicative of how one thinks and constructs meaning about experiences (Mair, 2012). Linkages exist between reflection and writing, reflection and metacognitive awareness, and metacognition and learning, but no few, if any, studies combine each element in a specific, applied journalistic context. So, what happens when students reflect on their metacognitive awareness during and throughout the writing process in a journalistic writing course?

PURPOSE AND RESEARCH QUESTIONS

This study interpreted students' metacognitive writing through periodic writing reflections in an advanced agricultural media writing course.

1. What did students think about when they reflected on writing?
2. How did students' metacognitive awareness of writing change?

CONTEXT OF STUDY

This study was situated within the context of an agricultural communications course at Texas A&M University. The advanced agricultural media writing course was the third course in a three-course sequence and focused on feature writing concepts. Course objectives include preparing learners to tell objective stories, conducting interviews, asking effective questions, writing feature stories, writing clear and concise copy, applying Associated Press style, and using correct writing mechanics. During the fall 2015 semester, the 15-week course was taught by one faculty member and one graduate teaching assistant and met four days a week for two lectures and two writing labs. In weekly lectures, students learned about elements of compelling feature writing, mechanics of AP style, deep writing, and general writing

practices. In lab sessions, students completed a writing activity that followed and reinforced concepts from the previous lecture. For major course assignments, students completed a column or review, an informational/educational or how-to, and a personality profile or descriptive story. Students received feedback from the instructor in a lab setting, as well as electronically as they submitted assignments, and were given the option to revise assignments for partial credit. After the revision deadline for each assignment and at the end of the course, students completed a reflection exercise.

METHODS

The methods used in this study were part of the reporting for a larger research project. Methods described here are specific to this study but also served to collect data for a larger project. As such, similar methods may exist as part of another study.

This case study explored students' awareness of metacognitive writing through periodic writing reflections. Case study research "focuses on describing, understanding, predicting, and/or controlling the individual (i.e., process, animal, person, household, organization, group, industry, culture, or nationality;" Woodside, 2010, p. 1). Deep understanding emanating from case studies includes knowledge of individuals' sensemaking with a focus on perceptions, frame of perception, or interpreting results of stimuli or intervention. Therefore, number of participants is not as important as the depth of the understanding in case study research (Woodside, 2010).

This case study was conducted using a qualitative and quantitative content analysis, which was consistent with Woodside's (2010) assertion that case studies use multiple observations over a period of time. Qualitative research determines "how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences" (Merriam, 2009, p. 5). A qualitative content analysis allows one to unobtrusively study written documents as a way of "listening to the words of the text and understanding better the perspective(s) of the producer of these words" (Berg, 2001, p. 242). Thus, through "qualitative data reduction[,] … sense–making effort[s]," (Patton, 2002, p. 453) and theme recognition, researchers can make sense of participants' experiences and understand how they develop meaning.

Additionally, using Berelson's (1966) methods for quantitative content analyses in communications, researchers can measure message frequency, type, and variety. For example, "units of space most commonly are seen as countable, and therefore, measurable" (Altheide, 1987, p. 66-67). This quantitative treatment of data was consistent with Berelson's (1952) description of quantitative content analysis as "a research technique for the objective, systematic, and quantitative description of the manifest content of communication" (p. 55). Because this study examined how students in a specific course under a purposeful intervention made meaning through reflection exercises and included triangulated data collection with extensive hours of observation and analysis, this project met Woodside's (2010) criteria for deep understanding.

Population

The population of this study was comprised of Texas A&M University students enrolled in the course during the fall 2015 semester. Nineteen students enrolled in Agricultural Media Writing II, and of the 19, 16 consented to participate in the study. However, not all 16 students participated in each of the four reflections (RA1 = 14; RA2 = 16; RA3 = 16; RA4 = 16).

Procedures

Prior to collecting data, we developed a reflection exercise based on our experiences teaching and researching agricultural writing development and on feedback from the writing faculty in the department. The exercise included 12 reflective questions related to students' challenges and success with writing assignments and questions about students' feelings, standards, and lessons learned. Students completed four reflection exercises throughout the semester—the first three at after revising each major assignment and the fourth at the end of the semester. Students' responses on the reflection exercise constituted the data for this study.

After data collection, we removed students' identifying information from each response and assigned numbers to each student and letters to each reflection period. We broke each student's reflection responses into two-sentence units for analysis and numbered each unit consecutively. To each unit, we assigned codes reflecting the student number, reflection letter, and individual unit number. We excluded some units because of impartial responses, unusable responses, or blank responses. We identified five unusable responses because there was no clear idea or identifiable thought in the reflection response (e.g., sentence fragments, unclear thought structure, or ambiguity). In total, we identified and coded 430 unique units.

To analyze the data, we (two agricultural communications and journalism faculty members and one graduate student) coded each unit using a modified constant comparative method adapted for naturalistic inquiry as described by Lincoln and Guba (1985). Then, we refined, combined, deleted, and/or modified categories as needed to capture the essence of the reflection's content. Following Lincoln and Guba's (1985) theme identification guidelines, we identified course outcomes and performance; confidence; journalistic style; writing skill; revision; audience analysis; researching; interviewing; emotions; future plans; time management; and topic selection in the first round of data analysis. In the second round, we refined the themes. We split course outcomes and performance into outcome (grade) and future plans (absorbing the other future plans theme); combined writing skill and journalistic style into general writing practices; revision, audience analysis, and combined some units from research and interviewing to form a writing process theme; and absorbed emotions into confidence. Once we refined and established these themes, we reviewed each unit in the theme to ensure it met the theme inclusion description. Further refinement led to the creation of three super themes: skills, strategy, and transferability. Final theme orientation and frequency of appearance in each reflection period is shown in Table 1.
After we qualitatively analyzed the data, we aligned the data within each sub-theme and theme for the quantitative content analysis portion of the study. Then, we counted reflection statements for each reflection to show growth and change over the course of the semester.

Given the qualitative paradigm of this study, we established trustworthiness by using Lincoln and Guba's (1985) guidelines for credibility, transferability, dependability, and confirmability. We maintained credibility through triangulation and frequent peer debrief, transferability through thick descriptions and wide inclusion of data. confirmability through field notes and an investigator audit trail, and dependability through triangulation. Additionally, Merriam (2009) noted four types of triangulation in qualitative inquiry: using multiple methods of collection (e.g., observations, interviews, and a review of literature), using multiple sources of data (e.g., data collected at different times), multiple investigators, and multiple theories to confirm data. This study achieved triangulation by using three of the four types of triangulation: multiple investigators, multiple methods of data collection (written reflections, instructor observations, and relevant literature) and multiple sources of data (observations and reflections at multiple times throughout the study).

FINDINGS

Metacognitive Writing Reflections

In reviewing students' metacognitive writing reflections, we found students think about writing skills, writing strategies, and transferability of writing strategies and skills. Each of the overarching themes included sub-themes describing its content: skills (general writing practices, interviewing, and researching), strategies (audience, revision, time management, topic selection, and writing process), and transferability (challenges, confidence, emotions, futures, and outcomes). Table 1 shows the frequency and organization of each theme and sub-theme.

Table 1
Emergent Themes and Sub-themes by Reflection

Theme	Sub-theme	R1	R2	R3	R4	Total
Skills	General Writing Practices	43	33	20	46	142
	Interviewing	7	18	37	2	64
	Researching	8	17	3	1	29
	Total	**58**	**68**	**60**	**49**	**235**
Strategy	Revision	24	11	1	18	54
	Topic Selection	8	15	10	2	35
	Writing Process	8	10	6	5	29
	Time Management	5	6	2	7	20
	Audience	5	7	0	1	13
	Total	**50**	**49**	**19**	**33**	**151**
Transferability	Confidence	15	15	9	15	54
	Outcomes	15	15	14	3	47
	Challenges	8	9	3	5	25
	Emotions	5	7	1	9	22
	Future	1	0	0	9	10
	Total	**44**	**46**	**27**	**41**	**158**
Total		**152**	**163**	**106**	**123**	**544**

Note: R1 = reflection one; R2 = reflection two; R3 = reflection three; R4 = reflection four

Metacognitive awareness of writing skills. The first theme emerging from the students' reflection was metacognitive awareness of writing skills (*f* = 235), which included general writing practices (*f* = 142), interviewing skills (*f* = 64), and researching skills (*f* = 29).

First, general writing practices, the most consistent across reflections and most prominent sub-theme of writing skills, consisted of statements about developing specific practices and habits that characterize effective writing. Some of these practices were specific to journalistic writing and Associated Press style and others focused on effective writing in general, regardless of style. Because this study investigated a writing-intensive course in a media writing context, we collapsed both the journalistic style statements and general writing skills statements into one sub-theme to encompass sound writing practices. Those practices do not, however, include interviewing and researching, as those skills were prominent enough to warrant separate sub-themes. Therefore, general writing practices included transitions, voice and style, brainstorming and organization, effective leads and endings, descriptive phrases, grammar and punctuation, clarity, attribution, and humanizing feature stories. This sub-theme captured the true nature of learning to write and some of the most raw and outcome-oriented statements in the study.

In many cases, students' reflections were both practical and ideological. For example, "I learned that I tend to 'over fluff' my paper. I also tend to use too many conjunctions when writing papers" (P21). This participant reflected about an intangible and vague idea (fluff), as well as a pragmatic, measurable practice (overuse of conjunctions). That juxtaposition between intangible writing skills and technical writing practices embodies the essence of this sub-theme. Participant 15 described how writing enables writers and readers to wrestle with ideas of importance: "Draw[ing] conclusions using opinions based on facts and sway[ing] readers gave me a satisfactory feeling, but being able to bring an issue to light that people might not know about was even better." However, participant 26 took a more pragmatic approach to attribu-

tion and the mechanics of writing—"I revised the way I introduced my second source. I think this made my paper more effective by crediting my source before I quoted him." In each case, participants reflected on their awareness of developing sound writing practices.

Second, interviewing was the next most prominent sub-theme within writing skills. Students reflected about their frustrations in setting up interviews, finding sources, anticipating interview responses, and integrating interview responses into their final projects. One student (P23) reflected "The answers I received from the source were not what I was expecting, which through the whole direction of my paper off." Other students echoed and expounded participant 23 by describing the challenges of planning and executing the interview. For example, "The interview process required the most attention, formulating introspective questions that led to a deep, thought provoking answer from the interviewee" (P15).

Third, researching was the final sub-theme of writing skills. Reflections about research were characterized by types of sources, credibility of sources, and balancing interests with sound research practices. While reflecting, students focused on their lack of research and recognized they should have done more research. One of the commonalities among the reflections was students' need to improve their interview practices. Participant 18 captured this most effectively, "I have learned that you have to do thorough research if you want to write a reliable article, and I take ownership over my lack of research." Although "…research was the most difficult part, it was also the most satisfying" for participant 27.

Metacognitive awareness of writing strategies. Five emergent sub-themes contributed to students' metacognitive awareness of writing strategies (f = 151): Revision (f = 54), topic selection (f = 35), writing process (f = 29), time management (f = 20), and audience (f = 13).

First, students reflected on revision, a writing strategy, most frequently. Students' statements about revising strategies included making multiple revisions and edits, using peer review, soliciting feedback, and emphasizing the positive outcomes of multiple revisions. For example, participant 20 described revising an assignment six times before submission. Similarly, participant 21 noted a new awareness of the importance of revising: "I will take the revision process more seriously. I will take more time editing my paper to make it meet full potential." Soliciting feedback from peers was an important component of revision. "I think the biggest strategy I have learned is to let other people view my paper. Several sets of eyes on your paper helps catch mistakes" (P13). Participant 11 echoed the value of peer review in revision: "My peers helped me notice errors that I had not caught in my 50 plus times of reading my article." Additionally, instructor feedback played a pivotal role in the revision process. Participants 12 and 16 described major reworks of assignments based on instructor feedback. For example, "I took extra time to sit down with my professor and talk through his critiques" (P18).

Second, students demonstrated an awareness of writing strategy related to topic selection. This sub-theme differed from the audience awareness sub-theme because topic selection explored identifying topics student authors found interesting and audience awareness explored identifying material relevant to the audience. Students frequently referenced their passion for or against a topic. Students who expressed difficulty identifying a topic that interested them also discussed their disappointment or dissatisfaction with their end product while students who identified topics important to them typically expressed their satisfaction and contentment with their work. Participant 22 called it writing about "things that matter," and participant 14 enjoyed writing about topics that interested her and targeting a publication she would read. Conversely, participant 26 wrote "I honestly didn't like my paper at all. I wasn't passionate about what I was writing about so that made it difficult to even complete my assignment."

Third, students also described thinking about writing as a process rather than a one-time activity. Reflection statements about ways students discovered and implemented a process characterized the writing process sub-theme. Many students identified steps or benchmarks for completing the process while others expressed the importance of writing in multiple settings because it was a more complex process than they initially perceived. For example, "I learned I work better if I give myself tiny breaks throughout my time writing" (P07). Participant 10 also reflected about an awareness of new strategies enhancing the writing process: "I tend to do 'word vomit' when I write. Instead, if I consciously think about each word I always have a more successful outcome."

Fourth, time management also emerged as part of the writing strategy theme. When reflecting on managing time, students noted budgeting time through each step, managing deadlines, planning ahead, avoiding procrastination, and allowing for unexpected setbacks as important to the writing process. Even early in the course, some students articulated a purposeful approach to time management. As an example, "my goal for major assignment one was to not procrastinate and get a good grade on the assignment. I made sure to start my paper two weeks before and work on it constantly throughout" (P24). Yet, time management challenged students as reflections on their difficulty managing time or on their shortcomings regarding effective time management were more frequent than reflections indicating effect time management.

Fifth, students' reflected about audience awareness. These reflections were typified by students' recognition that audiences are important and that researching and analyzing audiences requires a strategy. Participant 12 described the development of that awareness: "I think I've developed a writing behavior where I study my reader first, then cater my paper to the specific interests of the reader." Yet, other participants described crafting audience specific stories as challenging and difficult because, for them, the audience analysis and audience-centered writing strategy was the most challenging part of feature writing.

Metacognitive awareness of knowledge transfer. The final theme emerging from students' metacognitive reflections was an awareness of knowledge transfer and factors inhibiting knowledge transfer. For some students, the idea of successful knowledge transfer manifested through changes in confidence regarding writing skill (f = 54), changes in the nature of desired course outcomes (f = 47), or future plans and career ambitions (f = 10). For others, reflection about knowledge transfer took the form of identifying challenges (f = 25) or working through emotions as a part of writing (f = 22).

The most prominent sub-theme of knowledge transfer was an awareness of confidence. Most reflection statements in this sub-theme communicated students' enhanced confidence in their writing ability. Participant 18 described her awareness of enhanced confidence as "I am confident enough in my paper that I wouldn't mind sending it to [a] publication to see if it would actually run. I'm usually very self-conscious about my writing." Participant 22 echoed having enough confidence in her writing to submit her work for publication. Thus, overall, students described awareness of knowledge transfer as having a skill they previously doubted, growing from failure, and discovering their abilities and limitations.

Students' awareness of knowledge transfer was also evident in their reflections about desired course outcomes. This sub-theme was dichotomous in nature—some students desired real-world impact from the course and its assignments while others simply desired a good grade on their work. For example, participant 11 described developing effective writing skills to confidently share her work with the subject of her story; whereas, participants 21 and 23 reflected about their final grade rather than the outcome and impact of their writing. Participant 20 adopted an especially realist philosophy concerning desired course outcomes: "The main goal of the entire assignment was to make a good grade. How I go about reaching this goal for major assignment 2 will change since my strategy didn't work for major assignment 1." Alternatively, participant 27 offered a more idealist philosophy: "My goal was to educate the reader and maybe even change their minds about the topic. I hope I was able to do that!"

Similar to the outcomes sub-theme, some students reflected on future plans as a result of knowledge gained in this course. These reflections identified specific jobs students saw as possibilities for future employment—public relations writing, freelance writing, and magazine production. Other reflections included the importance of writing for careers in general. For example, "every job, especially communications-based jobs, require writing skills so I know I will take a lot away from this class" (P18).

Many students, however, chose to reflect on challenges to the learning process in a writing course. These challenges ranged from contextual ("I did not grow up on a farm or have a horse in my house like others in this class, so it's hard for me sometimes to understand agriculture the way my classmates do;" P12) to philosophical ("I learned that thoughts come easy to me; however, putting those thoughts on paper is difficult;" P13) to mechanical (uncertainty about perspec-

tive across multiple assignments and its limit on success; P24). Ultimately, this sub-theme was characterized by students wrestling with concepts like "leaving my comfort zone" and using writing to solve problems.

Finally, some students recognized the emotional connection to knowledge transfer and writing. Some students discussed emotions with positive connotations, like gaining a new love for writing, while others discussed emotions with negative connotations, like discovering a dislike for writing. In both cases, students described how emotions coalesced learning and translated into knowledge gains. As an example, participant 11 noted, "I learned I fear writing and I fear negatives. Getting started on an assignment is my biggest struggle."

Change in Metacognitive Awareness

RQ2 focused on the students' change in metacognitive awareness and the distribution of themes and sub-themes across the four reflection periods (Table 1). In the first (R1), second (R2), and fourth (R4) reflection periods, participants thought about general writing practices. Yet, in the third reflection period (R3), students thought about interviewing skills.

One way to look at change across reflections is to compare the most frequently appearing sub-themes or topics in each reflection. In the first reflection period (R1), participants thought about general writing practices (28.29%; $f = 43$) and about revision (15.79%; $f = 24$) of the time. During the second reflection period (R2), participants reflected about general writing practices (21.71%; $f = 33$) and about interviewing (11.84%; $f = 18$). The third reflection (R3) was the only period participants reflected most frequently on a sub-theme other than general writing practices. In fact, in R3 students reflected on interviewing (24.34%; $f = 37$) and on writing practices (13.16%; $f = 20$). In the final reflection, students thought about general writing practices (30.26%; $f = 46$) and revision (11.84%; $f = 18$).

There were notable changes in the frequency that students reflected on certain sub-themes across the reflection periods. For example, more than half (57.81%; $f = 37$) of the reflections about interviewing skills appeared in R3, which was immediately after the personality profile assignment. Similarly, 58.62% ($f = 17$) of the reflections about research appeared in R2, which was immediately after the informational or educational article assignment. Students reflected about revision more at the beginning of the course (R1; 44.44%; $f = 24$) and at the end of the course (R4; 33.33%; $f = 18$) than they did in R2 and R3 combined ($f = 12$). Students thought more about topic selection after the second assignment (42.85%; $f = 15$) than they did during any other period and thought more about the future almost exclusively at the end of the course (R4; 90.00%; $f = 9$).

CONCLUSIONS, RECOMMENDATIONS, & IMPLICATIONS

Metacognitive Writing Reflections

Reflections are often integrated into curriculum to provide students an opportunity to document their learning and think about their experiences. Throughout the semester, students in this study reflected on their writing skills, writing strategies, and transferability of writing strategies and skills. Coinciding with Posner et al. (1982), students used the retrospective post-assessments (reflections) to enhance their understanding of writing skills and strategies and think about how they plan to transfer their new understandings. Students' metacognitive awareness during the reflections helped them identify their areas of writing incompetence and adjust their strategies as necessary to achieve their goals on the next assignment, which complemented Negretti's (2012) findings.

Students consistently reflected on their general writing practices throughout the semester; therefore, developing specific practices and habits that characterize effective writing were at the forefront of their mind. In addition, they thought about interviewing, revision, confidence, and outcomes more than they thought about any of the other sub-themes. Looking at the data, one can see students focused on writing skill development and were not as aware of developing writing strategy or transferring writing skills and strategies. Although students were not as aware of transferring writing skills and strategies as they were of writing skills, the reflections show they began thinking about how skills and strategies transfer. This complements Ambrose et al. (2010), Bransford et al. (2000), Benander and Lightner (2005), Downs and Wardle (2007), and Zimmerman and Schunk (2011) who noted metacognitive skills and strategies instruction facilitates knowledge transfer.

As we investigated students' movement through the three domains of metacognitive awareness (Schraw, 1998; Schraw & Dennison, 1994; Sperling, Howard, Staley, & DuBois, 2004), students became aware of important writing skills and strategies and started to become aware of how to apply those skills and strategies. However, they did not reach an awareness of when and why to apply writing skills and strategies. Thus, we concluded students gained declarative and procedural knowledge in the course, but we do not have evidence for or against them gaining conditional knowledge. This evidence emerged as declarative knowledge when students identified skills and strategies that helped them develop as writers and as procedural knowledge when they developed a process for completing writing skills and strategies.

Because metacognitive skills and strategies instruction (e.g., reflection) enhance students' ability to become of aware of writing skills gained and writing strategies deployed, reflection should be integrated into writing courses as retrospective post-assessments. Reflection, in this study, was instrumental in facilitating the change process as students developed writing skills and strategies and identified ways to transfer their knowledge and understanding. We know students have the ability to gain declarative and procedural knowledge because it was evident in this study and others. However, conditional knowledge did not manifest in this data. Therefore, instructors should be more intentional about targeting conditional domains of metacognition through purposeful strategies in an effort to capture all three domains of metacognitive awareness.

Future research should focus on when students should engage in the reflection process throughout the semester. If reflection does enhance students' ability to transfer writing skills and strategies as it did in this course and it has in others, researchers should seek to understand how often and at what points reflection should be integrated into the curriculum. Additionally, more research should be conducted on how (e.g., assignments, reflections, exercises) students reach a conditional knowledge domain in a 15-week writing course. Perhaps, students cannot obtain conditional knowledge in one semester, which should be documented as well.

Change in Metacognitive Awareness

Interviewing skills were most important to students in the third reflection. This may be attributed to the personality profile assignment, as it required more interviews than other assignments. It might also be that students think more about interviewing as they progress as writers. Students reflected more about revising at the beginning and end of the course than they did in the middle of the course. Therefore, reflecting on revising may be most relevant to new and develop-

ing writers, which would support Lingwall and Kuehn's (2013) assertion that reflection is key in developing surface-level writers into deep writers. The idea of revising reappeared when students reflected on the course as a whole. In contrast, students thought more about topic selection earlier in the course, which may indicate that as they progressed as writers they became better at choosing topics or that the topic mattered less as they became more experienced writers. Unsurprisingly, students did not reflect as much about their future as writers or about their career ambitions until the end of the course.

In this study, the reflective process complemented the revision process, especially near the beginning and end of the class. This complements the findings of Parks (2014) who advocated for purposeful and focused reflection to enhance revision. Cohn and Stewart (2016) found metacognitive exercises helped students understand their decision-making. Participants in this study thought more about writing strategies they should apply at the beginning of the course than at the end. This could be indicative of enhanced decision-making, enabled through metacognition, which would support Cohn and Stewart's findings and Negretti's (2012) assertion that strategy development is enhanced and competencies are gained through metacognition. Additionally, Pacello (2014) found metacognitive instructional strategies encouraged concept transferability beyond the course. Thus, students in this study began to apply concepts to their futures as writers and think about their careers in this study, complementing Pacello's work.

Because students' metacognitive awareness changed throughout a writing course, instructors in agricultural communications and similar fields should be aware of the need for adapting metacognitive instructional strategies. Adapting such strategies will enhance and encourage changing metacognitive patterns, which may further develop writing competence (Negretti, 2012). Instructors should also be aware that the nature of assignments may influence the nature of students' reflection. This is important in planning the order and impact of assignments. In this study, students thought more about interviewing skills while working on a personality profile and more on research skills while working on an educational article. As such, instructors who view research as foundational to interviews (or vice-versa) should consider the impact of metacognitive awareness to ensure students are working through ideas in the right order and building effective foundations.

Future research on metacognitive writing should include quantitative measures to document changes in competencies as this study did not explore if changes in metacognitive awareness were related to changes in competency. Additional future research should compare the patterns of metacognitive awareness in this population to the patterns of others. Do students in a beginning news writing course show similar changes in metacognitive awareness? Does change in reflection occur in similar order and magnitude for students in non-agricultural contexts?

Agricultural communications and journalism professionals and other career professionals who write as part of their daily job should consider metacognitive exercises to document their writing development and enhance their understanding of writing concepts. Knowing what students thought about when they reflected on writing will enable the industry to continue to prepare and develop effective writers to tell the story of agriculture.

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ABOUT THE AUTHORS

Dr. Tobin D. Redwine is an assistant professor at Texas A&M University in the Department of Agricultural Leadership, Education, and Communications. Redwine investigates storytelling, including narrative discovery, meaning-making, and messaging practices in agricultural communications and journalism. His line of inquiry examines messaging across multiple media, including visual, written and interpersonal communications.

Dr. Holli. R. Leggette is an assistant professor at Texas A&M University in the Department of Agricultural Leadership, Education, and Communications. Leggette's research is focused on understanding, evaluating, and improving writing skills of the present and future professionals in agriculture. Much of her work is based on her conceptual model to augment critical thinking and create knowledge through writing in the social sciences of agriculture.

Ms. Brooke Prather is a communication specialist for Texas A&M AgriLife Extension Service in AgriLife Communications. Her research interests include visual communication and marketing. Prior to completing her master's degree, she was a contributing writer for The American Brahman Review© and served as Associate Editor for two years.

RESEARCH

Exploring Perspectives of Students Studying Communication Toward Media Access and Use: A Q Methodological Study

Angel Riggs, Diane Montgomery, and Cindy Blackwell

ABSTRACT

This study sought to help communication educators better understand young news consumers who have grown up among a plethora of media options. To better reach and educate today's up-and-coming media professionals, those in the industry need a better understanding of modern media students' perspectives of news. This study used Q methodology and relies on Stephenson's Play and Dutta-Bergman's Media Complementarity theories. Students on a large, comprehensive university campus pursuing undergraduate studies via a communications-related major were asked to complete a Q sort and demographic instrument. Thirty-four participants resulted in 33 usable sorts. The following labels were applied to the three perceptions found in this study: Old-school Media Hounds; Sensational Snippets; and Complimentary Convergers. Old-school Media Hounds tend to be more traditionally news oriented, with a strong appreciation for newspapers' role as government watchdog. Sensational Snippets tend to seek their news in convenient bits and pieces, often from non-traditional news sources. Complimentary Convergers are similar to Old-school Media Hounds in their views of the press; for example, they appreciate the role of the press as government watchdog. However, they do not prefer one media channel more than another, but expect to obtain credible news information free of charge. Recommendations for educators include suggestions for classroom adaptations in response to three perspectives.

KEY WORDS

Media, News, Q methodology, Usage

INTRODUCTION

Society's shift away from agriculture has resulted in today's news industry having "more sports reporters than professionals looking out for the safety of our food" (Zumalt, 2003, p. 27). Additionally, today's agricultural communications students are likely to find work in a variety of organizations, including government agencies, university extension services, news organizations and journals, marketing firms, and commodity or farm groups (2003). Preparing these students for modern communications positions requires melding a diversity of skills.

Traditional journalism and mass communication educational programs "often clearly define news-editorial, broadcasting, public relations and advertising," which tend to be more blended in agricultural communications (Boone, Meisenbach, & Tucker, 2000, p. 64). Indeed, Boone et al. (2000) wrote that some professionals in the agricultural communications industry refer to agricultural reporting as "service" or "advocacy" journalism (p. 111) and insisted there is room in agriculture for both traditional, investigative journalism and service reporting. Either way, agricultural communications students are generally interested in both the media and agriculture, so understanding how these students consume their news is crucial in understanding how to educate them.

According to a recent Pew Research Center study, "In 2016, Americans express a clear preference for getting their news on a screen – though which screen that is varies" (Mitchell, Gottfried, Barthel, & Shearer, 2016, para. 1). For college-age young adults ages 18-29, the screen is a mobile device and the news source is often a social media platform. For example, Tandoc and Johnson (2016) found that a majority of college students (52%) use Twitter to access breaking news, but from there students turn to newspaper websites, television news websites, and online only news websites for more information regarding the breaking news. However, many of these students were exposed to breaking news because of their use of Twitter, not because they were seeking news, per se. According to Tandoc and Johnson (2016) students "get exposed to news not because they were motivated to access news to begin with, but because they happen to be in that communication space" (p. 161), a concept called incidental exposure.

Although the number of adults who get their news via social media was at 62% in 2016, up from 49% in 2012 (Gottfried & Shearer, 2016), which may seem encouraging, much of this news comes via incidental exposure. In a study for Pew Research Center, Gottfried and Shearer (2016) found that users of Instagram, Facebook, and YouTube get news when they are online for other purposes; however, users of LinkedIn, Twitter, and Reddit are relatively even in using the social media platform for actively or incidentally getting news.

> News stories can now come piecemeal, as links or shares, putting less emphasis on the publisher. And, hyper levels of immediacy and mobility can create an expectation that the news will come to us whether we look for it or not. (Mitchell, et al., 2016, para. 1)

For young adults 18-29, about 50% get their news from online sources and 27% from television (Mitchell et al., 2016). In addition, Instagram is the leading social media platform for 18-29 year olds, followed by Twitter, YouTube, and Facebook. "To be sure, news remains an important part of public life" (Mitchell et al., 2016, para. 3), but has become more complicated as delivery media channels have expanded via the Internet. Since Google News was introduced in 2002, news aggregators have offered news free and easy to access, making this the primary, if not exclusive, model of news delivery most current college students recognize. One study focusing solely on college students' perceptions of paid news content found

> …respondents' perception of news as free and easily available from the Internet may be the biggest barrier to implementing a paid news model. Relatively few respondents considered news to be a commodity, though most respondents thought that news is a kind of public service that inform the public and benefit our society. (Sang, 2014, pp. 23-24).

Court rulings supporting news aggregators have woven more tightly into society the concept of news readily available and free of charge. Writing for the *Journal of Civil Rights & Economic Development*, Reynolds (2011) noted, "Thanks to the Internet, the demand for information, particularly the news, and an increased access to it, has grown. Google News is about reader efficiency and reader choice" (p. 990). This increased access of news leaves open the credibility of content.

Media Credibility

No single method determines how news consumers perceive news itself as credible (Golan & Day, 2010). However, several researchers have developed various criteria to gauge media credibility (Armstrong & Collins, 2009; Kiousis, 2001; Thorson, Vraga & Ekdale, 2010). Additionally, there are some benchmarks in determining media credibility, a notion important to the news industry because of evidence that people are more likely to consume news they trust (Thorson et al., 2010; Tsfati & Cappella, 2005).

The United States' first televised presidential debate of then-candidates Kennedy and Nixon in 1960 added another dimension to the study of media credibility: that media channel could confer credibility. The lore surrounding the debate suggests that many people who viewed the debate on television thought Kennedy won; radio listeners, however, thought the winner was Nixon (Druckman, 2003). Druckman, noting a dearth of scientific confirmation of television's role

in the 1960 election, recreated the scene in a study that, indeed, lent credibility to this political legend.
In Bucy's (2003) study on the synergy effects of television and Internet use on media credibility, adults and college students rated media channels they were less familiar with as more credible. For example, Bucy (2003) explained, that although college students tend to be more familiar with Internet news sources, they reported TV news as more credible. Flanagin and Metzger (2000) found online information was rated as credible as that included magazines, radio, and TV. While Flanagin and Metzger offered some conflicting evidence, it is possible, they explained, that the respondents were basing their credibility judgments on a media company, rather than channel of communication.

THEORETICAL FRAMEWORK

Two theories that guided this study are Dutta-Bergman's (2004) media complementarity theory and Stephenson's (1964, 1967) play theory. Both theories seek to clarify behaviors toward news consumption. Both theories were essential in the instrument development for this study. Additionally, both theories assisted the researchers in the interpretation of the perspectives identified in this research.

Dutta-Bergman (2004) postulated in the development of media complementarity theory that subject, rather than communication channel, drives news consumption. For example, Dutta-Bergman found that rather than one communication channel displacing another, news consumers will use various media in a complementary fashion as they search for information on a certain subject.

The literature has suggested that media channel credibility is fueled by a certain amount of imagination and comfort. Stephenson's (1964, 1967) play theory falls in line with this idea, as he proposed that news seeking is a pleasurable, social habit for people, rather than a necessity. Play theory certainly did not generate a stop-the-presses response among media researchers when Stephenson debuted it (Glasser, 2000). In fact, Glasser wrote, the book was "never quite taken seriously and now mostly forgotten" (p. 23). Stephenson (1967), too, thought the role of play was being overlooked in communication research:

> At its best, newsreading is a great skill with which the reader creates his own order, commanding his own grasp of things in the world. …it is deeply absorbing, almost trancelike. … Yet the core of it has been overlooked by the theorists. (p. 158)

Indeed, Ingenthron (1988), in a review of a then-newly reprinted version of Stephenson's The Play Theory of Communication, compared play theory to a "landmark that might have led communications scholars in the right direction 20 years ago" (p. 801).

PURPOSE

This study examined the perspectives of future communications industry professionals. Communications instructors must guide young professionals through a quickly changing media environment that incorporates technologies that did not exist when many of today's professionals were in school. To better understand students' relationship with news credibility, use, and access, the purpose of this study was to identify various perspectives held by communications students. The following research questions guided this study:

> RQ1: What are communications students' perspectives of news credibility as related to media access and use?
> RQ2: What do these perspectives say about communications students' access and use of media channels?

METHODS

We chose Q methodology as the research approach to best explore the subjective perceptions of news media as held by college students with communications majors. There are three ways that Q methodology is known to researchers. As a *technique*, the Q sort is the process of sorting all items into one constellation to represent one thought response of all items sorted in the Q set. As a *method*, statistical procedures of correlation, factor analysis and rotation, and z-score calculation for statements results in the mathematical structure for the relationships between and among the sorts. But, most importantly, as a *methodology*, the process for the interpretation of the resulting factor scores including comparisons across factor scores and other qualitative data provides for the subjectivity of viewpoints (Brown, 1980). Therefore, we applied these principles of Q methodology to determine the prevailing and subjective perceptions of news media among college students studying in a communications-related discipline.

Rather than using a survey in which test items are analyzed independently, we employed the by person analysis of Q methodology. Therefore, this study is in line with the recommendation of Leggette and Redwine (2016) who advocated Q methodology as a strategy to achieve diversity in research methods to acquire the range of knowledge needed to respond to issues in agricultural communications. The Q sort for this study was sampled from a large concourse (Stephenson, 1953; 1973; 1978) of a wide range of statements describing media credibility and usage to which the participants could respond with opinions and beliefs with no expectation of what would be correct.
Q methodology, which provides for a measurement of subjectivity, allows for greater depth and context to the survey-based field of media credibility research. In Q methodology, the use of subjectivity is not a threat to a study but rather the subject-material itself (Brown, 1980; McKeown & Thomas, 2013; Watts & Stenner, 2012). Q methodology instrumentation begins with the identification of a concourse, which is, hypothetically, all possible perspectives about the topic of study. In our case, the concourse was various opinions about media credibility.

Instrument Development

The concourse included over 200 statements reflecting opinions about media usage and credibility as found in the literature and gathered from informal inquiries with agricultural communication students. This collection of statements was sampled to result in the instrument used for data collection. The process for sampling included the "homogeneity" and "heterogeneity principle" (Brown, 1980, p. 189). In other words, the statements are first put together because they are alike in some way followed by choosing the most diverse and varied statements that represent that grouping. Therefore, the Q set was designed to be a sample of statements that represent the informal interactions with students majoring in agricultural communication studies and statements found in the literature.

A major source of the theoretical statements stemmed from Stouffer's comparison study of radio and print as preferred news media channels (Lazarsfeld, 1940; Stouffer, 1962). The study was first printed in Lazarsfeld's (1940) *Radio and the Printed Page*. While not a true Q method study, Stouffer's work was similar to Q in that it included statements regarding preferences for broadcast or print (Stouffer, 1962). The work was noted by Stephenson in his 1967 book *The Play Theory of Mass Communication*.

All of the sampled statements in the Q set were adapted to represent the vernacular of university students. This adaptation included making each statement an opinion and was especially needed for the statements in the Stouffer (1962) study. Most statements needed to be updated in reference to technological access. For example, one of Stouffer's statements related to the advantages of radio, "Can be heard while one is doing other work" (p. 155), became statement 3: "I prefer to watch or listen to news, because I can multi-task while doing so." Likewise, Paulson's (2009) remarks regarding newspapers being considered cutting-edge were they invented today served as inspiration for statement 4: "I would pay for a service that factually condenses the world's events and just tells me what I need to know."

Furthermore, we were careful to keep the grouping of the statements to maintain the integrity of the theories that directed the study. For example, Stephenson's (1967) play theory was the inspiration for statement 25: "I feel smarter after I read a newspaper." Dutta-Bergman's (2004) theory of media complementarity can be linked to several state-

ments, including statement 13: "If I see news on TV, I don't believe it until I see or hear that a newspaper has printed it." Additionally, statements were adapted based on likelihood to generate a response. Two statements include the names of popular pundits from both the liberal and conservative perspectives. These statements were included not only to help define the perspectives as related to news and media channel credibility, but also to ensure the study's relevance in today's media industry.

A total of 36 statements were selected for the Q set. Fifteen sets of Q statements were printed on small cards. Additionally, a pyramid- shaped form board made of 36 blank squares organized in nine columns labeled from -4 to +4 was printed for distribution with the Q statements (2, 4, 4, 5, 6, 5, 4, 4, and 2 statements to each column). A demographics sheet, including optional contact information for follow-up interviews and an open-ended question allowing participants to share thoughts related to their sort was included on the back of the form board.

P-Set

The population for this study included students from a large, central land grant university majoring in a communications-related field in the 2011-2012 academic year. This population was purposive and chosen because of these students' familiarity with the news industry and media channels and the necessity to study their perceptions. IRB approval was obtained from the university. One student's sort was unusable, leaving 33 sorts for this research. Six students provided comments during the post-sort interview process.

Data Analysis

Once all data were collected, each sort was entered into PQ Method 2.11, a software program for Q method data analysis. Solutions including both three and four clusters of opinions, called factors, were considered. However, the three-factor solution was chosen as the final factor solution, because it demonstrated the greatest diversity of perceptions and accommodated the most sorts as significant and defining of the factor from among all possible sorts. Follow-up interviews and written responses provided by participants on their demographic instruments provided additional material for the interpretation of the three factors.

All sorts were correlated to all other sorts, and the resultant correlation matrix was submitted to principal components factor analysis with a significance level of 0.42. Initial rotations to discover the best fit of the data resulted in using a three-factor varimax rotation. Although the correlations between factor scores of defining sorts for the factors ranged from 0.20 to 0.36, it was determined that the solution represented three diverse views about media channel credibility.

FINDINGS

The 33 sorts resulted in 24 of the sorts achieving a significant factor loading on only one factor. We used these defining sorts for the three factors, or perspectives, with nine participants defining the first perspective, six defining the second, and nine defining the third. In Q methodology, the statement structure within each perspective or factor is determined by the arrangement of z-scores calculated for the defining sorts (Brown, 1980; McKeown & Thomas, 2013; Watts & Stenner, 2012). We used the statement structure, including the most positively and negatively z-scored statements, comparisons across structures, and interview and demographic data to interpret the meaning of the three perspectives (See Appendix for z-scores and array position for all statements by factor array). The perspectives were interpreted to be *Old-school Media Hounds, Sensational Snippets, and Complimentary Convergers*.

Perspective 1: Old-school Media Hounds

This perspective was named the *Old-school Media Hounds* because of several themes that emerged in the data presentation and analysis. Those themes include a continuing belief in the credibility of newspapers, advocacy of the press as watchdog and wariness of pundits. It was defined by nine sorts. The *Old-school Media Hounds* highest positively and negatively z-scored statements are listed in Table 1.

Table 1

Most Like and Most Unlike Statements for Old-school Media Hounds

No.	Statement	z-score	AP
	Most Like Statements		
28	If I'm not up-to-date on the news, I feel like I'm missing something.	1.95	4
15*	Newspapers are a more credible source of news than other mediums.	1.54	4
13*	News reporters and editors are unfairly accused of ignoring positive news.	1.23	3
12*	Newspapers are more informative than news from other mediums.	1.20	3
2	If a major news event happens, I'll hear about it immediately.	1.45	3
26	I feel smarter after I read a newspaper.	1.14	3
	Most Unlike Statements		
36	Newspaper articles are rarely relevant to my life.	-1.18	-3
11	Although I know shows like The Rachel Maddow Show or Glenn Beck are opinion-based, I prefer to get news from them because it's easier to understand.	-1.31	-3
33	America no longer needs professional reporters. People can just post news events online.	-1.48	-3
30	It's no longer important for the press to serve as "watch-dog" of government	-1.60	-3
9*	The government should just put out a daily paper telling us what we need to know.	-1.69	-4
21*	I often find myself being swayed by Fox News, although I know it has a conservative mission.	-1.74	-4

Note. Distinguishing statements noted by asterisks (*). AP represents array position.

Students included in this perspective believe in newspapers. However, they may have a romanticized role of newspapers in their lives because they believe newspapers are the most credible source of information (statement 15, array position 4, z-score 1.54). Keeping up with the news is critically important to this group, and they believe newspapers are the most informative way to do so (statement 28, array position 4, z-score 1.95; statement 12, array position 3, z-score 1.20). However, as much as they love the printed page, all of this may not necessarily translate into purchasing newspapers as they more likely to receive news online. Of the 13 websites most logged onto for news by Old-school Media Hounds, only five of the online sources listed included a newspaper component (Table 2).

Table 2
Internet Sites Most Logged Onto for News as Reported by Participants

Old-school Media Hounds	Sensational Snippets	Complimentary Convergers
BBC.com	CNN.com (2)	ABC.com
CNN.com (3)	Facebook.com	AOL.com
ESPN.com (2)	Fox.com (3)	AP.com
LATimes.com	Local news site (3)	Buzzfeed.com
Local news site (2)	MSN.com	CNN.com
NewsOK.com (2)	Yahoo.com	Fitperez.com
NPR.com		Fox.com
NYT.com (2)		Marketwatch.com
MSNBC.com		MSN.com
OColly.com		MSNBC.com
TulsaWorld.com (2)		Newser.com
WashingtonPost.com		NewsOK.com
Yahoo.com		TulsaWorld.com
		Twitter
		USAToday.com
		Yahoo.com (2)

Note. Numerals inside parenthesis indicate the number of times a site was listed by individual participants.

Participant 10, a 25-year-old male senior majoring in journalism and broadcasting, wrote about his sort: "Journalists get a bad rap. If readers were honest with themselves, they would realize they still have a lot of faith in newspapers." Another student, participant eight, a 25-year-old female journalism and broadcasting senior, also referenced public beliefs regarding newspapers in a follow-up interview. "I feel like people expect more from newspapers... I think a lot of people have the expectation that the television media has to be more sensational in order to get people to watch."

Old-school Media Hounds seem to champion the press as watchdog of government while retaining a somewhat sympathetic attitude toward media professionals. For example, the third most-like statement for this perspective regards reporters and editors being unfairly criticized for ignoring positive news (statement 13, array position 3, z-score 1.23). In addition to believing the press should play the role of watchdog of government (statement 30, array position -3, z-score -1.60), they believe that government needs a watchdog. This group does not trust the government to tell the truth about itself (statement 9, array position -4, z-score -1.69).

Old-school Media Hounds do not want to be told what to think. Students included in this perspective are the least likely, when compared to the other two perspectives, to be swayed by a politically aligned media channel (statement 21, array position -4, z-score -1.74) regardless of political leaning. For example, participant 10 explained in a follow-up interview that when people think about "biased" news, "…honestly, they are thinking of the television or the Internet, because newspapers have never taken that path." Newspapers, he said, have clearly labeled editorial pages.

Although students included in this perspective found newspapers the most credible source of news, they ranked the Internet, on average, as the media channel through which they were most likely to receive news (Table 5). Newspapers were the second-choice, on average, although that is a higher ranking than the fifth-place ranking newspapers received by the other two perspectives. In light of the second-place ranking, perhaps *Old-school Media Hounds* are more newspaper supporters, rather than readers. A better description for this group may be that they are just generally more interested in the news than others. For example, although students included in this group listed television as the third most-often-used channel for news, almost half of them reported watching television news every day. The notion of incongruence between a preferred media channel and the channel actually used is not unusual. Bucy (2003) and Westley and Severin (1964a) both referenced similar findings in their respective studies. Bucy (2003) found that adults and college students rated media channels with which they were less familiar as more credible. Additionally, Westley and Severin (1964a) reported that "residents did not necessarily assign greatest credibility to the medium they assigned greatest preference" (p. 326).

Perspective 2: Sensational Snippets

Sensational Snippets have bits-and-pieces news-gathering habits, demand convenience, and expect media exaggeration. This perspective was defined by six sorts. The *Sensational Snippets* most positively and negatively z-scored statements are listed in Table 3.

Table 3

Most Like and Most Unlike Statements for Sensational Snippets

No.	Statement	z-score	AP
	Most Like Statements		
3*	I prefer to watch or listen to news, because I can multi-task while doing so.	2.37	4
31*	I rarely read, listen to, or watch an entire news article.	1.90	4
6*	I would rather hear the news told to me from television than read a newspaper of online news.	1.16	3
20	Media companies will lie to me if it boosts their ratings.	1.23	3
2	If a major news event happens, I'll hear about it immediately.	1.08	3
22	I have trouble determining whether news is biased or truthful.	1.05	3
	Most Unlike Statements		
8	I would buy more newspapers if I knew the paper came from sustainable forests.	-1.50	-3
14	If I see news on TV, I don't believe it until I see or hear that a newspaper has printed it.	-1.67	-4
4*	I prefer cable or satellite news programs to network news.	-0.94	-3
19*	I would seek out news from an agency that refused to purchase pictures from the paparazzi.	-1.05	-3
34*	Newspapers are for busy, educated, professional people.	-1.91	-4

Note. Distinguishing statements noted by asterisks (*). AP represents array position.

Students included in this perspective are not going to sit through an entire newscast (statement 31, array position 4, z-score 1.90). Additionally, *Sensational Snippets* appreciate newspapers, but they are not going to read one. However, they are sure that if something big happens, they will find out about it immediately (statement 2, array position 3, z-score 1.08). *Sensational Snippets* much prefer to receive news via broadcast, because it allows them to multi-task (statement 3, array position 4, z-score 2.37; statement 6, array position 3, z-score 1.16). This group may get much of their news from comedy shows that typically incorporate news into comedy bits. So, it's likely no surprise *Sensational Snippets* expect some level of exaggeration in news to boost ratings (statement 20, array position 3, z-score 1.23). Students included in this perspective are akin to Bird's (2000) perception of the relationship between news and modern young adults. Among her findings, Bird (2000) wrote people younger than 30 years old tend to believe it is the media's responsibility to attract them and perhaps entertain them.

Convenience is key for the *Sensational Snippets*. Consider the perspective of Participant 3, a 19-year-old female agricultural communications junior, who said in a follow-up interview: "My thing is, as a college student, we have no time, of course, to sit down and read a full newspaper, or at least I don't, because you're worried about reading for class." News and social media applications on her phone help her track everything from severe weather to which classes her friends are taking. "Newspapers have more detailed information," she said. "But I'm definitely more into websites and social media … they're more convenient."

Sensational Snippets may allow convenience to trump credibility. However, that may be because followers of this perspective put an emphasis on the viewers' responsibility to discern the credibility of news. Consider the perception of Participant 1, a 19-year-old female agricultural communications junior, who said in a follow-up interview that much of her news comes from the *Jimmy Kimmel Live!* A late-night comedy show. "Unfortunately a lot of my news comes from there, because it comes on after *Two-and-a-Half Men*," she said. She added that she often "half" watches the show while doing homework. "A lot of his stuff is fake … like Photoshopped," she said, describing the program's penchant for presenting snippets of real news stories in an exaggerated, comical format. "As long as people understand that the stuff he's saying is actually going on, but the way he says it is not. … They have to know it's comedy- based."

The Sensational Snippets receive news, on average, via television (See Table 5). That is no surprise as *The Sensational Snippets* seem to view television as the most credible media channel (statement 14, array position -4, z-score -1.67). Students included in this perspective seem to have some preference for local television news rather than cable or satellite news programs (statement 4, array position -3, z-score -0.94). This is may be due to a distrust of media companies, which they believe will lie for a ratings boost (statement 20, array position 3, z-score 1.23). Additionally, followers of this perspective tend to have a difficult time determining whether news is biased (statement 22, array position 3, z-score 1.05) and may perceive local stations as the most unbiased.

Although *Sensational Snippets* reported that television, on average, was their primary media channel choice, only one respondent in this perspective reported watching television news more than once per day. In comparison, four *Old-school Media Hounds* reported watching television news at least every day, despite TV's ranking as the third-most-often used media channel.

Perspective 3: The Complimentary Convergers

Complimentary Convergers was defined by nine sorts. The participants whose sort defined this factor believe news should be free, accurate and converged. This group is similar to the *Old-school Media Hounds* in that keeping up with the news is important to them (statement 28, array position 4, z-score 2.08) and their belief that the press has a necessary role of government watchdog (statement 30, array position -3, z-score -1.52). However, unlike the *Old-school Media Hounds*, *Complimentary Convergers* assign no greater credibility to newspapers as a media channel (statement 16, array position -4, z-score -1.66; statement 14, array position -4, z-score -1.72). Unlike the Sensational Snippets, Complimentary Convergers will watch, listen to or read an entire news article (statement 31, array position -3, z-score -1.36). However, Complimentary Convergers are not going to pay for news (statement 7, array position 3, z-score 1.62). The Complimentary Convergers' most positively and negatively z-scored statements are listed in Table 4.

Table 4

Most Like and Most Unlike Statements for Complimentary Convergers

No.	Statement	z-score	AP
	Most Like Statements		
28	If I'm not up-to-date on the news, I feel like I'm missing something.	2.08	4
2*	If a major news event happens, I'll hear about it immediately.	1.93	4
7*	I should not have to pay to receive credible news information.	1.62	3
26	I feel smarter after I read the newspaper.	1.32	3
5	I would pay for a service that factually condenses the world's events and just tells me what I need to know.	1.19	3
20	Media companies will lie to me if it boosts their ratings.	1.01	3
	Most Unlike Statements		
31	I rarely read, listen to, or watch an entire news article.	-1.36	-3
8	I would buy more newspaper if I knew the paper came from sustainable forests.	-1.37	-3
11	Although I know shows like *The Rachel Maddow Show* or *Glenn Beck* are opinion-based, I prefer to get news from them because it's easier to understand.	-1.39	-3
30	It's no longer important for the press to serve as "watchdog" of government.	-1.52	-3
14	If I see news on TV, I don't believe it until I see or hear that a newspaper has printed it.	-1.72	-4
16*	If I see a news item on my phone or Internet, I don't believe it until I see it on TV or in a newspaper.	-1.66	-4

Note. Distinguishing statements noted by asterisks (*). AP represents array position.

Students included in this perspective may challenge long-standing notions that age or prestige (Lazarsfeld, 1940; Westley & Severin, 1964a and 1964b) is likely to influence media channel preference. *Complimentary Convergers* are truly immersed in media convergence. Like the *Sensational Snippets*, this group is sure they will hear about it if something major happens (statement 2, array position 4, z-score 1.93). Like the *Old-school Media Hounds*, this group does not rely on news analysis programs to help them understand issues (statement 11, array position -3, z-score -1.39).

They will follow an entire news article, however, *Complimentary Convergers* tend to have a resigned distrust of media (statement 20, array position 3, z-score 1.01). For example, Participant 26, a 23-year-old, male, agricultural communications sophomore said in a follow-up interview he knew from his experience working in television that reporters, both in print and broadcast journalism, "want to make it interesting." However, he said, although the media channel with the most credibility is the newspaper, that just-the-facts attitude is leading to the print industry's demise. "I think that's why they are kind of dying out," he said. "They aren't the most interesting read." He added that while some TV news stations do a good job of presenting the facts, "Newspapers are dying out because they aren't giving all the gossip. They are just giving the facts."

Complimentary Convergers receive news most often, on average, via the Internet and television (Table 5). They receive news via magazines and newspapers least often. That makes sense as those media channels require payment at point of purchase or a subscription, and this group strongly believes they should not have to pay for news. It is true that the Internet, cell phone and satellite television and radio also require subscriptions, but those services also have alternative uses.

Table 5
Media Channels Most Often Used to Receive News

	Online	Magazine	Television	Newspaper	Cellphone	Radio
Old-school Media Hounds	1.8	4.8	3.8	2.7	3.6	4.2
Sensational Snippets	2.8	5	2.3	4.3	3.3	3.2
Complimentary Convergers	2.3	4.6	2.4	4.5	3.4	3.9

Note. Media channels most often used by participants indicated by rank, 1-6. Results depict average rank, per factor, of each channel.

CONCLUSION AND DISCUSSION

Although Stephenson (1964, 1967) related his play theory to news reading, this study found the theory translates well to modern media consumption as a whole. *Sensational Snippets*, especially, emulate play theory in that newsgathering likely includes seeking information about their friends as well as traditional news all from one media channel. *Old- school Media Hounds* also illustrate the theory in that they seem to take pride in being newspaper loyalists. Interestingly, while Stephenson (1964, 1967) noted that news readers may think to themselves that they would have handled a situation better than subject of an article, *Old-school Media Hounds* may think of themselves as the reporter. Neither *Old-school Media Hounds* nor *Complimentary Convergers* want to be told what to think by pundits. Indeed, drawing their own conclusions about the news is likely part of "play" for these groups.

To reach students, communications instructors need to understand how students access and perceive news information. Additionally, understanding the relevance of play theory in students' lives may provide for better classroom engagement, especially since many are exposed to news in an incidental manner (Gottfried & Shearer, 2016; Tandoc & Johnson, 2016). For example, *Old-school Media Hounds* might benefit best from a traditional pencil-and-paper approach to news gathering, however, they may be intrigued by investigative reporting and could be drawn to projects involving computer-assisted reporting. Their penchant for following news may make them more likely to speak up in classroom media ethics and current events discussions. While their loyalties clearly lie with newspapers, today's media environment dictates that students be functional across media channels since they recognize news as a public service and a need in society (Reynolds, 2011; Sang, 2014). This group could probably be encouraged to expand their abilities via an introduction to backpack journalism; that is, creating a multi-media package in conjunction with newswriting. They may also be the first to get breaking news via social media, but will back up that information with more traditional media outlets similar to the findings of Tandoc and Johnson (2016).

Current events discussions may be helpful to *Sensational Snippets*, who may need to be encouraged to keep up with the news more than they already think they do. These students are interested in news, and may recall certain headlines, but are not likely to have followed a news item in-depth. However, because *Sensational Snippets* may tend to receive

news incidentally via social media (Gottfried & Shearer, 2016; Tandoc & Johnson, 2016) or a late-night humor television program, these students may have a better grasp of entertainment news. Therefore, including entertainment news items in classroom discussions or examples may help these students feel more welcome and likely to contribute.

Complimentary Convergers may thrive in a new-media environment, and are likely to benefit most from a hybrid education of broadcast and print. Like the *Old-school Media Hounds*, these students are interested in news and the press' role in democracy. However, *Complimentary Convergers'* reluctance to pay for news may entice them to further develop innovative ideas about how the industry is to survive without a paying base beyond news aggregators such as Google News. According to Reynolds (2011) "Google's aggregation of news increases access to information by bringing the world's news to the fingertips of the user" (p. 994). Encouraging these students to develop cutting-edge ideas about the future of media industry management may help them feel included in the classroom.

Suggestions for classroom applications by student perspectives were given here. Yet, research for the connection between these practical suggestions and how teaching to student perspective has yet to be explored. Furthermore, future research should consider how media channel credibility changes as new social media platforms influence how students communicate with each other. Indeed, some of the most prevalent social media platforms today were in their infancy or did not exist when data for this study were collected. Additionally, it would be interesting to gauge the relevance of play theory as media channels increasingly offer interactive engagement.

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APPENDIX

Q Statements with z-score and array position per factor array

		Factor 1		Factor 2		Factor 3	
Number	Statement	z-score	AP	z-score	AP	z-score	AP
1	If a major news event happens, I'll hear about it immediately.	0.728	2	0.985	2	-0.118	0
2	I prefer to watch or listen to news, because I can multi-task while doing so.	1.447	3	1.081	3	1.932	4
3	I prefer cable or satellite news programs to network news.	0.903	2	2.370	4	0.811	2
4	I would pay for a service that factually condenses the world's events and just tells me what I need to know.	0.628	1	-0.941	-3	-0.217	-1
5	I would rather hear the news told to me from television than read a newspaper or online news.	0.832	2	-0.281	-1	1.192	3
6	I should not have to pay to receive credible news information.	-0.295	-1	1.162	3	0.300	1
7	I would buy more newspapers if I knew the paper came from sustainable forests.	0.032	0	-0.072	0	1.616	3
8	The government should just put out a daily paper telling us what we need to know.	0.318	0	-1.500	-3	-1.370	-3
9	Editors twist Sarah Palin's quotes to affect how people view her.	-1.691	-4	-0.457	-1	0.535	1
10	Although I know shows like The Rachel Maddow Show or Glenn Beck are opinion-based, I prefer to get news from them because it's easier to understand.	-0.453	-1	0.860	2	0.258	1
11	Newspapers are more informative than news from other mediums.	-1.309	-3	0.528	1	-1.386	-3
12	News reporters and editors are unfairly accused of ignoring positive news.	1.202	3	0.386	1	-0.627	-2
13	If I see news on TV, I don't believe it until I see or hear that a newspaper has printed it.	1.225	3	0.200	1	-0.036	0
14	Newspapers are a more credible source of news than other mediums	0.523	1	-1.668	-4	-1.719	-4
15	If I see a news item phone or Internet, I don't believe it until I see it on TV or in a newspaper.	1.538	4	0.158	0	-1.073	-2
16	News events are so parodied that sometimes I don't know if something really happened.	-0.415	-1	-0.859	-2	-1.660	-4
17	If news agencies didn't exaggerate the news, no one would watch.	-0.838	-2	-0.593	-1	-0.090	0

18	I would seek out news from an agency that refused to purchase pictures from the paparazzi.	-0.344	-1	0.055	0	0.416	1
19	Media companies will lie to me if it boosts their ratings.	0.730	2	-1.053	-3	0.196	0
20	I often find myself being swayed by Fox News, although I know it has a conservative mission.	-0.076	0	1.229	3	1.005	3
21	I have trouble determining whether news is biased or truthful.	-1.737	-4	0.276	1	-0.181	-1
22	Sometimes I can't figure out if a newscaster is a pundit or a reporter.	-0.249	0	1.051	3	0.734	2
23	News reporters and editors are scared to print the truth about industries like agriculture.	-0.030	0	0.062	0	0.355	1
24	Journalists often make up or tweak quotes to fit in story.	-0.549	-1	-0.661	-1	0.701	2
25	I feel smarter after I read a newspaper.	-0.655	-2	-0.254	0	0.572	2
26	I follow the news more than I lead others to believe.	1.137	3	0.868	2	1.322	3
27	If I'm not up-to-date on the news, I feel like I'm missing something.	0.455	1	0.055	0	-0.237	-1
28	Television and the Internet have been detrimental to news credibility.	1.949	4	0.291	1	2.079	4
29	It's no longer important for the press to serve as "watchdog" of government.	0.716	1	0.897	2	-0.562	-2
30	I rarely read, listen to, or watch an entire news article.	-1.595	-3	-0.892	-2	-1.517	-3
31	Newspapers would be more popular if they were free.	-1.003	-2	1.898	4	-1.362	-3
32	America no longer needs professional reporters. People can just post news events online.	0.672	1	-0.681	-2	0.220	0
33	Newspapers are for busy, educated, professional people.	-1.484	-3	-1.489	-3	-0.537	-1
34	Only the horoscope/comics, celebrity news or other entertainment sections are important to me.	-0.046	0	-1.905	-4	-0.553	-1
35	Newspaper articles are rarely relevant to my life.	-1.082	-2	-0.346	-1	-1.017	-2
36	If a major news event happens, I'll hear about it immediately.	-1.181	-3	-0.759	-2	0.022	0

Note. AP represents array position.

AUTHORS

Angel Riggs, Ph.D., Assistant Professor of Agricultural Communications in the Department of Agricultural Education, Communications Leadership at Oklahoma State University. Dr. Riggs teaches media writing classes with a focus on science-based news writing and reporting.

Diane Montgomery, Ph.D., Regents Professor Emerita, Educational Psychology in the School of Applied Health and Educational Psychology, College of Education at Oklahoma State University. Dr. Montgomery continues to teach and conduct research using Q methodology with particular attention to mentoring other researchers.

Cindy Blackwell, Ph.D., Visiting Associate Professor and Assistant Director in the School of Mass Communication and Journalism at The University of Southern Mississippi. Dr. Blackwell teaches writing courses in the public relations emphasis of the journalism program, oversees The Agency at Southern Miss and advises the USM chapter of the Public Relations Student Society of America (PRSSA).

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