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Journal of Applied Communications 100(3) Full Issue

Abstract

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COMMENTARY

Expo Milano 2015: The Overview, Issue, and Future for Agricultural Communicators

Abigail Borron and Jessica Holt

ABSTRACT

Expo Milano 2015 was an international agricultural event to promote and discuss the issue of food sustainability around the world. Two agricultural communication researchers attended the event in summer 2015 to better understand the world's perspective of the prominent issues facing the agricultural industry and how other countries were addressing the issues. The Expo took place in Milan, Italy, and featured 140 countries and their perception on agriculture and food in their respective country. While the event was impressive, the issues purported to be the focus of the event (agriculture sustainability and food insecurity) were rarely addressed in each country. Rather, the countries focused on culture and how food impacted their culture and customs. Events like these offer agricultural communicators the opportunity to join the discussion of how the issues of food sustainability and insecurity can be positively impacted by agriculture technology and research; however, it may be only through the formation of meaningful and collaborative relationships with groups and organizations outside of the traditional agricultural industry that agricultural communicators will be invited to join the conversation. These relationships may need to be cultivated to show respect and mutual benefit for both the organization and the agricultural industry for long-term impact for the expansion of opportunities for agricultural communicators.

KEY WORDS

Agriculture Sustainability, Expo Milano 2015, Worldwide Agriculture

INTRODUCTION

Food is a cornerstone to daily living. We depend on it to sustain us. Therefore, it is a non-negotiable resource that, in turn, has elicited a rather complex relationship with us for centuries. Throughout history, food has defined families, communities, and countries throughout the world. Frankly, food is that unconventional media channel that communicates our identity and our heritage. Food and food practices have been and will continue to be the centerpiece of celebrating milestones, mourning the loss of loved ones, and building the bonds of our respective communities. As individuals, we continually utilize our relationship with food to link the present with the comfort of the known past, resulting in shared narratives that sustain food practices and embody our personal heritages.

Expo Milano 2015 encapsulated the rich heritage that is food. Taking place in Milan, Italy, from May 1 through October 31, 2015, the world exposition's platform was a conversation on a sustainable future by highlighting traditional cultural values and emerging technologies (Expo Milano 2015, 2015c). Through the elaborate design of 1.1 million square meters, showcasing more than 140 participating countries and their respective pavilions, the Expo stated that each country shared "its best technology that offers a concrete answer to the vital need: being able to guarantee healthy, safe and sufficient food for everyone, while respecting the Planet and its equilibrium" (Expo Milano 2015, 2015c, para. 1); and that it is "a place where cultures, traditions and flavors meet against a backdrop of outstanding architecture" (Expo Milano 2015, 2015b, para. 5).

Yes, needless to say, it was incredibly impressive. To walk into the Expo and attempt to take in its massive presence was overwhelming. It's grandeur and expanse resembled Disney's Epcot. Each country's pavilion showcased its rich culture through the architecture, the dress of the individuals working the pavilions, the music being played, and the food available. While the duration of the Expo was only a short six months, the design and construction of each pavilion did not elicit a temporary nature. And the diverse and creative technology used to convey a country's story and establish its presence within the Expo was incredibly inspiring to two communication professionals as we contemplated how to integrate some of the communication technologies and creativity into our work. However, it also left us perplexed and rather irritated. Before we address our resulting state of mind, let us first set the stage of what we saw at four very different pavilions.

Pavilions of Interest

Save the Children – This was one of the few pavilions that was not country-specific and addressed multiple variables at play in food insecurity throughout the world. Save the Children is an international organization that endeavors to improve the welfare of children around the globe in humanitarian crises, such as natural disaster, civil unrest, and food insecurity (Save the Children, 2015). To walk through and engage in the pavilion, visitors assume the identity of a small child who struggled with his/her family to make ends meet or get by on a daily basis. Each subsequent interactive element demonstrated more evidence of the variety of external factors (many outside of a family's control) that contributed to their daily struggles. If visitors stayed on the intended path throughout the entire pavilion, they would gain a deeper understanding of the portrayed needs in food insecurity, as well as personal calls to action. This pavilion was one of the few at the Expo that recognized a need in the face of adversity and, through building elements of interaction, worked to provide a solution to the issue. Of course, at the exit visitors could purchase novelty items associated with the organization. However, next to each item was a list of resources and services that a percentage of the purchase price would help support. For example, a $20 T-shirt could provide nutritional supplement packets for 20 people.

The Save the Children Pavilion at the Expo

Slow Food – Founded in Paris, Slow Food International is a grassroots organization that focuses on preserving local food cultures and traditions (Slow Food, 2015). This pavilion demonstrated activist-style messages where small farms were clearly portrayed as better than large farms. Those touted as doing things right were small, European stakeholders who avoided monoculture crop and livestock systems and, instead, practiced small, diverse operations. The pavilion had workstations for visitors to engage with concepts regarding the "proper way" to grow food. One station had small, hinged doors with images of small, diversified farming practices with an explanation and location of the type of farming on one side while the opposing side depicted images displaying large, industrialized farming. The latter images were accompanied by text offering the location, generally in the U.S. and U.K. and why this type of farming was harmful to the environment, the animal, and the consumer.

U.S. Pavilion – This pavilion was a massive 42,000 square foot space with multiple levels and a number of interactive elements throughout. It also claimed to have the world's largest vertical farm with panels of crops that rotated throughout the day, depending upon the location of the sun (Expo Milano 2015, 2015a). A variety of multimedia elements incorporated a number of talking heads, including Barack Obama and well-known food activists and chefs, such as Alice Waters and Michael Pollan. The videos highlighted the types of foods and meals that could be created with the foods grown on small, local farms, and highlighted select and emerging

The U.S. Pavilion at the Expo

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technologies that suggest the future of U.S. food production. A significant emphasis was placed on the end product and the enjoyment of healthy fresh food.

Future Food District – Functioning as a complete grocery store, the technology integrated throughout the food displays and shelves was impressive. By way of a three-dimensional scanning system, visitors could hold their hand over a food item and a digital display immediately showed a full breakdown of the item. Information included the food's origins, the breakdown of its nutrients, and the carbon footprint that resulted from the production of that particular food item. Ingenious? Of course. The technology could clearly attribute to local food movements, trace food contamination events, and bolster farm-to-plate awareness.

The Issue

So, after two days of wandering in and around all parts of the Expo, why did we leave feeling perplexed and downright irritated? While the Expo did highlight and pay respect to the culture of each country, little if no discussion was offered to the future of food with consideration to major issues facing the world. The issues of sustainability, insecurity, obesity, hunger, environmental impacts, and GMOs were very rarely discussed within the countries' pavilions. If GMOs, or other controversial issues were mentioned, they were criticized and dismissed as viable options for the wellbeing of the country and its people. Save the Children was the only one we saw that acknowledged a humanitarian problem while simultaneously identifying potential solutions and calls to action.

The Slow Food pavilion demonstrated a one-sided conversation. And, while neither of us denied the attractiveness and beauty of the slow food movement, it left us feeling quite defensive and struggling to maintain an open mind throughout the interactive displays. To negatively portray industrialized farming while simultaneously advocating a preservation of food cultures and traditions ultimately created a disjointed juxtaposition in the argument. When faced with a growing world population, one cannot argue for one without the acknowledgement that the other is essential as well.

An interactive display about the legislative process in the U.S. pavilion at the Expo.

In the U.S. pavilion, while the interactive elements were impressive, there were significant elements lacking. Neither animal/crop specialists nor agricultural-based researchers were included in the conversation of food for the future. While the end product and associated experiences were artfully depicted, no elements of the pavilion ever showed the entire process of growing food. No attention was given to the farmer, the researchers, or the process for providing enough food to feed the population. The pavilion touted sophisticated farming practices, but failed to address the reality and complexity of feeding the nine billion. We left the pavilion with an engrained sense of the types of food we could and do eat from the U.S. but with little information about the start-to-finish impact of those foods used to make the end product enjoyed by consumers.

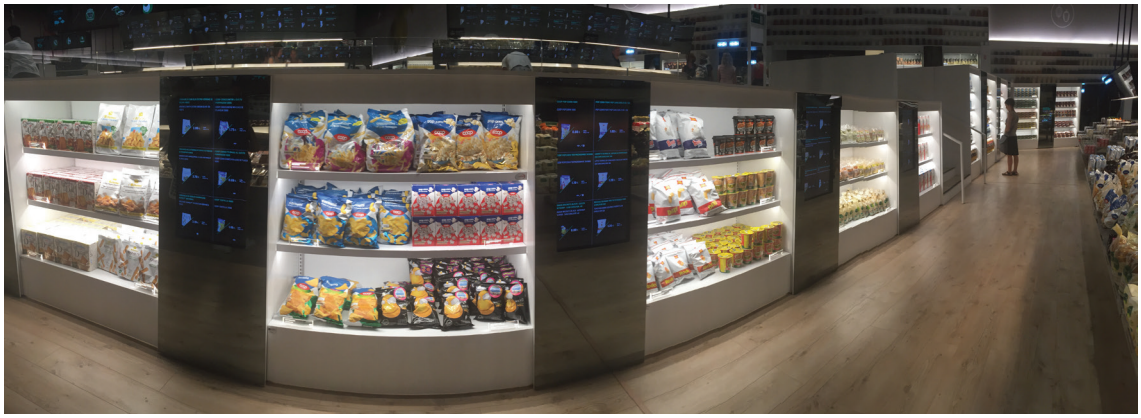
The Future Food District was fascinating; and the demonstration of a three-dimensional scanning system for the purposes of placing a plethora of product information literally at your fingertips was quite impressive. However, the implementation and maintenance of such an endeavor left us with many questions. Is it unrealistic with respect to financial and technological reasons? Would the store design ultimately wield a greater disparity between the haves and the have-nots? Would customers be required to pay a premium price for such a shopping experience? Is it possible that such store innovation would perpetuate and enhance the existence of food deserts and the accessibility of fresh food? And, when it comes to those who are food insecure, is such information a greater priority than the food itself?

Also, an issue that continually emerged between us was the hypocrisy, or the decision for a country's allocation of resources to design and build such an elaborate temporary pavilion. Some struggling countries spent millions of dollars to have a pavilion on display at the Expo, highlighting the culture of their country, while a large portion of their people

are facing hunger or nutritional deprivation issues. For instance, Bangladesh had a pavilion at the Expo, but 41% (about 7 million) of the children in that country are chronically undernourished (World Food Programme, 2015). We did not see any mention of how these types of countries were working to address the deprivation or imbalances they were facing. Instead, the countries focused on the cultural impacts food has had on their country and its people.

We continually wrestled with what we saw, without fully pinpointing exactly why. And, finally, we found ourselves contemplating the power of food. Regardless of the time period, food has been and is still used to display wealth and wield power and control. Think back to WWII, when Germany shut down supply chains to Leningrad for 872 days, leading to 1.5 million Russians dying of famine (Jones, 2008). More recently, in Sudan, the civil war has resulted in more than two million people dying, mostly of hunger (Roston, 2012). The militant Islamist group, Al-Shabab, has wielded power and control by prohibiting food aid to the Somalians they want to suppress. The result is starving young men who join Al-Shabab, which happens to control the food (Roston, 2012).

And, while Expo Milano 2015 did not wield such destructive power, it did demonstrate the power structures at play as country after country, movement after movement, touted their best while overshadowing their least. Therefore, during the six-month exposition with the tagline "Feeding the Planet—Energy for Life," it became clear that food clearly has the ability to differentiate socioeconomic levels. Access to premiere food sources is relegated to the select few, where food becomes art and experience. This is a common thread among all cultures and was the perpetual theme throughout the Expo.



The shopping aisles in the Future Food District with interactive displays at th Expo.

The Future and Our Role

Don't get us wrong. We enjoyed our tour of the globe, eating culturally specific foods from a variety of countries; and we enjoyed the Epcot-like experience of the off-the-hook pavilions. But, we also looked at the Expo through the critical lens of the agricultural communicator. Events such as Expo Milano 2015 have the opportunity to be a wonderful outlet to inform and educate the world and its consumers about the truthful issues we are facing in the future. These types of platforms provide a stage to bring together the greatest minds to propose ideas for helping to solve our greatest problems related to food. Also, this begins the conversation for young minds to understand their role in helping to ensure there will be sustainable food for all in the future. But, we struggled to see that. The impression was a beautiful, yet surface-level, depiction of idealistic rather than realistic.

The overarching point of this article: Well, we turned the critical lens back on ourselves as well, asking, "What is our role in these types of venues and discussions like this?" And, the answer was obvious. We must be at the proverbial table, talking with the likes of pavilion designers and activists… not to win the argument but to enhance and begin the holistic discussion. We are food activists, too. And, until we lay claim to that often perceived unsavory title, we will continue to walk away from these events feeling perplexed and irritated.

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PROFESSIONAL DEVELOPMENT

Testing the Usability of Communication Materials through Heat Maps in Online Survey Platforms

Laura M. Gorham, Shuyang Qu, Ricky W. Telg, and Alexa J. Lamm

ABSTRACT

Usability tests can be used to enhance the communication strategies of agricultural organizations as they identify the use and value of a communications tool from a target audience's perspective. Further, online survey methodology has provided a place where communicators can gather information from a diverse target audience. One way communicators can create a usability test in online surveys is through the use of heat map questions. Heat map questions provide a platform where agricultural communication professionals and researchers can identify how well a target audience uses a communication material. By merging heat maps and value-based questions, researchers and communicators can evaluate the usability and value of a communication material. Heat maps allow agricultural communicators to evaluate communication materials such as websites and fliers, gather users' feedback and identify strategies to enhance agricultural communication materials. This article provides steps to incorporate heat map questions into online survey, tips for using heat map tests, and methods to interpret heat map results.

Funding for this study was provided by the Florida Department of Agriculture and Consumer Services' Travelers Don't Pack a Pest Program.

KEY WORDS

Heat Map, Survey Methods, Usability Testing, Value Testing

INTRODUCTION

Agricultural communicators recognize the need for using effective communication and distribution methods that best inform, motivate, and serve their clients (Telg, Irani, & Varvorines, 2008). Goodwin and Rhoades (2011) found the agricultural industry fails to communicate effectively with non-agricultural audiences, and therefore, the agricultural industry needs to find ways to increase effective communication strategies. Research has addressed the use of communication audits in determining how communication messages could be improved (Goodwin, Davis, & Telg, 2014). However, communication audits could be strengthened when paired with tests to determine the use and value from a target audience (Goodwin et al., 2014). This article provides a rationale for the need for usability tests to determine how a target audience perceives the communication material. Additionally, the article describes how heat map questions are utilized to perform usability testing in online survey methods, tips to use heat maps in usability tests, and methods to interpret heat map results.

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Usability Testing

Agricultural communication professionals should design communication messages based on how a target audience uses and values the information they find in the communication materials (Dimas & Redish, 1999). Usability testing is an evaluation technique measuring how easily a target audience member can learn the information in the communication material and then make use of the information to accomplish a task (Dumas & Redish, 1999; Goodwin et al., 2014). These tests evaluate users' perceptions of ease and value in order to find out the usefulness of the communication material and identify potential improvements that could increase effectiveness and efficiency for both stakeholders and the public (Dumas & Redish, 1999; Goodwin et al., 2014; Rubin & Chisnell, 2008).

Heat Maps

Communicators can measure the usability of their communication materials by using heat maps embedded in online surveys, and thereafter enhance communication materials. For example, when creating Web pages, heat maps can be adopted to determine which parts of a page visitors click on the most. Understanding users' most frequent clicks helps developers to assess what images or text draws people's attention more on that Web page. In an online survey with a heat map question, the image of a piece of communication material can be uploaded and presented to the respondents. The respondent will click on an image on the computer screen to determine numerous usability functions (Qualtrics, 2015a).

For example, in Figure 1 the heat map shows that more people click on the banana image more than anywhere else on the computer screen, followed by the "Don't Pack a Pest" button at the top of the screenshot.

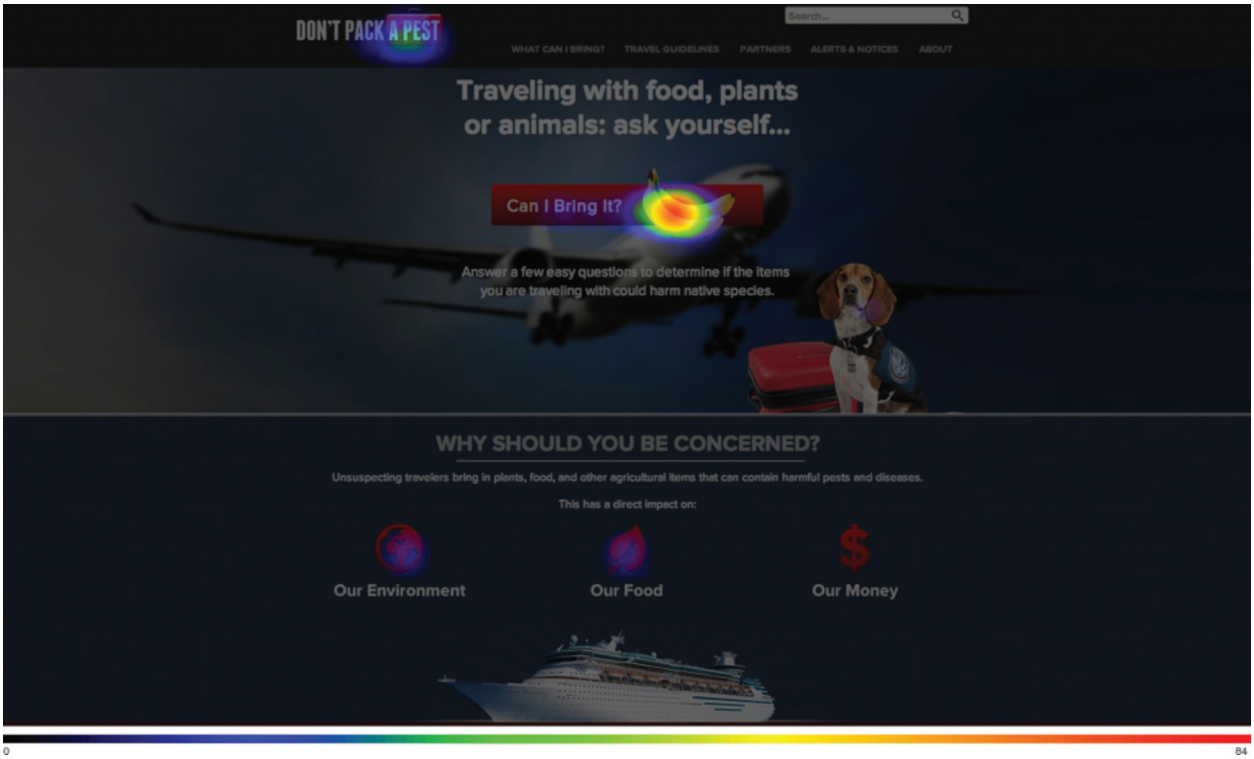


Figure 1. Screen capture of heat map overlay on desktop image.

A timing question, which records how long the task takes to complete, can be integrated into a heat map question to provide researchers information about the degree of functionality associated with the website (Qualtrics, 2015a). Value questions can also be added to determine users' perceptions toward the communication materials. Combining timing

and value questions allows communicators to gather information and determine the ease of respondent use of the communication material. Researchers can use this method to improve communication strategies targeted toward how the communication material is being used and valued by its audience.

Applying Heat Maps as a Usability Test: An Example

To use heat maps to perform a usability test, communicators need access to a communication material, access to an online survey platform, and access to a sample of respondents who would be most likely to view the communication material (the target audience). A number of survey software programs provide heat map functions including Qualtrics (2015a), AirMagnet Survey (2015), Survey Analytics (2015), and SurveyGizmo (2013).

Heat maps were recently used in a study to evaluate the usefulness of a website designed to provide educational resources regarding invasive species transferred on agricultural products to international travelers. The study used heat maps to determine the usefulness of the website on mobile (smartphone), tablet, and desktop platforms. A timing question was added to record how long it took the respondents to make the first and second clicks on the Web page. The perceived value of the Web pages was measured through questions about users' general perceptions of the website, perceived navigation experience, and perceived quality and quantity of information.

The steps for developing a heat map question in Qualtrics, for this example, are described in this article. When performing a usability test using heat maps in Qualtrics, this article can be considered as an example. Note that online survey tools utilize heat maps differently and the specific procedures may vary; refer to the specific online survey program's help menu to learn how to use heat maps in particular survey applications.

Developing your question

Develop user- or audience-based questions to determine how well the user finds information. Example statements for your questions:

- Please click on the area of the following image where your eye went first when you looked at the page.
- Please click on the area where you would most likely click first were you visiting this page.
- Please click where you would go to find information about…
- Please click on the area that attracts your eye the most.
- Please click on the area you think needs improvement.

Take a photograph or screenshot of your communication material to be used in the question. In Figure 2, a screenshot of the mobile version of the "Don't Pack A Pest" website was used to generate the heat map question.

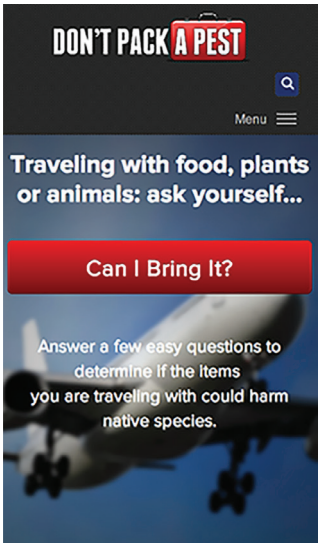


Figure 2. Screen capture of the "Don't Pack a Pest" website (mobile version)

Incorporating your Question into Qualtrics

1. Select "Heat Map" as the question "Item Type" inside Qualtrics (different terms may be used with different software applications).

2. Select "Choose Graphic" to upload the screenshot or photograph into Qualtrics (see Figure 3).

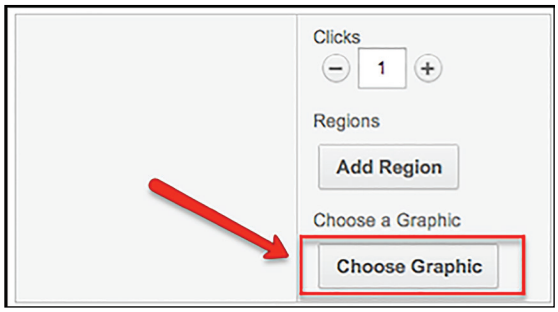


Figure 3. Screen capture of "Choose Graphic" to upload into Qualtrics (Qualtrics, 2015a)

3. Enter the question in the question box (see Figure 4).

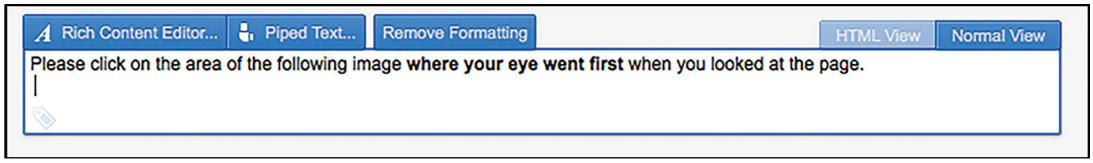


Figure 4. Screen capture of enter heat map question in Qualtrics

4. Enter the number of clicks on the page that the respondent is allowed to make (see Figure 5).

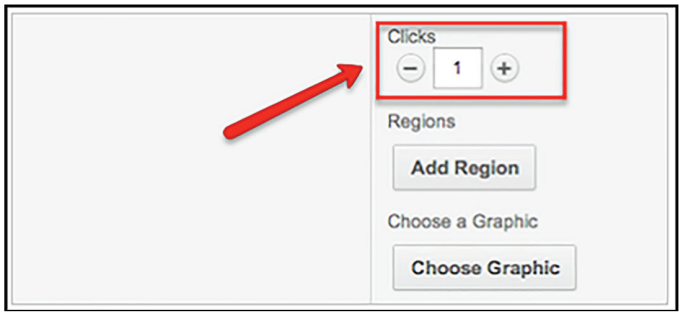


Figure 5. Screen capture of enter the number of clicks allowable for respondents (Qualtrics, 2015a)

Evaluating Timing and Value

Timing. Add a timing question before the heat map question to evaluate how long it took the respondent to click on the communication material to answer the question at hand. The survey respondents will not be displayed with the timing question (Qualtrics, 2015b). Instead, the timing question will only help the researcher to show how long it took the respondent to canswer the question or complete the task. Figure 6 displays how to select a timing question from within Qualtrics.

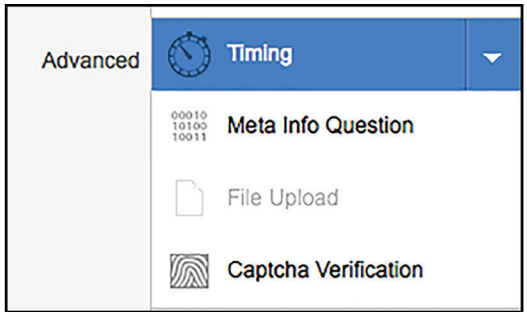
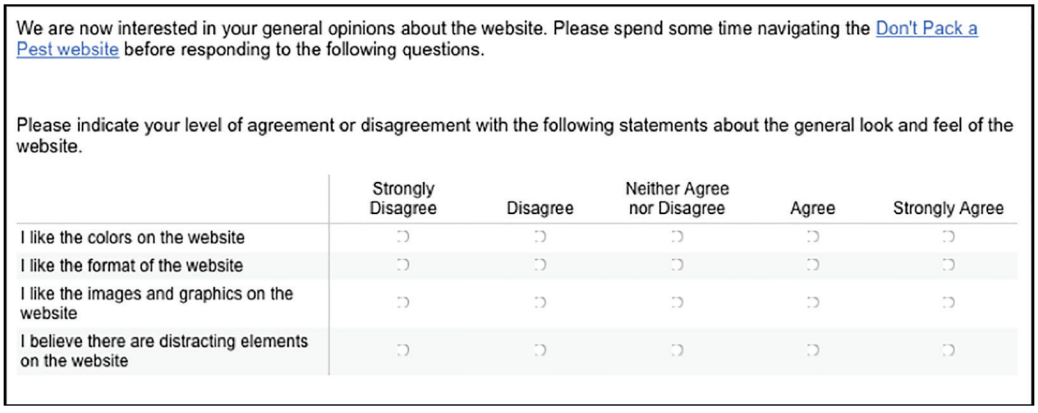


Figure 6. Screen capture of Qualtrics timing question (Qualtrics, 2015a)

Value. Add a value question after the heat map question to evaluate the value of the communication tool. You may incorporate Likert-type, semantic differential, and multiple-choice questions to evalute the value of the tool see Figures 7, 8 and 9).

Likert-type question. Likert-type questions are used to assess respondents' levels of agreement or satisfaction with statements (see Figure 7). Example Likert-type statements for your heat map questions:

- Please indicate your level of agreement or disagreement with the following statements about the website.
- Please indicate your level of satisfaction with the following statements about the website.


We are now interested in your general opinions about the website. Please spend some time navigating the Don't Pack a Pest website before responding to the following questions.

Please indicate your level of agreement or disagreement with the following statements about the general look and feel of the website.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I like the colors on the website					
I like the format of the website					
I like the images and graphics on the website					
I believe there are distracting elements on the website					

Figure 7. Screen capture of Likert-type questions in Qualtrics

Semantic differential question. Semantic differential questions should be used to determine respondents' attitudes toward a specific concept (see Figure 8) Semantic differential questions are used to determine where respondents fall between two opposite ends of a spectrum. For example:

https://newprairiepress.org/jac/vol100/iss3/13
DOI: 10.4148/1051-0834.1236

16

- Please respond to the following items by marketing the circle most closely aligned with how you feel based on the two options provided:
- I found the information presented on the website to be:
    - o Simple, complex
    - o Incomplete, complete
    - o Hard to understand, easy to understand

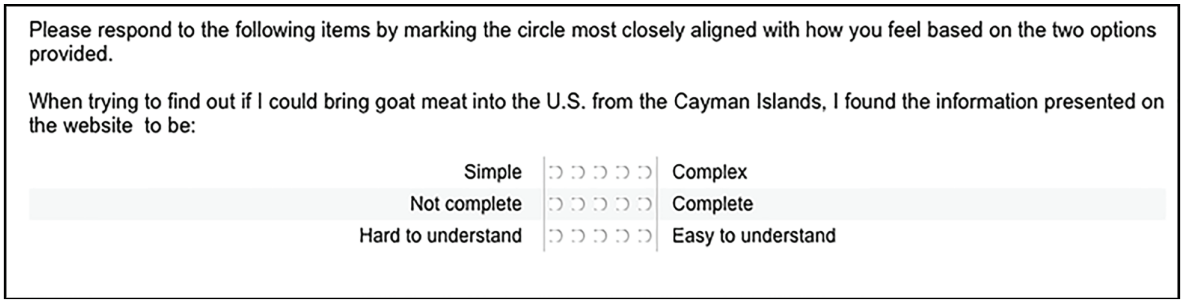


Figure 8. Screen capture of semantic differential question in Qualtrics

Multiple–choice question. As seen in Figure 9, multiple-choice questions should be used to gather specific points of information about the respondents' experiences with the communication tool. In this example, the multiple-choice question asked respondents where they found specific information on the website. The following multiple choice question example evaluates how easy information was found on the website: Please select the location on the website where bringing garlic from Puerto Rico was found.

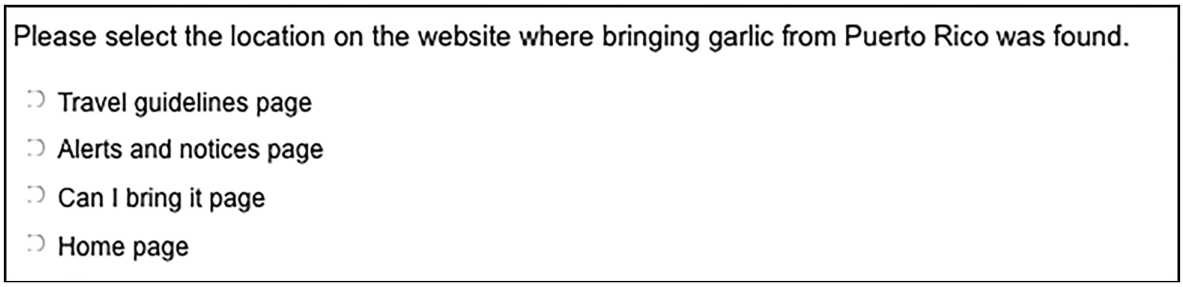


Figure 9. Screen capture of multiple-choice question in Qualtrics

Analyzing Data in a Heat Map

As the respondent completes the survey, the data will be recorded by Qualtrics. The heat map can be observed to discover areas where the respondent clicked the most frequently. This information will be displayed in a heat map. The higher the frequency of clicks in a specific location, the more red the area is or the "hotter" the map is. In Figure 10, respondents were most likely to click on Pest and on the Can I *Bring It* logo.

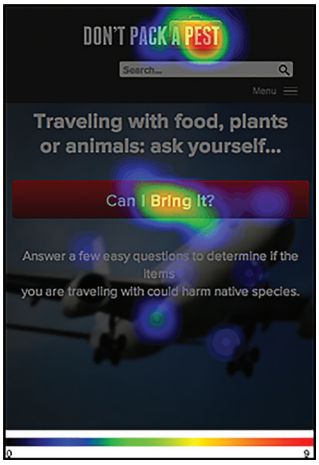


Figure 10. Screen capture of "Don't Pack a Pest" heat map

Defining regions for quantitative data analysis. Custom region shapes may be added or drawn around certain images within the communications tool (see Figure 11). By creating custom regions, the researcher is able to see how many people clicked in a specific area. In Figure 11, a region was drawn around the "*Can I Bring It*?" button.

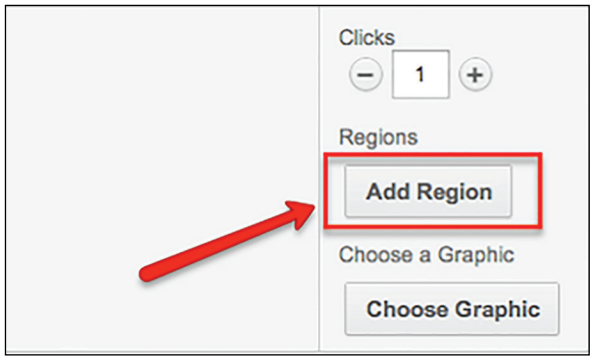


Figure 11. Screen capture of adding a custom region to a heat map area in Qualtrics (Qualtrics, 2015a)

Qualtrics will then output a summary of the number of people who clicked in a specific region such as "Can I Bring It." In Figure 12, there were 53 responses. Twenty-four of the respondents (45 %) clicked in the "Can I Bring It" logo, while 29 (55%) clicked in other areas of the communication tool.

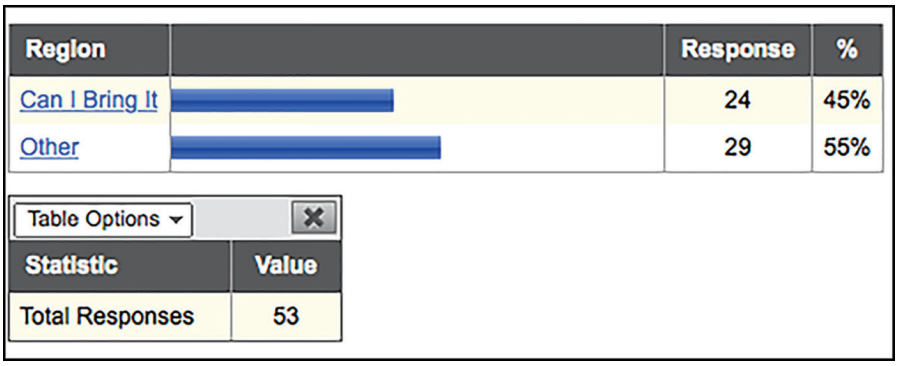


Figure 12. Screen capture of table generated through Qualtrics

Interpreting Results of a Usability Test

Inside of your survey platform, a heat map will be generated on top of the image you uploaded. The heat map shows the amount of people who clicked in a specific location. As previously stated, the more red the area is, the more respondents clicked in the specific location. The observation of the heat map allows the researcher to understand the most frequently clicked-on area of the heat map. While the interpretation depends upon the specific research question asked, understanding the most frequently clicked area will help the researcher in understanding where the respondents were most likely to click for the information asked in the research question.

When the researcher defines regions, or areas, the researcher will be able to gather a frequency count of the amount of respondents who clicked in the area. By using a defined region, the researcher will have an opportunity to see the usefulness of certain aspects of a communication material. For example, a researcher may want to direct website users' attention to the header of a website. By creating a defined region around the header of the website, the researcher will be able to see how many respondents clicked on the header. Further, when paired with a timing question, the researcher

will understand how long the respondents spend to click on the communication material or find the information. While knowledge of frequency counts will allow the researcher to understand where the respondent went for information, the researcher may also want to know how the respondent valued the information. By asking value-based questions, the researcher can understand how well the respondent interpreted the information they found or their attitudes toward the information.

Agricultural communications researchers and practitioners can use these types of questions to understand the respondents' perception and attitude toward the use of design and information presented on the communication material. Based on the results, agricultural communications professionals could make revisions to their communication materials to meet the needs of the respondents. Further, the usability test can help the researcher to understand how well specific graphics or text blocks were interpreted. If the results indicated a scattering of responses or a mix of interpretation of information, then the material should be edited and redesigned for clarity or graphics.

Interpretation of Results from the Example

In the Don't Pack a Pest example, the results indicated respondents generally focused on the highlighted website elements, such as buttons with larger text and highlighted objects. The results showed click timing varied among the mobile, tablet, and desktop computer platforms, with desktop users taking the most time to make a decision on where to click. These results show areas where communicators need to focus their attention to improve usability, such as emphasizing important areas with larger buttons, text, and highlights. Additionally, respondents took less time on platforms that had less information displayed on the website. While there is value in the information on the homepage, the homepage should be concise and simple to attract users to the most important place in a shorter amount of time. These results also show communicators how website information should be even more concise when it is displayed on mobile and tablet devices than it is on desktop computers.

CONCLUSION

By using a heat map as a tool to evaluate communication materials, agricultural communication professionals and researchers can understand how their target audiences use the information found in specific communication materials, such as websites. By understanding how a communication material is used by a target audience, the agricultural communicator can provide recommendations or adjust the communication material to fit the needs of the target audience. Usability test tools, such as heat maps, have the ability to improve communication messages and strategies between information senders and receivers; therefore, these usability tools can help agricultural communication professionals to develop communication materials suited to the needs of their target audience.

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RESEARCH

Fairgoers' Attitudes Toward Youth Livestock Exhibits at the California State Fair

Krista Anderson-McCoon, Dwayne Cartmell, and Robert Terry, Jr.

ABSTRACT

Developing public and policy maker understanding of agriculture and natural resources is a national research priority of the American Association for Agricultural Education. Because of cultural and geographic distancing from agriculture, consumers' ability to obtain firsthand knowledge of agriculture may be limited to a handful of experiences including local, county, and state fairs. As such, agriculturalists' opportunities to communicate with the public about production agriculture may be limited to these experiences. Youth livestock exhibitors fill a gap in the agricultural education system. While a body of research exists about agricultural literacy among youth and adult groups, few studies exist concerning the impact of youth livestock show exhibits upon fairgoers. This study employed a survey research method using semantic differential scales with a then-now approach. Fairgoers, who had been through the youth livestock exhibits at the California State Fair, were asked about their attitudes toward the exhibits. Findings led to the conclusion viewing livestock exhibits and interacting with youth exhibitors resulted in fairgoers having more positive attitudes toward animal agriculture. Interaction between fairgoers and livestock exhibits should be encouraged and exhibitors should be prepared to view interactions with fairgoers as opportunities to educate about agriculture.

KEY WORDS

California, Fair, Literacy, Livestock Exhibits, Semantic Differential, Youth

INTRODUCTION

Agricultural fairs, or exhibitions, began as a means of trade for merchants from different countries (International Association of Fairs and Exhibitions, n.d.). Although it is not known for certain, according to the International Association of Fairs and Exhibitions, fairs existed as early as 500 BC (International Association of Fairs and Exhibitions, n.d.). The root meaning of the word fair is the Latin word feria, which suggests in addition to trade, fairs served as a place of worship (International Association of Fairs and Exhibitions, n.d.). The partnership between fairs and churches was logical, considering worship as well as trade typically was concentrated in large cities. According to the International Association of Fairs and Exhibitions (n.d.), churches actually sponsored fairs during the early Christian era.

Efforts to preserve the educational components of fairs are being made to enhance fairgoers' agricultural knowledge. Recently, fairs and shows have been used as a means to re-imagine British agriculture by improving consumers' agricultural knowledge and perceptions (Holloway, 2004). "Shows are used to stage encounters and exchanges between farming and the non-farming public, which are increasingly rare in societies where many experience a distancing between themselves and the way their food is produced" (Holloway, 2004, p. 321). Holloway (2004) mentioned this shift might align fairs in the United Kingdom with those in North America. Being aware of how the presence of livestock at shows helps to impact the public, both breed associations and youth exhibitors were asked to become directly involved in promoting agriculture at shows. Similar educational efforts are evident in North American shows.

> Today, over 3,200 fairs are held each year in North America. They provide industrial exhibits, demonstrations and competitions aimed at the advancement of livestock, horticulture and agriculture with special emphasis placed on educational activities such as 4-H, FFA and similar youth development programs. (International Association of Fairs and Exhibitions, n.d., para. 12)

According to the Environmental Protection Agency (EPA) (2009), less than 1% of the population claims farming as their occupation and about 2% of the population lives on a farm. With this percentage dwindling, the majority of the population is becoming farther removed from production agriculture (EPA, 2009; Wachenheim & Rathge, 2002). As a result, "most Americans, whether young or old, have limited knowledge about agriculture and food production" (Frick, Machtmes, & Birkenholz, 1995, p. 44). Many would agree, however, a basic understanding of agriculture and problems facing the industry would prove beneficial for both consumers and producers (Frick et al., 1995). An increased understanding could lead to better management of food supplies and resources (Frick et al., 1995).

Consumers who are removed from agriculture can be influenced by experiences and interactions with agriculturalists, such as attending county and state fairs (Godfrey & Wood, 2003; Diem & Rothenburger, 2001; Goodwin, Chiarelli, & Irani, 2011). Although studies have been conducted to describe agricultural knowledge and perceptions (Tolman, 2009; Wachenheim & Rathge, 2002), little research has been conducted at fairs, which e is the only interaction some people have with production agriculture. After all, perceptions of agriculture influence the agricultural industry via consumers' buying and voting power (Wachenheim & Rathge, 2002).

Every year at the California State Fair, members of 4-H and FFA organizations enter exhibits to demonstrate competencies in their selected projects (California State Fair, n.d.). The fair, which runs for two weeks in July, is held in the State's capitol city of Sacramento (California State Fair, n.d.). It first opened at its current location in 1968 and in 2011 had more than 521,000 attendees (California State Fair, n.d.). The fair features carnival rides and games, horse racing, a water park, exhibit buildings filled with vendors, and competitive livestock shows and exhibits.

During the fair, the public can watch 4-H and FFA members compete for championship honors both in and out of the show ring. Recognizing the need for the youth to understand that showing livestock serves as an opportunity to educate the public about these projects, the fair hosts an educational display competition (California State Fair, n.d.). These displays serve as outreach for the public to gain greater understanding about the youth and their efforts in addition to agriculture as a whole (California State Fair, n.d.). Additionally, youth are often available for conversations regarding their roles in the agricultural industry. This intrapersonal communication is a factor in the public opinion process (Hoffman, Glynn, Huge, Sietman, & Thomson, 2007). Finally, breed and specie organizations typically attend fairs to interact with the public, who may only experience agriculture through this lens (Holloway, 2004).

As people become farther removed from agriculture, their interaction with production agriculture decreases (Wachenheim & Rathge, 2000). Consequently, agricultural literacy is diminished and perceptions of the industry are formed based on minimal hands-on experience with, and possible misrepresentations of, the industry (Turnbull, 2002).

A report from the California Postsecondary Education Commission (2007) indicated a majority of Californians ages 25-64 have had some post-secondary education. However, because a large portion of the population lives in urban and suburban areas, people's ability to obtain firsthand knowledge of agriculture may be limited to annual local, county, or state fairs (Turnbull, 2002). As a result, agriculturalists' opportunities to communicate with the public about agriculture may be limited to a handful of these experiences. A review of literature revealed little research exists that indicates what influence, if any, attending fairs has on fairgoers' attitudes toward youth livestock fair exhibits.

THEORETICAL FRAMEWORK: SOCIAL REPRESENTATION THEORY

Social representation theory is used to create understanding between expert and non-expert audiences through both discourse and imagery (Halfaree, 1993). This theory, developed primarily by Serge Moscovici, seeks to "outline how people understand, explain and articulate the complexity of stimuli and experiences emanating from the social and physical environment" (Halfaree, 1993, p. 29). A person's perceptions and understanding of a concept are influenced by their predispositions and experiences with the subject (Moscovici, 2001). Moscovici (2001) noted the world, as people perceive it, is a result of responses to stimuli from the physical environment and the quasi-physical environments they live in.

One unique characteristic of social representation theory is how new information is processed and unfamiliar situations are integrated into concepts and ideas already understood by individuals (Buijs, et al., 2012). Buijs et al. (2012) explained anchoring allows new representations to be linked to concepts already understood. "Objectification allows an abstract thing to become concrete through projecting abstract constructs as concrete images, which then come to stand for the new phenomenon" (Buijs et al., 2012, p. 1170). Moscovici (2001) noted when we think about an unfamiliar concept, our images, learned habits, memories, and genetic predisposition all combine to make the concept as we imagine it. Social representations are linked to social groups and people who experience them; however, individuals interpret and internalize them differently based on discourse about the topic with experts and previous perceptions (Halfaree, 1993). Representations symbolize a specific means of communicating and understanding; they provide an idea for every image and from there, provide meaning, understanding, and significance to everyday life (Moscovici, 2001; Buijs et al., 2012).

Moscovici (2001) stated sometimes perceptions are misguided by "a pre-established fragmentation of reality, a classification of the people and things, which comprise it" (p. 19). Moscovici (2001) noted it is not uncommon that some previously assumed facts, basic to understanding and conduct, turn out to be misconceptions. Knowledge is gained by engaging in communication and imagery about the abstract and unfamiliar (Moscovici, 2001). Because the world we live in is social, Moscovici (2001) stated all information we receive is distorted to some degree. Duncan and Broyles (2006) noted after experiencing a concept, people tend to perceive that concept more accurately.

Until recently, only a handful of agriculturally related studies used social representation theory as a framework (Buijs et al., 2012). However, studies have recently been published that "illustrate how the theory of social representations can be used to deepen our understanding of disputes over land management and of how people conceptualize nature and natural resources" (Buijs et al., 2012, p. 1168). Halfacree (1993) suggested using this theory to develop a more encompassing definition and understanding of the rural. Halfacree (1993) agreed with Buijs et al.'s (2012) contention that social representations allow individuals to conceptualize new objects, events, and persons but also noted understating the representations allows people to guide behaviors.

Researchers seem to agree the social property is deeply engrained in the theory (Buijs et al., 2012, Halfacree, 1995; Holloway 2004; Moscovici, 2001). "They [representations] are consensual means of making the unfamiliar, but this consensus is group specific. Only those who share a representation will use it the same way" (Halfacree, 1993, p. 30). Moreover, Halfacree (1993) stated social representations are inherently social due to the linkage to the communication process. Holloway (2004) also emphasized the communication process when he discussed this theory as the foundation of an effort to re-imagine British agriculture. He used the input from the chairs of several large agricultural societies, breed societies, and pedigreed breeders to determine what concepts should be focused on when engaging in social representations to educate the public at shows (Holloway, 2004). Holloway mentioned seeking to improve agricultural education and, in turn, agricultural perceptions might bring these shows in line with the North American model of agricultural shows.

Livestock and agricultural shows were targeted as points of convergence between farming and non-farming communities, which were said to be central to the effort of re-imaging agriculture and transferring agricultural knowledge (Holloway, 2004). Holloway (2004) stated, "shows are used to stage encounters and exchange between farming and the non-farming public, which are increasingly rare in societies where many experience a distancing between themselves and

the way their food is produced" (p. 321). Focused on the opportunity to present a specific image of agriculture, breed associations, and livestock exhibitors were asked to help promote a positive image of agriculture (Holloway, 2004).

PURPOSE/OBJECTIVES

The purpose of this study was to determine if visiting livestock exhibits at a state fair impacts fairgoers' attitudes toward livestock exhibits. According to the American Association for Agricultural Education's 2011-2015 National Research Agenda (Doerfert, 2011) it is important consumers have "an accurate understanding of and informed opinions about agriculture and natural resources (p. 11)." The specific objectives guiding this study were:

1. Describe fairgoers at the California State Fair based upon age, sex, ethnicity, race, education, current residency, livestock ownership, 4-H and/or FFA experience, occupation, if they had family members who lived on a farm, and time spent viewing the exhibits.
2. Identify the fairgoers' attitudes about livestock fair exhibits at a state fair before viewing the livestock exhibits.
3. Identify the fairgoers' attitudes about livestock fair exhibits at a state fair after viewing the livestock exhibits.
4. Determine if visiting the livestock exhibits impacted fairgoers' attitudes about livestock fair exhibits.

METHODS/PROCEDURES

The population for this study consisted of adult fairgoers who attended the California State Fair on July 14, 2012. During this time, a convenience sample of the population, composed of people near the livestock exhibits, was identified to participate in the study. Sponsorship funds were available to support a sample of 400 people. One individual did not wish to take the participation incentive, which allowed an additional person to take the questionnaire. This process resulted in a sample size of 401 subjects. Of these, 395 responses were deemed usable. This population is only representative of people who attended the fair and were near the livestock exhibits during the specified times. As a result of this sampling method, conclusions of this study cannot be generalized to everyone who attended the California State Fair.

This study was intended to describe fairgoers' attitudes before and after viewing the livestock exhibits and whether visiting the exhibits impacted their opinions of youth livestock exhibits at the California State Fair. The instrument was administered after fairgoers visited the livestock animal exhibits, which required participants to retrospectively assess their initial opinion of the livestock exhibits. This then-now approach is an accepted procedure for collecting attitudinal data (Townsend & Wilton, 2003).

The questionnaire consisted of 11 items to gather data about participants' age, sex, race, ethnicity, education, 4-H and FFA experience, and residency. These questions were developed based on questions included in the U.S. Census (2010) and modified questions from Frick, Machtmes, and Birkenholz's (1995) study of agricultural literacy. Fairgoers also were asked how long they spent in the exhibits, and why they attended the fair.

The instrument included two tables of semantic differential scales (Osgood, Suci & Tannenbaum, 1965) to assess attitudes of fairgoers before and after viewing exhibits. A semantic differential is composed of dichotomous terms separated by a seven-point scale (Osgood et al., 1965). Osgood et al. (1965) designed the semantic differential to objectively measure three attitudinal factors: evaluative, potency and activity. The stem question for the semantic differentials on this instrument was: "Youth Livestock Exhibits at the California State Fair are."

The instrument was reviewed for content and face validity by a panel of five experts from the College of Agricultural Sciences and Natural Resources at Oklahoma State University as well as individuals involved in livestock shows and youth competitions from California and Oklahoma. The panel provided feedback and suggestions on both the content

and format of the questionnaire. The experts suggested modifications for the format of tables and the wording of some demographic questions.

A pilot study was conducted at a county fair located in the same geographic area as the California State Fair. Thirty people participated in the pilot. Feedback from participants indicated some ambiguity existed regarding some of the selected word pairs. As a result of this finding and further discussion about the purpose of the study, we determined to focus only on assessing the evaluative attitude factor. According to Isaac and Michael (1982), word pair selection should be based on relevance and appropriateness to the topic. Consequently, new word pairs were selected from a list by Osgood et al. (1965). A Cronbach's alpha reliability analysis was conducted on the items resulting in a .85 for the then table and .83 for the now table.

Data collection for this research was conducted on one day at California State Fair. One of the researchers and 15 trained volunteers identified subjects and administered the questionnaire. The volunteers were trained in the morning prior to starting the data collection process. Volunteers were instructed to respond to questions regarding the instrument by stating only that each question was to be answered based on the participant's interpretation of the question. Furthermore, volunteers were instructed to have participants, especially those in pairs or groups, take the questionnaire independently. Volunteers were broken into groups and assigned tasks, which included soliciting fairgoers to participate, managing the booth where participants filled out the questionnaire, collection of complete questionnaires, and distribution of incentive funds.

To qualify as a subject in the study, a participant had to be at least 18 years of age, could not know anyone exhibiting livestock, and had to have visited the livestock exhibition barn that day. During the entire data collection period, breeding swine and breeding sheep shows were taking place in the livestock exhibit barn. Fairgoers had the opportunity to view those shows from bleachers surrounding the show rings and walk through other areas of the facility. Announcers for each show often provided industry facts and described activities taking place in the show ring to further enhance the educational aspect of the show. Subjects who completed the instrument were provided $5 cash as an incentive for participating in the study.

Data analysis for the first objective consisted of descriptive statistics including frequencies and appropriate measures of central tendency. Means were calculated for constructs associated with the semantic differentials. A paired samples *t* test was used to determine if the change in perceptions was significant. The confidence level for this study was set at $\alpha = .05$, a priori.

FINDINGS

Findings Related to Objective 1: Description of the Subjects

Participants in this study were asked to respond to items indicating their age, sex, ethnicity, race, education, current residency status, livestock ownership, 4-H experience, FFA experience, if they have relatives who live on a farm, and if they have worked in agriculture. They also were asked how much time they spent in the livestock exhibits while at the fair.

Of the 395 respondents, 377 provided their age. The youngest participants were 18 years old and the oldest was 80 years old. Nearly 39% ($n = 146$) were between 18 and 35 years old. Nearly 55% ($n = 206$) were between 36 and 55, while almost 19% ($f = 71$) were more than 55 years old. More than half (58.2%, $f = 219$) of the respondents were female. Of the 373 participants who provided their ethnicity, 13.1% ($n = 46$) identified themselves as Hispanic and 86.9% ($n = 324$) identified themselves as non-Hispanic. Of the respondents who provide their race ($n = 376$), 77.9% ($n = 293$) identified themselves as white, 1.6% ($n = 6$) identified themselves as African American, 4.8% ($n = 18$) indicated they were Asian, 1.3% ($n = 5$) identified themselves as American Indians or Alaska Native, 1.9% ($n = 7$) identified themselves as some other race, and 12.5% ($n = 47$) identified themselves as being two or more races. No respondents identified themselves as Native Hawaiian or other Pacific Islander. The questionnaire revealed that for 18.2% ($n = 72$) of respondents, high school

was the highest level of education achieved. More than one-third (35.4%, *n* = 140) had completed some college, 29.9% (*n* = 118) had obtained a bachelor's degree, and 16.5% (*n* = 65) had a graduate degree.

Of the respondents (*n* = 391), 3.6% (*n* = 14) said they lived on a farm, 12.9% (*n* = 51) indicated they lived in a rural area, 60.8% (*n* = 240) identified their residence as suburban, and 21.8% (*n* = 86) indicated they were urban residents. Respondents were asked if they had ever owned livestock. Just more than one-third, 35.2% (*n* = 135), had owned livestock and 64.8% (*n* = 249) indicated they had not owned livestock. Of the 389 respondents, 14.9% (*n* = 58) had participated in 4-H and 85.1% (*n* = 331) had not participated in 4-H. Of the 58 who participated in 4-H, 38 responded with the number of years they participated. The responses ranged from 1 to 12 years, with 63.2% (*n* = 24) of respondents indicating they participated for five or fewer years. Of the 387 respondents, 7.1% (*n* = 28) indicated they participated in FFA and 90.9% (*n* = 359) indicated they had not participated in FFA. Of the 28 who participated in FFA, 16 responded with the number of years they participated. The responses ranged from 1 to 6 years, and 43.9% (*n* = 7) responded they participated for three or fewer years. Of the 395 respondents, 42.5% (*n* = 168) of respondents indicated they had a relative who lived on a farm, and 57.5% (*n* = 227) said they did not have a relative who lived on a farm. Of the 392 respondents, 5.1% (*n* = 20) indicted they worked in agriculture, and 94.9% (*n* = 372) said they did not work in agriculture.

Participants were asked to estimate how long they spent in the livestock exhibits. Of the 380 respondents, 9.7% (*n* = 37) spent 10 minutes or less, 33.2% (*n* = 12) spent 11-20 minutes, 29.7% (*n* = 113) indicated they spent 21-30 minutes, 5.5% (*n* = 21) spent 31-40 minutes, 10.8% (*n* = 41) spent between 41-50 minutes, 9.2% (*n* = 35) spent 51-60 minutes, and 1.8% (*n* = 7) indicated they spent more than 60 minutes in the exhibits.

Findings Related to Objective 2: Attitudes About Youth Livestock Exhibits Before Visiting Livestock Exhibits

The second objective was designed to describe participants' evaluative attitude about youth livestock exhibits prior to visiting the youth livestock exhibits at the California State Fair. Ten of the 12 dichotomous pairs had a mode of 7, the most positive response possible. Slightly more than 50% (f = 198) of the respondents marked 7 for the work pair Negative/Positive. More than 40% of the respondents marked 7 for five pairs and more than 30% of the respondents marked 7 for four other pairs. The only two pairs that did not have a mode of 7 were Ugly/Beautiful and Dirty/Clean, each of which had a mode of 4, correlating with a neutral or undecided response. These data are displayed in Table 1.

Table 1

Semantic Differential Scales Associated with Attitude Prior to Viewing Livestock Exhibits

Negative Item	1		2		3		4		5		6		7		Positive Item
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%	
Negative	0	0.0	5	1.3	8	2.0	48	12.2	55	13.9	81	20.5	**198**	**50.1**	Positive
Worthless	1	0.3	3	0.8	8	2.0	50	12.7	51	12.9	100	25.3	**182**	**46.1**	Valuable
Bad	0	0.0	1	0.3	11	2.8	63	15.9	60	15.2	81	20.5	**179**	**45.3**	Good
Dishonest	1	0.3	5	1.3	5	1.3	70	17.8	60	15.2	81	20.5	**172**	**43.7**	Honest
Unimportant	2	0.5	6	1.5	20	5.1	57	14.5	68	17.3	69	17.6	**170**	**43.3**	Important
Sad	2	0.5	1	0.3	15	3.8	56	14.3	77	19.6	77	19.6	**164**	**41.8**	Happy
Cruel	4	1.0	8	2.0	20	5.1	53	13.4	49	26.6	105	26.6	**156**	**39.5**	Kind
Unpleasant	0	0.0	7	1.8	14	3.6	62	15.8	72	21.7	85	21.7	**152**	**38.8**	Pleasant
Boring	8	2.0	19	4.8	25	6.3	48	12.2	62	23.6	93	23.6	**139**	**35.3**	Intersting
Unsuccessful	1	0.3	2	0.5	12	3.1	77	19.7	77	22.0	86	22.0	**136**	**34.7**	Successful

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Ugly	2	0.5	10	2.5	37	9.4	**106**	**26.9**	85	21.6	68	17.3	86	21.8	Beautiful
Dirty	22	5.6	33	8.4	68	17.3	**89**	**22.6**	52	13.2	64	16.3	65	16.5	Clean

Note. Modal responses are boldfaced.

Findings Related to Objective 3: Attitudes About Youth Livestock Exhibits After Visiting Livestock Exhibits

The third objective was designed to describe participants' evaluative attitude about youth livestock exhibits after visiting the youth livestock exhibits at the California State Fair. Eleven of the 12 dichotomous pairs had a mode of 7, the most positive response possible. More than 50% of the respondents marked 7 for 8 of the 12 pairs. The pair with the highest modal response was Unsuccessful/Successful with 58.4% (f = 230) marking 7. More than 40% of the respondents marked 7 for two pairs and more than 30% of the respondents marked 7 for one other pair. The only pair that did not have a mode of 7 was Clean/Dirty, which had a mode of 6. These data are displayed in Table 1.

Findings Related to Objective 4: Difference Between Fairgoers' Attitude Before and After Viewing Livestock Exhibits

A paired-samples t test was conducted to detect differences in subjects' attitude after viewing the livestock exhibits. Responses for the 12 word pairs were summed to calculate a mean score for the evaluative attitude scales collected before visiting the livestock exhibits. The same calculation was done for the evaluative attitude scales collected after visiting the livestock exhibits. The mean for attitude before viewing the livestock exhibits was 67.35 with a standard deviation of 12.36. The mean for attitude after viewing livestock exhibits was 73.04 with a standard deviation of 10.30 (see Table 3). A paired-samples t test was used to evaluate change in attitudes before and after viewing the exhibits. The difference was statistically significant at the specified .05 level, $t(375) = -13.20$, $p < .001$. To determine the practical significance, a Cohen's d effect size was calculated. This statistic demonstrates the practical significance the exhibits had on participants' attitudes. To determine the effect size, the mean difference was divided by the pooled standard deviation (Thalheimer & Cook, 2002). To establish this value, the mean for attitude before viewing exhibits was subtracted from the mean for attitude after viewing exhibits and divided by the pooled standard deviation, 73.04 - 67.35 / 11.33 = 0.5. According to Cohen (1992), 0.5 represents a medium effect size.

CONCLUSIONS RECOMMENDATION AND IMPLICATIONS

Objective 1

The typical respondent to this study is a middle-aged, suburbanite female with at least some higher education. She has never owned livestock or been involved in 4-H or FFA, and has not worked in agriculture. She viewed the livestock exhibits briefly.

The general demographic makeup of participants with regard to sex, age, race, and ethnicity is fairly consistent with the 2010 census information for California (U.S. Census Bureau, 2010). However, the proportion of Hispanic participants is much lower, at 13% when compared to the general California population, which is more than 37% (U.S. Census Bureau, 2010). The low percentage of Hispanic respondents is a curiosity. This occurrence could be due to the fact that the questionnaire was available in English only, thus inhibiting Hispanics from participating in the study. If the study is replicated, the questionnaire should be translated into Spanish to facilitate Spanish speakers'/readers' participation in the study.

Table 2

Semantic Differential Scales Associated with Attitude After Viewing Livestock Exhibits

Negative Item	1 f	%	2 f	%	3 f	%	4 f	%	5 f	%	6 f	%	7 f	%	Positive Item
Unsuccessful	0	2	3	0.8	3	0.8	15	3.8	34	8.6	109	27.7	**230**	**58.4**	Successful
Negative	0	0.0	2	0.5	6	1.5	10	2.5	40	10.1	109	27.6	**228**	**57.7**	Positive
Boring	0	0.0	3	0.8	1	0.3	26	6.6	33	8.4	112	28.5	**218**	**55.5**	Interesting
Unimportant	1	0.3	1	0.6	6	1.5	18	4.6	41	10.4	106	26.9	**221**	**56.1**	Important
Worthless	1	0.3	2	0.5	11	2.8	13	3.3	45	11.4	107	27.1	**216**	**54.7**	Valuable
Dirty	1	0.3	2	0.5	4	1.0	16	4.1	56	14.2	102	25.8	**214**	**54.2**	Clean
Cruel	0	1.5	3	0.8	2	0.5	31	7.9	1	10.4	110	27.9	**207**	**52.5**	Kind
Bad	2	0.5	6	1.5	7	1.8	26	6.6	63	16.0	88	22.3	**202**	**51.3**	Good
Unpleasant	6	0.0	13	3.3	21	5.3	21	5.3	37	9.4	103	26.2	**192**	**48.9**	Pleasant
Ugly	9	3	12	3.3	11	2.8	28	7.1	42	10.6	111	28.1	**181**	**45.8**	Beautiful
Sad	1	0.0	3	0.8	15	3.8	61	15.5	70	17.8	98	25.1	**146**	**37.1**	Happy
Dishonest	11	2.8	24	6.1	41	10.5	57	14.6	66	16.9	**98**	**25.1**	94	24.0	Honest

Note. Modal responses are boldfaced.

Table 3

Then/Now paired-Samples t Test

Data Set	*n*	*M*	*SD*	*t*	*p*
Summed Then	376	67.35	12.36	—	—
Summed Now	376	73.04	10.3	-13.202	.0001

df = 374; $\alpha = 0.05$

A report from the California Postsecondary Education Commission (2007), stated just more than 60% of Californians ages 25 to 64, have had some post-secondary education. A higher proportion of the participants in this study (80%) indicated they had completed some college or other higher education. Interestingly, five percent of the participants in this study indicated they are employed in agriculture, which is more than the national average of one percent (EPA, n.d.). This difference might be explained by the fact people employed in agriculture might be more likely to view livestock exhibits.

Results can only be generalized to the 395 participants. Because of the limited time frame during which questionnaires were distributed, this study should be repeated during the other times of the day to determine if participant demographics and responses change based on the time of day. We recommend the study be replicated at county and local fairs in different areas across the state and nation.

Objective 2

Overall, respondents' attitudes about youth livestock exhibits prior to viewing the exhibits are positive. This conclusion may be a result of their previous experiences with or knowledge of agriculture, or even previous experience with the exhibits at the state fair.

Objective 3

Respondents' attitudes toward youth livestock exhibits remain positive after viewing the exhibits. Additionally, after viewing the exhibits the positivity of attitudes for all pairs improved, including beautiful/ugly and clean/dirty. Therefore, we conclude viewing livestock exhibits contributes to more positive attitudes about livestock exhibits. The improvement in attitude is supported by Holloway's (2004) concept of using social representation theory to improve agricultural perceptions.

Duncan and Broyles (2006) stated people more accurately perceive a concept after experiencing it, which supports the improved positivity of perceptions after viewing the exhibits. This improvement demonstrates to agricultural communicators, fair administrators, youth organization leaders, and fair exhibitors that livestock shows make positive contributions to the industry (Diem & Rothenburger, 2001).

Objective 4

The change between evaluative attitude regarding livestock exhibits held by fairgoers before and after viewing such exhibits is statistically significant and has a medium effect size. Therefore, the youth livestock exhibits influenced fairgoers' attitudes toward youth livestock exhibits in a positive way. The most noticeable changes are in opinions of the cleanliness and beauty of the exhibits. Attitudes changed in a positive manner, indicating respondents clarified previous ambiguity they had regarding the exhibits (Holloway, 2004).

Given the medium effect size, it is concluded that although an impact is made, exhibits can be more impactful. To make this impact, club leaders for 4-H and FFA advisors should increase efforts to provide educational exhibits for fairs and ensure youth are available to engage in conversations with fairgoers. Admittedly, a great deal of financial resources and time go into constructing educational displays (Diem & Rothenburger, 2001); however, as demonstrated by this study, doing so does have a payoff in improving perceptions. It may even validate the need for fundraising efforts by agricultural organizations and companies to ensure displays can be improved to increase literacy and awareness of youth projects.

This study supported a British movement to improve perceptions and knowledge of agriculture by increasing communication, interaction, and imagery between farming and non-farming publics (Holloway, 2004). Holloway (2004) stated times of convergence between experts and non-experts, such as fairs, can improve consumer perceptions and increase their knowledge and understanding of agriculture. The intrapersonal communication and imagery provided by the exhibits and exhibitors impacted participants' attitudes (Holloway, 2004; Moscovici, 2001). Therefore, youth organizations such as 4-H and FFA should continue to ensure exhibits are both educational and aesthetically pleasing. As the study indicated, cleanliness and beauty were the two areas with the least positive attitudes.

Holloway (2004) suggested in addition to exhibitors, organizations should also become engaged with fairgoers to further enhance the educational experience at fairs. The same could be said for North American organizations such as the Western Fairs Association and specie organizations. Participation on behalf of these groups might fill an additional educational gap when exhibitors are showing and have less time to interact with fairgoers, as was the case during this study.

Although few previous studies regarding attitudes at fairs have been conducted, the findings agree with studies of agricultural perceptions, which stated participant's perceived agriculture positively (Tolman, 2009; Wachenheim & Rathge, 2002). Although attitudes initially were positive, interaction with agriculturalists improved these; thereby, changing attitudes as Wachenheim and Rathge (2002) indicated was possible.

The social representation theory also states the image of the industry presented is the one people will see and perceive (Moscovici, 2001; Holloway, 2004). It is not unreasonable, therefore, to postulate that fairgoers will extend these positive perceptions of youth livestock exhibits to agriculture as a whole. The results of this study could validate the implementation of a similar re-imaging of American agriculture via annual local, county, and state fairs as a means to improve attitudes about agriculture (Holloway, 2004).

While this study demonstrates the benefit of youth livestock exhibits for improving perceptions, it only described if a change occurred and if it was significant. A qualitative study should be conducted to glean a deeper understanding of how participants' attitudes are formed and altered. Determining what aspects most significantly impact fairgoers' opinions can lead to improved communications strategies by exhibitors. Furthermore, one final area where this study was limited was the reliance on participants' retrospective assessment of the exhibits. Therefore, a true pretest/posttest version of the study should be conducted to determine if the results differ.

Using this understanding of attitudes, agriculturalists can create communication strategies to positively influence consumers' attitudes and understanding of agriculture (Goodwin, Chiarelli, & Irani, 2011). Furthermore, youth organization leaders need to work to ensure their groups are positive liaisons for agriculture by communicating with consumers and having clean and informative displays (Diem & Rothenburger, 2001).

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RESEARCH

Millennial Alumni Perceptions of Communications: A Look at One Land Grant University's Media Use

Amanda Northfell, Leslie D. Edgar, Donna L. Graham, and K. Jill Rucker

ABSTRACT

An important aspect of higher education is alumni relationship cultivation, because it keeps alma maters connected to graduates. To assess this relationship, researchers sought to describe Millennial alumni perceptions of media distributed by the Dale Bumpers College of Agricultural, Food, and Life Sciences (Bumpers College) from 2012 through 2014. Assessed media included alumni magazines, an e-newsletter, key event invitations, College website, and social media presences. Active and inactive alumni responses were gathered via telephone interviews and qualitatively analyzed for emergent themes. Researchers identified Building the Professional and Interest in Giving Back as themes related to respondents' connection to Bumpers College. Five additional themes emerged related to assessed media and included Message Relationship, Specialized Content, Communications Medium, Message Barriers, and Need for Promotion. No alumni were dissatisfied with their collegiate experience and favored monetary donations for its convenience. Alumni sought a personable-angle communications media and were drawn by updates about the College's research and global impacts. Respondents consumed print and digital media differently with engagement based on personal preference and flexibility. Subthemes emerged related to Message Barriers and included time, distance, vague messages, too much information, non-relatable subject matter, technical errors, and outdated information. Finally, there was little brand recognition between Bumpers College and University messaging, and most alumni were unaware of the College's social media presences.

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KEY WORDS

Agricultural Communications, Agricultural Education, Alumni Relations, Communications, Development, Higher Education, Media, Millennial Alumni

INTRODUCTION

Today's land-grant institution is challenged to reach new and non-traditional audiences by redefining and diversifying the agricultural field (Baker, Abrams, Irani, & Meyers, 2011). In addition, the world is facing new and complex issues in agriculture (National Academy of Sciences, 2009); therefore, there is a need to produce highly skilled graduates to identify solutions (Doerfert, 2011). This need was emphasized in the 2011-2015 National Research Agenda as a research priority with the hope of driving "…sustainable growth, scientific discovery, and innovation in public, private, and academic settings…" (Doerfert, 2011, p. 18). Although there is a need for higher education to produce agricultural scientists and professionals who meet industry demands (Doerfert, 2011), progress is dependent upon the generosity of

external constituents to assist in providing opportunities to agricultural students. With the decline of government appropriations and the general economic climate, public institutions depend on alumni donations for a considerable portion of their overall budget to keep education affordable (McDearmon & Shirley, 2009). Further complicating the issue, a land-grant university's fundamental product, education, is "largely intangible" (McAlexander, Koenig, & Schouten, 2006, p. 109). University branding is used to give face to an institution and increase valued behaviors such as "donations, college referrals, engagement in alumni groups, and participation in continuing education" (McAlexander et al., 2006, p. 115). Understanding and managing a university or college's brand can have a strong impact on advancement programs (McAlexander et al., 2006).

Consistent communication and relationship cultivation with alumni is often the backbone of the institution (CASE, 2014a; CASE, 2014b). Advancement programs perceive alumni as the most loyal supporters of an institution (Muller, 1986); however, these programs must keep alumni informed and involved with their alma mater to generate interest and investments over time (Webb, 1989). According to Weinreich (2010), "[t]he single biggest problem in communication is the illusion that it has taken place" (p. 135). While alumni are significant contributors to funding public institutions, the number of alumni donors is decreasing (McDearmon & Shirley, 2009). Though research has been conducted to identify factors that impact alumni giving, it was not until recently researchers began considering generational differences in their analyses (McDearmon & Shirley, 2009). As history's first "always connected" generation (Taylor & Keeter, 2010), Millennials, or individuals born during 1981 or later, comprise the smallest percentage of nonprofit giving (Rovner, 2013; Twenge, 2006). Because it is important to create meaningful experiences and relationships for alumni while they are students, one would surmise interacting with Millennial alumni could provide an up-to-date assessment of a college or university's communication strategies, because they are the most recent graduates. A recent survey revealed nonprofit practitioners did not see the value in prioritizing Millennials because they did not yield a great return on investment (Achieve & Johnson, Grossnickle and Associates [JGA], 2012). This is because the most recent graduates have student loan debt which delays alumni giving (McDearmon & Shirley, 2009). However, not seeing value in Millennial relationship cultivating is problematic as alumni-alma mater relationships are not only important for generating future investments (Webb, 1989), but help provide insight regarding alumni needs and an assessment of the quality of university education (Miles & Miller, 2000). Despite their high level of self-interest, Millennials are more socially tolerant and possess a greater international outlook than older generations (Rovner, 2013). They are the most diverse and educated generation in history (Rutgers, 2012; Taylor & Keeter, 2010), and history's first "always connected" generation (Taylor & Keeter, 2010). Millennials are the first generation to grow up with the Internet and are more open about their lives with others—even strangers (Twenge, 2006). Therefore, colleges must create communication strategies to effectively target Millennials in an effort to keep them connected.

To develop committed alumni, alumni relations programs seek to keep alumni informed and involved with their alma mater to generate interest, which translates into investments over time (Webb, 1989). Multichannel communications is the new normal for all generations, but the ideal mix of channels is dependent on generation (Rovner, 2013). Although Millennials are still decades away from the donor marketplace, there is a need to begin building relationships now (Rovner, 2013). Generational use of communication channels in relation to charitable giving has been researched to help nonprofit organizations gain a better idea of Millennial channel preferences in relation to researching an organization and making a donation. According to *The Millennial Impact Report* (Achieve & JGA, 2012), 65% preferred websites, 55% of Millennials preferred to learn about nonprofits through social media, 47% preferred e-newsletters, 18% preferred print, and 17% would rather have face-to-face contact. Creating messages using communication channels appropriate for Millennials is necessary stay connected to these important alumni after they leave our colleges and universities.

This study was guided by the Shannon and Weaver Model developed in 1949 and Berlo's Source-Message-Channel-Receiver Model of Communication, developed in 1960s, to better understand where breakdowns in communication can occur (Berlo, 1960; Communication Theory, 2010). Berlo's SMCR model illustrates the significance and influence of the communication process. In each stage of communication, special care should be given to shape the way a message is interpreted and impacts the attitudes of the receiver. Although transmitters can control how a message is encoded, this does not ensure the desired message reaches the receiver. Petty and Cacioppo's (1986) Elaboration Likelihood Model

maintains there are central and peripheral routes to persuasive communication. When individuals lack information to form an opinion, they will rely on peripheral cues such as a message's treatment, structure, or code to shape an attitude (Miller, Annou, & Wailes, 2003). As emphasized in previous studies (AA, 2009; McAdoo, 2010), branding higher education's messaging can increase valued behaviors including "donations, college referrals, engagement in alumni groups, and participation in continuing education" (McAlexander et al., 2006, p. 115). Alumni relations programs must ensure proper messages are being communicated through appropriate channels to strengthen and maintain relationships across the world.

In addition, alumni relations programs must remember a college is a marketing institution that offers a range of services through its brand (McAlexander et al., 2006). Although education's product is elusive, the strength of a college's brand relationship with consumers is apparent in the frequency consumers adorn themselves and spaces with branded merchandise (McAlexander et al., 2006). One area of marketing that has been underexplored for public organizations is branding (Waeraas, 2008). Consumers who invest in a common brand form a brand community (McAlexander et al., 2006; Muniz & O'Guinn, 2001). As cited by McAlexander et al. (2006), a brand community is formed through social relationships amongst consumers of a common brand, regardless of location, who acknowledge their commonness and share traditions and a sense of duty related to the brand (Muniz & O'Guinn, 2001). In higher education, consumer relationships include: (a) alumni-product, (b) alumni-brand, (c) alumni-institution, and (d) alumni-alumni, (McAlexander et al., 2006). The alumni-product relationship is one of the most meaningful relationships an individual can have because the product (education) shapes the consumer's identity (Belk, 1988) as a student (McAlexander et al., 2006). An alumni-institution relationship follows graduation and is damaged or improved through interpersonal relationships with alumni relations (McAlexander et al., 2006). An alumni-brand relationship is also a core concern for institution marketers in building a consistent message and an emotional connection with consumers (McAlexander et al., 2006). Understanding an institution's identity can strengthen a customer's sense of pride for their alma mater as well as strengthen the alumni-brand relationship (McAlexander et al., 2006). Institution-alumni relationships are the most important bond in maintaining a brand community (Muniz & O'Guinn, 2001) and impact buyer behaviors through communication (McAlexander et al., 2006). Colleges of agriculture have a critical need to identify the most effective ways to stay connected with former students. Understanding alumni needs, especially Millennials because they are different from previous generations, will be critical to fundraising efforts in the future; especially as colleges and universities rely more heavily on alumni financial support.

PURPOSE AND OBJECTIVES

The purpose of this study was to describe Millennial alumni's relationship with the Dale Bumpers College of Agricultural, Food and Life Sciences (Bumpers College) and print and electronic communications media utilized by the College. Through this assessment, researchers sought to identify Bumpers College Millennial alumni's: (a) perceptions regarding current electronic and print communications media utilized by the College; (b) communication preferences; and (c) giving preferences (funds, time, or services).

METHODS

Researchers conducted a series of telephone interviews with active and inactive Millennial alumni to evaluate media utilized by the Bumpers College from 2012 through 2014 to maintain relationships with graduates. This time frame was selected to assess communications media distributed during the introduction of a Director of Development, Director of Communications, and Communications Graduate Assistant. Selected print media included *The Graduate* alumni magazine and the *AR Culture* student-written magazine. Digital media included (a) *The Graduate* e-newsletter, (b) email invitation to the *Bumpers College Alumni & Friends Tailgate*, (c) email invitation to the *Connecting Bumpers College Professional Mocktail Party*, (d) Bumpers College website and alumni homepage, and (e) Bumpers College social media presences (Facebook, Twitter, and LinkedIn). Although there are currently no existing communications media or events

solely targeted toward Bumpers College Millennial alumni, assessed media (identified by key communications personnel) included a sample typically shared with Millennial alumni.

To identify participants for this study, subjects were supplied by Arkansas Alumni Association [AA] archive based on the following sampling frame: (a) obtained bachelor's degree from Bumpers College and (b) age of 32 and younger. This query produced 1,122 male or female subjects labeled as active or inactive alumni (418 active, and 704 inactive). Individuals classified as active alumni had either received a one-year complimentary AA membership following graduation or had paid the membership fee, while inactive alumni were those who had discontinued their AA membership or allowed it to expire (T. Tucker, personal communication, December 20, 2013). Prospective participants were identified through a stratified random sample. Because there are no rules for sample size in qualitative research, a baseline of 20 alumni (Erlandson, 1993) was established to easily replicate the 6:4 female-to-male gender ratio of the Bumpers College as of 2013. Each individual from the list was contacted until researchers obtained 10 active and 10 inactive alumni (N = 20) with the goal of redundancy in data. Researchers found a sample size of 20 sufficiently yielded saturated data.

Before conducting telephone interviews, participants were contacted by the graduate student's research advisor to verify involvement, confirm the study's credibility to participants, and increase response rate. Correspondence followed a specific script developed by researchers based on a sample script developed by Consumer Assessment of Healthcare Providers and Systems (CAHPS®) (2009). IRB approved all data collection materials including initial and follow-up contact scripts and interview protocol. Interviews were held in the spring of 2014 and aimed to last 45 minutes (Creswell, 2009). Participants scheduled their own interviews, and the print and digital media were sent to participants one week before interviews to allow participants ample time for reviewing content. Conversations were recorded using two varying audio recording devices and handwritten notes (Creswell, 2009). All but one interview took place via telephone with one participant, despite instructions, appearing for a face-to-face interview.

Once the subject and researcher were acquainted through an ice-breaker question (Creswell, 2009), the interviewer led participants through a series of semi-structured questions regarding identified media utilized by the College. Interviews were neo-positive in nature as the interviewer aimed to ask good questions, minimize bias, and generate quality data as well as conversation (Merriam, 2009). Interview questions were open-ended and few in number to evoke participant opinions as suggested by Creswell (2009). A few questions focused on participant's ability to recall or engage in the particular communications medium, their impression of the medium, and the type of information they would like to receive and how they preferred to receive it. After the questioning route was completed for a single medium, the interviewer conducted member checking to ensure recorded data agreed with the participant's intended perception (Creswell, 2009; Lincoln & Guba, 1985). This process was repeated until each medium was reviewed. A brief survey was then administered at the end of each interview to gain a deeper understanding of participant's past and present relationship with Bumpers College. This survey collected data on participants' level of education and whether they had made a donation to Bumpers College, were a first generation college graduate, had a relative graduate from the University of Arkansas, or had received financial aid to complete their education.

Following each interview session, audio recordings were saved to a computer and assigned a number based on interview order and labeled with an AR or IR depending on their active (n_a) or inactive (n_i) alumni status. Once sessions were completed, transcribed data were arranged according to their information source (Creswell, 2009) and interview question. Triangulation was implemented using various modes to record data including notes and two audio recordings, each with differing audio quality to increase transcription accuracy (Merriam, 2009). Transcripts were hand-coded using color schemes and key segments were placed under categorical themes (Creswell, 2009). Open codes from each interview were clustered and consolidated through axial coding (Creswell, 2009; Tesch, 1990). Findings were reported through narratives supported by respondent quotations and included a general summary written to capture lessons learned in thick description (Creswell, 2009; Lincoln & Guba, 1985). Peer debriefing between the researcher and a panel of experts was used to reinforce the data's accuracy and reach intercoder agreement of greater than 80% (Creswell, 2009; Gibbs, 2007). Transferability was increased through rich, thick description so that individuals in a similar context may draw

commonalities (Lincoln & Guba, 1985; Merriam, 2009). Dependability was maintained through a detailed audit trail and use of an interview protocol and script (Merriam, 2009).

FINDINGS AND RESULTS

Participants were 22 to 29 years of age with no correlation between age and AA status. The majority of participants (n_a = 5, n_i = 6) had completed a bachelor's degree with the remainder having received at least a master's degree. Six of these participants (n_a = 3, n_i = 3) had returned to the Bumpers College for graduate school with two of these participants (n_a = 1, n_i = 1) enrolled as graduate students at the time of their interview. One active alumna was completing her doctoral degree and one inactive alumnus had completed his Ph.D. There was no relationship between distance from campus and their AA status. Sixteen of the 20 participants (n_a = 8, n_i = 8) resided in Arkansas with 10 (n_a = 6, n_i = 4) living an hour or less from the University of Arkansas campus. Looking at participants' academic relationship with Bumpers College, half (n_a = 4, n_i = 6) were first-generation college graduates. Of those who were not first generation graduates, eight participants (n_a = 5, n_i = 3) had a relative graduate from University of Arkansas. Nineteen participants (n_a = 9, n_i = 10) reported receiving financial aid to complete their education.

Two key themes emerged related to Millennial alumni's connection to the College: *Building the Professional* and *Interest in Giving Back*. As participants reviewed and discussed each of the eight communications media, the following themes emerged related to Bumpers College Millennial alumni's connection to the media: a) *Message Relationship*; b) *Specialized Content*; c) *Communications Medium*; d) *Message Barriers*; and e) *Need for Promotion*.

Alumni Connection to College – Building the Professional

Regardless of whether respondents were using their degree in their occupation, no alumni said they were unprepared or upset with their collegiate experience. In fact, four participants (IR3, AR15, IR16, AR19) made it known they have considered returning to Bumpers College to pursue a master's degree in the future. Only one alumna displayed a detached outlook of her relationship with the College. She reflected, "…I was more involved with my sorority and that kind of thing. Sorry, I'm not really helpful on that one. My major helped me get a job" (AR10).

Alumni Connection to College – Interest in Giving Back

While money was perceived as a barrier to the alumni-college relationship (n_a = 5, n_i = 2), most responded positively toward the idea of giving back financially. When asked if they would rather donate funds, time, or services, nine alumni (n_a = 5, n_i = 4) said they would prefer to give back financially. One alumnus cited monetary donations as a convenience because he just began his career. "…[T]here's not a lot of time to donate, but definitely in the future as I get more involved and more comfortable in my job, I might [have things] that I could contribute and advice I could give" (AR8). Making a financial gift was also viewed as the most convenient option for respondents who lived far from the College campus. Some were more interested in providing directly to current students rather than the College as a whole. "…[I]f I ever came to the point where I had a considerable amount of money to give the program, it'd likely go into some form of scholarship... Funding *that* to help some of the other current students out" (IR5). Although many showed interest in giving back financially, participants noted needing more time to accumulate money to give.

Contributing to the College through mentorship and service opportunities also appealed to alumni. Few respondents (n_i = 3) mentioned they had or were currently collaborating with past professors to help mentor or offer services for students. Not only did they feel good about giving back to their alma mater, but they were also glad to be providing meaningful opportunities for future students. An alumna explained, "I want to offer students what I had as a student and those opportunities to network and meet with professionals... College was so great and helpful to me in that aspect that I feel like I owe them" (AR17). Finally, alumni were least likely to donate their time for general volunteer opportunities. As with monetary donations, alumni cited being too fresh in their careers to donate.

Alumni Connection to Media – Message Relationship

While reviewing each medium, respondents wanted to feel like Bumpers College was connecting with them on a

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personal level. When asked about what they wanted to receive from their alma mater, all participants desired updates on specific people in the College. Whether through visual and textual content, special events, or event invitations, alumni wanted to feel they had made a connection with someone.

> My favorite part was the 'Bumpers College Family Album.' It showed what alumni have been doing and pictures of like the girl meeting Clinton... I really like things that are related to particular people instead of just Bumpers College in general. It makes it more personal. (AR10)

Sections in *The Graduate* magazine such as the "Bumpers College Family Album," "Class Notes," and *AR Culture* articles were standout elements to alumni who encouraged the College to add more people-focused content. Respondents noted they typically did not read everything distributed by the College, but scanned content for key words and images related specifically to their interests. One respondent who traditionally left their copy of *The Graduate* unread reflected, "I think I sat down and read one article in this one, and the *only* reason was because when I opened that very first page, one of the photos was a friend of mine..." (IR1). Instances of seeing familiar faces and programs were not only what respondents noted as a point of entry, but were what they remembered most.

Anticipating familiar faces and reconnecting with instructors and classmates were also reasons most alumni (n_a = 8, n_i = 9) considered attending a college event. Most respondents (n_a = 8, ni = $_8$) were drawn to the alumni and friends tailgate as football attracts many former students and professors. In contrast, while many related the event to seeing familiar faces, others said they would be more swayed to attend specialized, departmental events. One participant warned, "Just a random invitation wouldn't really entice me to come… It would probably be just a room full of people I've never seen before eating a buffet" (IR13). Along with an intimate approach to alumni events, some (n_a = 2, n_i = 3) valued personalized invitations or being approached by an individual to attend a Bumpers College event. Alumni were more willing to give the College their time when it looked like a message had been specially crafted for select individuals rather than to the masses.

Alumni Connection to Media – Specialized Content

Along with interest in a people-focused approach to communication, alumni desired to hear about research being conducted at their alma mater. Regardless of education level, almost half (n_a = 3, n_i = 5) wanted to continue to hear about advancements made within the agriculture industry and their personal field. Research served as a thread that not only linked alumni to their past but also related Bumpers College to their current industry positions. Two alumni in particular noted interest in hearing about community and global impacts of research conducted on campus. One alumna noted, "I like that *AR Culture* highlights different things that students are doing around the world... That's just interesting to know students from my alma mater are able to have that sort of have a hand in something big" (IR6). Hearing these stories helped alumni to see how Bumpers College continues to connect and impact their lives even though they are no longer on campus.

While the message or purpose was perceived as the most important part of a communications medium, the quality of the visuals encouraged alumni to invest time in the College's message. An alumnus explained, "[T]he invitation design encouraged me to read the whole invitation. But as far as encouraging me to come the event… I think that's the function of the event itself" (AR7). When discussing the *AR Culture* magazine, one alumnus added, "It's got good pictures in almost every story. And I think that does a lot for reading purposes. It helps engage the readers" (IR2).

Alumni Connection to Media – Communications Medium

Alumni's willingness to receive and engage in Bumpers College messaging was dependent on the communications medium. Over half of respondents had a particular medium preference for different information and was largely dependent on personal convenience.

> …I think it's just one of those things. I like them sent to my inbox so I can read them where I want to if I'm on

> the computer. But I do also like having a hard copy so that way if there's a really cool article, I can give it to somebody else to let them read it. (AR18)

Although some alumni flexibly engaged in print and electronic media, others were unwavering in their medium preference. One alumna explained, "I would like to receive *nothing* in the mail. I don't like mail[ed] items. They end up being thrown away, and then they're just waste, which I think is bad for the environment" (IR4). Essentially, alumni saw a benefit in having a variety of media at their disposal to opt in and out of at their leisure.

Not only did personal preference play a role in medium selection, but alumni also admitted to reading print and electronic news media differently. Respondents typically perceived print media as lengthy, in-depth, and needing more time to read, while electronic media was described as providing a quick list of topics for scanning. An alumna with a preference for print noted instances where content frequency and length described the medium/channel.

> I would read a printed version–I'd always read that more thoroughly. I just like to have paper in front of me. But for just a monthly [publication], I would rather get it digital and I'll just scan through it. It's easier to just kind of glance through and click on the topics that are interesting to me. (IR11)

Clearly, some alumni were willing to compromise their personal preferences at times to ensure information was sent in the most practical manner.

Focusing specifically on electronic media, alumni identified unique benefits and expectations for messaging. With everything a click away, alumni expected interconnectivity between varying electronic media including e-newsletter, webpage, and social media presences. This caught one alumna off-guard as she looked at the mocktail party invitation and noticed it didn't include an active link to RSVP. "If I was sending someone an email or if there was a website or link for that party, I would expect to be able to click on it and it send me right to it" (AR12). In addition, alumni did not want to be overwhelmed with content. Some alumni suggested linking emails to a landing page to prevent being bombarded with too much content.

Alumni also viewed electronic media as an opportunity to save the College money (n_a = 3, n_i = 4). "Well I think that electronic form, it could probably be published more than twice a year as in it could possibly be a cheaper way to get higher volume out" (AR14). Respondents expected (but did not necessarily want) a higher frequency of news and timely content because it was available online. Along with the instantaneity that comes with electronic media, alumni anticipated social media be kept up-to-date, active, and engaging as a digital form of public relations.

> I think for me, if you're going to be on social media, you shouldn't just say that you have a page. You should have a page that you could share and post information, where you can be authentic and engage in two-way conversations... I really think it's important for there to be an active, engaged presence on social media. Not just a presence. (AR18)

Respondents were not content with just recent updates from the College, but wanted their alma mater to be seeking a relationship or forming dialog with alumni online.

Alumni Connection to Media – Message Barriers

As active and inactive Millennial alumni began to justify their perceptions of each medium, a theme of *Message Barriers* emerged with nine subthemes. 'Time' was frequently identified as the reason for a respondent's inactivity with the College and its media. Their choice to invest in content was often dependent on time available. When asked their likelihood of opening an email based on its subject line, one alumnus respondent, "If I had time to sit there and look through it, I would just open it. If I didn't [have time], I wouldn't and I'd probably not come back to open it" (AR7). Alumni will not open an email if they do not believe they have time to look through it—no matter how well crafted a subject line may be. Messages with chunks of content were also perceived as taking too much time, and often set aside for later. One

respondent explained, "I always have the best intentions to read things like this because I'm a very proud alumna,... [b]ut it's just hard to keep up with time and that kind of thing" (AR10).
Another external barrier cited by almost half of respondents was the issue of distance. This barrier was only mentioned when discussing alumni events and the possibility of making a gift of time or services. When asked which events they would return to campus for, one alumnus replied, "Well if we're just talking about me, I live four and a half to five hours away, so probably about the only thing I'm coming for is a sporting event" (IR7). Those who lived quite a distance from the campus cited only returning for sporting or other major events. Distance also made alumni selective about which messages they would receive. If a respondent anticipated being unable to attend an event because of distance, the alumnus would instantly discard or skip an electronic or print invitation.

Also when discussing the likelihood of engaging in Bumpers College communications media, a subtheme of 'vague messages' emerged. If alumni were unable to understand the key purpose of a message without additional research, these messages were discarded or skipped. This theme emerged when discussing the *AR Culture* magazine and reemerged when reviewing the mocktail party invitation. An alumnus shared, "It says 'An Evening of Engagement, Networking Among Bumpers College Alumni and Current Students.' I think it'd be nice if it listed for the networking side what alumni or what businesses might be there" (IR2). Rather than understanding the event as a mentorship opportunity, the alumnus was seeking ways he would professionally benefit from attending. A lack of details not only led alumni to misinterpret the event but to see no value in attending.

On the other hand, too much information was perceived as a barrier preventing the receiver from discerning a key message. Discussing the tailgate invitation's subject line, one alumna remarked, "That's way too long for a subject line. You could easily just leave it as 'Bumpers College Alumni Tailgate,' and I'd probably open it… That's a really, really, long subject line. You lost me after Register Aug. 31" (IR1). Digging into the invitation, respondents felt they had to sift through material to find event information. On top of being bombarded with content from a single source, respondents receive an overflow of print and electronic media from external sources, vying for their attention. This led alumni to prioritize messages worthy of their time and attention with some messages never reaching the receiver.

Another barrier presented by respondents was the inability to relate to the subject matter. As mentioned in the *Message Relationship* theme, alumni wanted to read content that appealed to their interests and history. Stories featured in *The Graduate* or *AR Culture* that had no relation to their interests were skipped. This was also true for invitations and events. When speaking about her likelihood of opening the tailgate invitation, an alumna responded, "Whenever I think tailgate, I'm thinking football. If that pops up, usually I'm never interested in it. It's one of those things I just kind of think football and that just goes into the trash" (AR20).

During participant interviews, a seventh barrier surfaced when alumni were unable to properly view electronic media because of technical errors. Although the same email was distributed to all alumni, each viewed the electronic media differently based on their email provider and screening method (desktop/mobile devices). When photos did not appear and electronic templates were warped, participants lost patience and abandoned the message. An alumna who had difficulties with *The Graduate* e-newsletter commented, "It's not lined up correctly or anything. So even on my computer screen, they didn't even manage to line up everything correctly" (IR4). Instances like these reflected poorly on the College as alumni perceived the creative piece as being carelessly thrown together.

The final subtheme identified by Millennial alumni was 'outdated information.' This theme was mentioned by two respondents while reviewing the Bumpers College alumni webpage and social media presences. "…[W]hen you look at on the left-hand side at the 'Alumni and Friends Blogs,'… the most recent post is from October 8, 2011… It's completely neglected" (IR4). Alumni showed interest in the 'Alumni and Friends Blogs' link; however, content was no longer timely to be relatable.

Need for Promotion

A final theme observed during participant interviews was the *Need for Branding and Promotion* for Bumpers College. Although alumni were attracted by the reference of their alma mater in subject lines, media distributed by the two entities (Bumpers College and the University or Arkansas) had little brand recognition. Though Bumpers College and the University are not competing entities, each sent separate messages which confused alumni. Not only were *The Graduate* and *AR Culture* magazines interchangeable in the minds of alumni, but participants viewed the AA and Bumpers College Alumni Society as two separate organizations. "…When Bumpers College goes to events and tries to get people to join the alumni society, [they think] there's an alumni society for the University and one for Bumpers College. And they're two separate alumni societies..." (AR17).

Lastly, it was noted the College needed to promote their social media presence. A little over half of participants (n_a = 6, n_i = 5) were unaware of Bumpers College social media presences, and those who were aware confused the separate student and alumni Facebook pages.

CONCLUSIONS AND RECOMMENDATIONS

While discussing their relationship with the Bumpers College, alumni showed *Interest in Giving Back* to the College. Though most were fresh in their careers and unable to presently make a gift of their funds, time or services, they still hoped to make a contribution—whether to the College or directly to students—sometime in the future. Alumni were pleased with their experience and wanted to offer the same advantages and opportunities to the next generation of Bumpers College students. By creating personal connections with alumni while they were students, the Bumpers College established a strong customer-product tie for Millennial alumni and can continue to develop its brand community by answering the call for a fruitful customer-institution relationship.

In addition to their relationship with Bumpers College, alumni discussed their relationship with distributed media. A theme of *Message Relationship* emerged as alumni described information they would like to receive from their alma mater. One alumna commented,

> I feel like Bumpers College was really kind of personal with me as far as I made a lot of good connections with the faculty, and staff, and my friends, and so I want to still kind of feel that connection to the Bumpers College as a whole. (AR19)

Alumni valued relatable, familiar, and specialized messaging and communicated a need for the College to build its customer-brand relationship to foster an emotional connection. This may be caused by a lack of branding associated with distributed media, reflected in the *Need for Promotion* emergent theme. Bumpers College currently does not have a brand identity, so alumni adopted faces of students and professors to form the College's identity. Alumni were not nostalgic for a tradition or symbol, but for the personal connections (customer-customer relationships) they made while students. Brand identity is an important component of communications (McAlexander et al., 2006), and should be improved by Bumpers College. Studies regarding alumni communications media should continue as they are often the only element currently linking Millennials to their alma mater post-graduation.

Participants showed interest in *Specialized Content* including compelling research visuals to "catch their eye" as they scanned messaging. Most alumni expressed a desire to hear about Bumpers College research with a focus on professors and students. The few participants who were seeking employment preferred job listings and networking opportunities for reviewed media. These preferences were largely dependent on an alumnus's stage in life and will evolve as participants mature in their role as an alumnus.

In discussing their relationship to the College's media, a theme of *Communications Medium* emerged. Alumni acceptance of a medium is depended on individual preference, but they sought flexibility in the way they wanted to receive College messages. If the Bumpers College failed to send a message through a desired channel, this led to a

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communication breakdown caused by the receiver's unique attitude. Print and digital media were consumed differently with separate expectations. Print media were viewed as more in-depth and involving more time, while digital media were prompt and easy to scan. Though the particular issue of the *AR Culture* magazine was two years old, alumni were more shocked by the three-year-old 'Alumni & Friends Blog' post. Alumni expected instantaneity and timeliness from digital media and were more forgiving of print. Communications that failed to encode the message to meet alumni expectations were more susceptive to noise interference and prevented the message from reaching the receiver (Berlo, 1963; Communication Theory, 2010; Petty & Cacioppo, 1986).

Finally, as alumni justified their perceptions of distributed media, the *Message Barriers* theme emerged. While time, distance, and an overflow of external messaging were barriers outside of the College's control, most of the listed barriers or noise could be solved. These included vague messaging, too much information, non-relatable subject matter, technical errors, and outdated information. This supports Berlo's SMCR, which stresses the importance of shaping messages to positively impact the attitudes of the receiver. By noting and addressing these barriers and its delivery to specific channels, Bumpers College could foster growth in alumni involvement. One alumnus commented,

> In the end, it all comes down to me as an individual if this is something that I want to have as part of my life… A website one way or the other isn't going to convince me. (AR14)

Although media distributed by alumni relations isn't going to sway an alumnus to get active, making information available to alumni is important to help keep them connected enough to easily become active if they choose to do so.

Because Millennials are the first generation to grow up with the Internet (Twenge, 2006), understanding their preferences and habits is critical. Since multiple media messages were used in this study, the findings provide insight how to shape the message and the desired channel (Berlo, 1960) for reaching Millennial students (McDearmon & Shirley, 2009). Studies regarding alumni communications media should continue because they are often the only element linking Millennials to their alma mater post-graduation. This will allow Alumni Relations to identify and be mindful of barriers hindering relationships. Secondly, researchers also suggest alumni involvement be increased through a personable approach. Not only does this method communicate sincerity, but it also gives face to an institution. When information is disseminated by the preferred methods of communication, the likelihood of reaching alumni with a persuasive message will increase (Petty & Cacioppio, 1986) for the institution. This tactic builds the alumni-brand relationship by instilling an emotional connection to their alma mater—a core concern for marketers wishing to strengthen their brand community (McAlexander et al., 2006). Finally, practitioners must ensure strategy implementation is driving their tactics rather than visa-versa. Before jumping to the next social media frenzy, alumni relations must evaluate whether these tactics truly align with strategies for reaching an overarching goal.

Despite Bumpers College alumni being spread all over the world, it is recommended future studies regarding alumni communications follow a focus group methodology for data collection. Researchers for this study ideally would have held two to three focus groups; however the planned focus group never came to fruition because it lacked a proper incentive and timing for alumni participation. A drawback to interviews is the assumption participants have thoughts about and understand how they feel about something (Krueger, 1988). Some respondents during their telephone interview provided brief or one-worded answers without much elaboration despite interviewer prompts. Unlike interviews, focus groups allow participants to hear the opinions of others and build on their own (Krueger, 1988). This method would also be a solution for improving dialog and discussion during the data collection process. While focus groups may pose respondent bias because of social pressure and anxiety, researchers could better understand how people influence their relationship with communications media and the Bumpers College. The researchers also believe holding a focus group would have reduced limitations associated with the unpredictable nature of technology (interview recorders over the phone) and people. With the researcher and participant present in the same room, the researchers could have ensured print and digital media would have been viewed in the same manner by all participants. Finally, this method would have also reduced the frequency of rescheduled interviews among participants.

As researchers of this study, we realize this is a small glimpse at alumni communication perceptions and needs for one Land-grant university. However, we believe there are findings in this study that can and will relate to other universities across the United States. Staying connected to our alumni through effective communication messaging and strategies is of current and lasting interest. Furthermore, this information can be used to inform communication efforts in our agricultural communication classrooms.

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RESEARCH

Associating Importance with Behavior: Providing Direction for Water Conservation Communication

Alexa J. Lamm, Lisa K. Lundy, Laura Warner, and Kevan W. Lamm

ABSTRACT

This study identified differences in characteristics of High Water Users (HWUs) based on their perceived importance of plentiful water and their engagement in water conservation behaviors. Differences in the characteristics of high water users based on the level of importance they associated with plentiful water and their engagement in water conservation behaviors were identified. Communication needs and interests of HWUs were also identified. The Situational Theory of Publics (STP) was applied to explore why HWUs might perceive plentiful water to be important but may not feel personally responsible and may perceive barriers to changing their behaviors. Significant differences were found in terms of gender and race between the four primary groups of respondents identified (High Importance/High Engagement, Low Importance/High Engagement, Low Importance/Low Engagement and High Importance/Low Engagement). The High Importance/Low Engagement group was identified as an important and potentially high impact public for communicators.

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KEY WORDS

Segmenting Publics, Situational Theory of Publics, Water Conservation

INTRODUCTION

Water is one of the single most critical elements to a productive society (Young & Dhanda, 2013). Without sufficient water resources it is impossible to sustain life, therefore the active monitoring, management, and engagement in water related endeavors is paramount (Morris, 1995). Despite the necessity for water the indifference, obliviousness, and apathy of the general public in water related issues has been observed (Lamm, Lamm, & Carter, In Press-a).

As a fungible resource water may serve a multitude of purposes: potable, recreation, natural habitat, agriculture, industry, or aesthetics (Chiras, 2009). However, use within each particular category may result in a deficiency within another; for example, water used for aesthetic, or landscaping purposes, may become non-potable until going through the necessary reclamation process. Such conflicts over use are starting to emerge with greater frequency, especially in geographies where water is beginning to be viewed as a finite resource (Barnett, 2007).

In Florida one of the largest conflicts centers around competing and diverging interests related to the restoration of the

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Everglades (Carter, 2004). Those in favor of returning the Everglades to a more natural environment express concerns of the water quantity needs of the agricultural industry upstream, as well as questionable water quality associated with post-agricultural use (Carter, 2004). From the agriculturalists perspective, their adherence to best management practices and net contribution to cleaning the Everglades tends to go unnoticed. "Farmers have spent an estimated $200 million implementing the improved practices, including fertilizer controls, water management and soil conservation" (Salisbury, 2015, para. 13).

A similar conflict has emerged between public water consumption and competing interests. Within Florida public water demands are expected to grow by 29% over the next 20 years (Florida Department of Environmental Protection, 2013). Based on 2005 data Marella (2013) found public consumption in Florida already accounted for 52% of fresh groundwater and 13% of fresh surface water withdrawals. Based on estimates by the United States Environmental Protection Agency (USEPA, 2014) the average United States household consumes more than 300 gallons of water a day with 30% going for outdoor uses. The implication of these estimates is that a larger number of individuals are going to be competing for the same limited water resources (Florida, 2013; USEPA, 2014). Additionally, the volume of water directed to outdoor endeavors, specifically, aesthetic and landscaping, are expected to increase dramatically (Haley, Dukes, & Miller, 2007; Marella, 2013).

One recommendation to mitigate the potential consequences of water resources directed at outdoor water use, particularly for landscaping purposes, has been to identify individuals that tend to use an excessive amount of water for such purposes and focus educational initiatives at behavior change within this group (Monaghan, Ott, Wilber, Gouldthorpe, & Racevskis, 2013). According to Monaghan et al. (2013) individuals in Florida that use an excessive amount of water, classified as High Water Users (HWUs), have a tendency to share similar characteristics. This recommendation is consistent with research that has found that similarities in individual characteristics can have a significant bearing on communication channel preferences (Lamm, Rumble, Carter, & Lamm, In Press-b).

Despite previous efforts to provide educational materials to the general public through the Florida Extension service (Greene, 2010; Lee, Tansel, & Balbin, 2013) knowledge gaps related to water issues have continued to persist (Lamm et al., In Press-a). Two of the National Research Agenda (Doerfert, 2011) priority areas are germane to the study of HWUs and their preferred educational channels. First, priority area one focuses on public and policy maker understanding of agriculture and natural resources (Doerfert, 2011). As a natural resource, water is essential to all elements of life. Consequently, a study directed at better understanding and classifying HWUs may serve as a benchmark to the public, as well as policy makers, regarding the use of water for outdoor, urban landscaping purposes as well as engagement in water conservation behaviors. Secondly, priority area five emphasizes efficient and effective agricultural education programs. Understanding the needs and preferences of an audience is paramount in providing the most effective educational experiences possible (Doerfert, 2011). A study which empirically analyzes channel preferences may have significant bearing on recommended educational intervention strategies and may ultimately influence individual knowledge and behavior (Lamm et al., In Press-b).

THEORETICAL FOUNDATION

In the context of natural resource issues like water management, groups of citizens can be identified that have shared characteristics or demographics with regard to the issue at hand. These groups can be described as publics. "Publics develop around issues that affect them because they have a similar problem, they recognize that problem, and

they organize to do something about the problem" (Lee & Rodriguez, 2006, p. 5). Researchers have long sought to categorize and describe publics in terms of how and why they seek out information for problem solving. Within the Situational Theory of Publics (STP) framework, publics are categorized based on how they respond to problems and their communicative behavior. STP also examines the cognitive, attitudinal and behavioral effects of communication messages (Grunig, 1997, 2003).

According to STP, three independent variables can be measured to explain and predict communication behaviors in a particular situation: problem recognition, involvement recognition, and constraint recognition. Problem recognition refers to an individual's cognitive perception of discrepancy between a held expectation and an observed reality (Kim & Grunig, 2011). For agricultural communicators, there are many examples of societal issues that are not perceived as problems by some individuals. For example, a city may have areas designated as food deserts lacking access to healthy food options. For many citizens and leaders in that city, however, lack of awareness and information may preclude them from perceiving food deserts as an issue for their city. They do not recognize a problem. Kim and Grunig (2011) distinguish between perceptual problems and cognitive problems, defining "problem recognition as one's perception that something is missing (perceptual problem) and that there is no immediately applicable solution to it (cognitive problem)" (p. 128).

Involvement recognition stems from an abundance of social psychological research on the concept of involvement related to attitudes and information processing. As an example, within the Elaboration Likelihood Model of Persuasion involvement is an important variable influencing the amount of cognitive processing individuals will devote to a communication message. Grunig (1997) defined level of involvement as "the extent to which people connect themselves with a situation" (p. 10). Low involvement tends to result in more passive communication behavior, defined by Grunig (1976) as information processing. Higher involvement results in more active communication behavior or information seeking (Grunig, 1976). According to Grunig (1983), publics will express concern about environmental issues when they are unwilling to seek out information to learn more about the problem. At issue in these instances is personal involvement. If they perceive an environmental problem to be of personal concern, they are more likely to seek out information (Major, 1993).

While involvement recognition comes from the field of social psychology, Grunig's (1989) concept of constraint recognition is rooted in economics and management science. It is, however, analogous to Bandura's (1977) social psychological concept of personal efficacy. According to Grunig (1997), constraint recognition occurs when "people perceive that there are obstacles in a situation that limit their ability to do anything about the situation" (p. 10). Even when problem recognition and perceived involvement are high, individuals are not likely to engage in information seeking or process if they perceived significant restraints (Ramanadhan & Viswanath, 2006).

Residents' landscape water conservation practices are influenced by constraints in the form of Homeowners' Association (HOAs) membership and the presence of water restrictions. HOAs typically elect their leadership, regulate activities, and provide services to their residents and "are quickly becoming the most common and fastest growing units of local governance in the United States" (McCabe, 2005, p. 404). Residents of HOAs "are contractually obliged to follow the rules and regulations" (Turner & Ibes, 2013, p. 1168) specified in an HOA's covenants, codes, and restrictions (CCRs). In 2012, Florida was reported to have 46,000 HOAs, which makes up the largest percentage (14.2%) of the country's growing numbers of HOAs (Foundation for Community Association Research, 2012). In a recent study of Florida residents, 66% indicated they resided in an HOA (Odera & Lamm, 2015).

HOAs generally prioritize landscape aesthetics despite their potential to contribute to water conservation (Cook, Hall, & Larson, 2011; Dyckman, 2008). Many HOA CCRs require specific combinations of plant species, turfgrass coverage, and quality of turfgrass, which affects landscape water consumption (Turner & Ibes, 2013). Additionally, both perceived and codified social norms within HOAs shape individuals' landscape water use practices (Cook et al., 2011; Larson & Bruman, 2014). HOA CCRs paired with the pressure to conform to a neighborhood norm have been identified as barriers to environmentally responsible landscaping practices (Cook et al., 2011; Hansen de Chapman, Sanagorski, Monaghan, Lewis, & Momol, 2014).

While residing within an HOA is recognized as a local driver for residential landscape practices, the presence of water restrictions is recognized as a broader-scale constraint, which may be imposed by counties or municipalities (Cook et al., 2011). Water restrictions are one of the most common water conservation strategies (Survis & Root, 2012), yet reports on effectiveness have been mixed. Restrictions may be voluntary or mandatory, and are often prescribed as allowable irrigation days, times, and durations (Kenney, Klein, & Clark, 2004). Water restrictions may also detail rules for different watering methods and sources, such as hand watering with a hose or using reclaimed water (Kenney et al., 2004). Ozan and Alsharif's (2012) study on water restrictions and compliance demonstrated that stringent water restrictions actually increased water usage. Additionally, people who had received water usage citations during water restrictions increased their usage more that those who did not (Ozan & Alsharif, 2012). Survis and Root (2012) found that individuals may substantially wastewater through irrigation despite compliance with water restrictions. This loss of potential water savings may be attributed to a perceived obligation to water during a resident's allowable days (Kenney et al. 2004). Both HOA membership and water restrictions represent constraints to water conservation practices.

The cognitive effort needed to evaluate communication messages is a limited resource for consumers who are bombarded with messages each day and can serve as an additional constraint for individuals presented with water conservation communication. Effective communicators can use audience data to determine which individuals are most likely to actively attend to their message. Depending on an individual's problem recognition, involvement recognition and constraint recognition related to an issue, they acquire information about the issue either actively (information seeking) or passively (information processing) (Grunig, 1997). Information seeking is premeditated and involves an individual actively looking about their environment for messages about a topic. Information processing is the "unplanned discovery of a message, followed by continued processing of it" (Clarke & Kline, 1974, p. 233). Information seekers often rely on interpersonal discussion and specialized booklets or pamphlets (Clarke & Kline, 1974). They are more likely to look for media sources developed to provide problem-specific information. This could also include issue-related websites. Information processers rely more on mass media for information. While they're not seeking issue-related information, they may stumble upon it through exposure to mass media. Through the use of STP, high water users can be better understood, and therefore more easily communicated with, by examining how problem recognition, involvement recognition and constraint recognition related to water conservation impacts information processing and information seeking.

PURPOSE AND OBJECTIVES

The purpose of this study was to gain a deeper understanding of high water users based on their problem recognition that plentiful water is important, level of involvement in water conservation behaviors, and constraint recognition related to HOA membership and being required to abide by water restrictions. This will aid communicators in encouraging adoption of water conservation behaviors. The study was guided by the following objectives:

1. Identify differences in characteristics of high water users based on the level of importance they associated with plentiful water and engagement in water conservation behaviors within the landscape.
2. Determine if the level of importance associated with plentiful water and engagement in water conservations behaviors within the landscape is associated with HOA membership and being required to abide by water restrictions.
3. Identify the communication needs of high water users based on the level of importance they associate with plentiful water and engagement in water conservations behaviors within the landscape.

METHODS

This study used an online survey research design to address the research objectives. The population of interest was high water users in the state of Florida age 18 or older. A high water user was defined as living in specific counties within the state, having an irrigated landscape and hiring an outside landscaping company to manage their landscape. Previous literature has identified individuals with these characteristics as consuming an unusually high amount of water to ensure they have a green, lush home landscape (Davis & Dukes, 2014; Huang, Lamm, & Dukes, 2015). The study was limited to Florida because water has been identified as the top issue facing the agricultural and natural resource sector despite it being surrounded by water on three sides and having an extensive spring system. The state is also currently undergoing a strategic restructure of their extension system where enhancing and protecting water quality, quantity and supply has emerged as one of the priority initiatives.

The survey instrument was researcher adapted with items based on the 2012 RBC Canadian Water Attitudes Study (Patterson, 2012). For this study, the original instrument was adapted to fit a Florida audience and researcher-developed questions specific to learning interests and communication preferences were added. As the research is part of a larger study, five sections of the survey instrument were germane to the findings in this study: importance of plentiful water, self-reported engagement in water conservation behaviors, interest in water-focused learning experiences, communication preferences, and demographics. Once the instrument was developed an expert panel ensured content and face validity. The expert panel included the Director of the Center for Landscape Ecology and Conservation, the Director of the UF Water Institute, the Director of the Center for Public Issues Education, and an evaluation specialist with expertise in survey design.

First, respondents were asked to indicate the level of importance they associated with seven items related to plentiful water on a five point Likert-type scale ranging from 1 = *Not at all important*, 2 = *Slightly important*, 3 = *Fairly important*, 4 = *Highly important*, and 5 = *Extremely important*. Responses to the seven items were averaged to create an overall measure of importance of plentiful water score. Reliability was calculated *ex post facto* resulting in a Cronbach's alpha coefficient of .79 deemed to be reliable. The overall mean score for the index was a 3.67 (SD = .60) indicating the respondents, on average, perceived plentiful water as highly important but there was a diverse level of response. Next, respondents were asked to indicate if they had engaged in six specific water behaviors related to the protection of water when using it in the home landscape. If they marked they had engaged in the specific method, they were given a point. The points were then summed to create an overall water conservation behavior score that could range from zero to six with a zero indicating they did not engage in any of the behaviors and a six indicating they engaged in all of the behaviors. The overall mean score was a 4.01 (*SD* = 1.43).

Respondents were also asked whether or not they were a part of an HOA and if they currently had to abide by any water restrictions for their lawn. Communication needs were measured in two ways. First, respondents were asked to indicate the types of learning opportunities they would most likely take advantage of to learn more about water topics. Respondents were presented with 11 options and asked to check all that apply. Second, respondents were asked to indicate which of 14 subject matter areas they would be most interested in learning more about. Respondents were presented with 14 options and asked to check all that apply. Finally, respondents identified their sex, education level, race, ethnicity, age, annual household income, and political affiliation.

In order to categorize the respondents, both the importance of plentiful water index score and engagement in water conservation behavior scores were transformed into z scores. The z scores were used to classify the respondents in to one of four groups: (a) positive importance of plentiful water z score and positive water conservation behavior z score (+I+WC), (b) negative importance of plentiful water z score and positive water conservation behavior z score (-I+WC), (c) negative importance of plentiful water z score and negative water conservation behavior z score (-I-WC), and (d) positive importance of plentiful water z score and negative water conservation behavior z score (+I-WC). Chi-square tests were used to determine if significant differences existed between the four groups on the variables of interest.

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A non-probability opt in sample was obtained using a public opinion survey research company, Qualtrics. Non-probability samples are commonly used in public opinion research to make population estimates (Baker et al., 2013) and in this case was the best way to reach the population of interest: high water users. Although there are limitations in being able to generalize non-probability samples, they have been shown to yield results as good as, or even better than, probability-based samples (Abate, 2008; Twyman, 2008; Vavreck & Rivers, 2008). The researchers fully acknowledge the limitations of opt-in panels and the lack of coverage associated with on-line survey designs. Weighting techniques were implemented in an effort to mitigate the coverage error associated.

Qualtrics sent a link to the developed instrument to 3,493 Florida residents representative of the state population based on the 2010 Census data. Only residents who answered they were residents of Florida, lived in specific counties within the state, had a home landscape they were responsible for maintaining that used an irrigation system and that reported hiring an outside landscaping company to maintain their landscape (classifying them as high water users) were allowed to participate. As a result, 932 responses were obtained representing a 26.7% participation rate. To compensate for potential exclusion, selection, and non-participation biases that tend to be limitations of using a non-probability sample, quotas established a priori were implemented (Baker et al., 2013).

RESULTS

Differences in characteristics of high water users based on level of importance of plentiful water and engagement in water conservation behaviors – To identify differences in characteristics of respondents based on the level of importance they associate with plentiful water and their engagement in water conservation behaviors, both the importance of plentiful water index score and engagement in water conservation behavior scores were transformed into z scores. The z scores were then used to classify the respondents in to one of four groups for further data analysis. The four groups were respondents who had a (a) positive importance of plentiful water

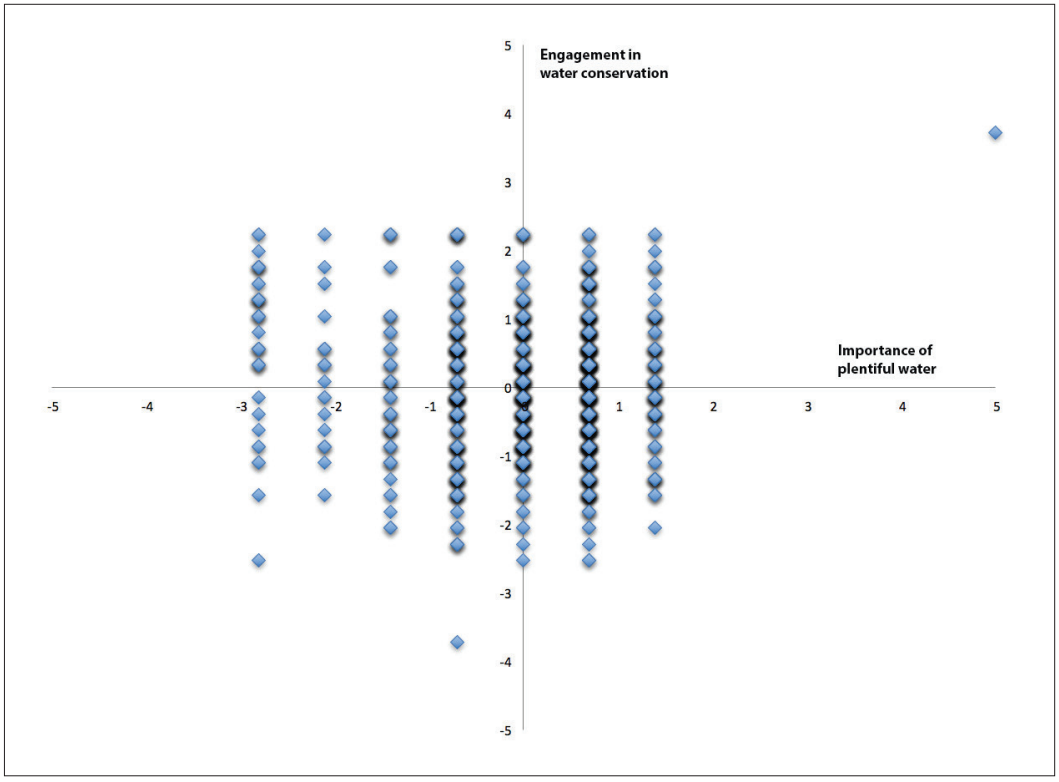

Figure 1. Distribution of groups based on water conservation behaviors and importance of plentiful water z scores

z score and positive water conservation behavior z score (+I+WC), (b) negative importance of plentiful water z score and positive water conservation behavior z score (-I+WC), (c) negative importance of plentiful water z score and negative water conservation behavior z score (-I-WC), and (d) positive importance of plentiful water z score and negative water conservation behavior z score (+I-WC). The distribution of respondents based on their z scores can be seen in Figure 1.

Overall, when identifying the characteristics of the high water user respondents, there was an even gender split (Table 1). The majority was Caucasian/White (Non-Hispanic), had at least a four-year college degree, was older and had an annual family income of more than $75,000 a year. In terms of political affiliations, all were present but the largest group was Republican (37.1%).

Chi-square tests were conducted to compare the demographic characteristics of the four groups. Differences in sex were significant ($X2 = 8.07$; $p < .05$). The +I-WC group exhibited more males than the other three groups and the +I+WC group had the least. Differences in the number reporting being Hispanic ($X2 = 13.28$; $p < .01$) was also significant with the +I-WC group exhibiting more Hispanic respondents than the other three groups and the –I+WC the least. The Caucasian/White race indicator was also significant ($X2 = 7.90$; $p < .05$) with the –I+WC group having the most Caucasian/White respondents and the +I-WC having the least.

Table 1

Demographic characteristics of high water users overall and in groups

	Overall (*N* = 932) %	+I+WC (*n* = 222) %	-I+WC (*n* = 195) %	-I-WC (*n* = 252) %	+I-WC (*n* = 253) %
Sex*					
Male	48.1	41.0	47.2	49.2	53.4
Female	51.9	59.0	52.8	50.8	46.6
Race					
African American	4.4	4.5	3.1	4.4	5.1
Asian	1.5	1.4	0.0	1.6	2.4
Caucasian/White*	93.5	93.7	97.4	93.3	90.9
Native American	.5	0	1.0	0.0	0.8
Hispanic Ethnicity**	6.8	5.4	3.6	5.6	11.5
Age					
18 - 39	12.1	11.7	9.7	10.7	15.8
40 - 49	11.6	10.8	14.4	7.9	14.2
50 - 59	20.2	18.5	19.5	23.8	18.6
60 - 69	33.5	35.6	33.3	35.3	29.6
70 - 79	20.2	22.1	20.0	19.4	19.4
80 years and older	2.5	1.4	3.1	2.8	2.4
Annual Household Income					
$50,000 to $74,999	26.2	28.4	26.2	29.0	20.9
$75,000 to $149,999	49.5	80.0	51.8	49.6	48.2
$150,000 to $249,999	17.9	15.8	14.9	16.3	23.3

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$250,000 or more	6.4	5.9	7.2	5.2	7.5
Education					
High school diploma	5.9	10.4	3.6	4.4	5.1
Some college education	16.4	18.5	13.3	16.3	17.4
2 year college degree	10.1	11.3	10.3	7.9	11.1
4 year college degree	38.1	35.6	38.5	42.9	35.6
Graduate degree	29.4	24.3	34.4	28.2	30.8
Political Affiliation					
Republican	37.1	43.7	33.8	35.3	35.6
Democrat	30.2	26.6	29.7	32.1	32.0
Independent	22.6	19.8	28.2	21.4	21.3
Non Affiliated	9.0	9.0	6.7	9.9	10.3
Other	1.1	.9	1.5	1.2	0.8

Note. *$p < .05$; **$p < .01$.

HOA membership and requirements regarding water restrictions - Respondents were asked to indicate whether or not they currently resided in an HOA and if they were currently required to abide by water restrictions for their lawn. The overall results, as well as the results by group, can be seen in Table 2. The –I-WC group exhibited the lowest level of respondents currently residing in HOAs and the lowest number required to abide by water restrictions for their lawn. The +I+WC group had the most respondents reporting they were required to abide by water restrictions for their lawn. Chi-square tests were conducted to determine if the four groups differed. The results indicated there were significant differences between the four groups in terms of currently residing in an HOA ($X^2 = 7.76$; $p < .05$) and being required to abide by water restrictions for their lawn ($X^2 = 10.63$; $p < .01$).

Table 2

HOA membership and requirements regarding water restrictions

	Overall ($N = 932$) %	+I+WC ($n = 222$) %	-I+WC ($n = 195$) %	-I-WC ($n = 252$) %	+I-WC ($n = 253$) %
Currently residing in an HOA*	70.4	74.3	74.9	64.7	68.8
Currently required to abide by water restrictions for their lawn**	74.6	79.3	77.9	67.5	75.5

Note. *$p < .05$; **$p < .01$.

Communication needs - Types of communication needs of the respondents were identified by asking respondents to indicate which of 11 learning opportunities they would most likely take advantage of to learn more about water topics (Table 3). Respondents were allowed to check all that apply. A "none of the above" option was also offered. Overall, respondents were most interested in visiting a web site to learn more about water topics, followed by reading printed fact sheets, bulletins or brochures. When examining groups, the –I-WC group was the least interested of the four groups in visiting a website and the –I+WC was least interested of the four groups in reading printed materials. The +I-WC group was more interested in watching TV coverage to learn about water than the other groups. A series of Chi-square

tests were run comparing the results from the four groups to determine if differences existed. Differences in interest in watching TV coverage were significant ($X^2 = 7.72$; $p < .05$) with the +I-WC group indicating the highest level of interest in this form of communication.

Table 3

Types of communication needs of high water users overall and in groups

	Overall (*N* = 932) %	+I+WC (*n* = 222) %	-I+WC (*n* = 195) %	-I-WC (*n* = 252) %	+I-WC (*n* = 253) %
Visit a web site	72.6	73.0	77.9	67.5	74.3
Read printed fact sheets, bulletins or brochures	50.4	52.3	45.1	51.6	51.8
Watch TV coverage*	47.5	45.9	48.7	41.3	53.4
Read a newspaper article or series	41.4	45.9	37.4	39.7	43.1
Watch a video	30.2	30.2	34.4	26.2	30.4
Attend a fair or festival	20.2	24.8	14.9	19.0	21.7
Attend a short course or workshop	19.5	17.6	15.4	21.0	23.7
Look at a demonstration or display	18.7	16.7	16.9	17.1	23.3
Take part in a one-time volunteer activity	14.7	13.1	12.3	14.7	18.6
Attend a seminar or conference	11.5	13.5	9.2	11.5	11.5
Get trained for a regular volunteer position	5.5	6.3	4.1	5.6	5.9

Note. *$p < .05$.

Subject of communication needs of the respondents were identified by asking respondents to indicate which of 14 water topics they would be most interested in learning about (Table 4). Respondents were allowed to check all that apply. A "none of the above" option was also offered. Overall, respondents were most interested in home and garden landscaping ideas for yards. When examining groups, the –I+WC group was the most interested in landscaping ideas of the four groups and the –I-WC was least interested. A series of Chi-square tests were run comparing the results from the four groups to determine if differences existed. Differences in interest in learning about irrigation management were significant ($X^2 = 10.70$; $p < .01$) with the -I-WC group indicating the lowest level of interest and the +I-WC indicating the highest. Differences in interest in fish and wildlife water needs were also significant ($X^2 = 11.77$; $p < .01$) with the +I+WC indicating the lowest level of interest and the +I-WC indicating the highest. Differences in interest in learning about private well protection and interest in learning about watershed protection were also significant.

Table 4

Subject of communication needs of high water users overall and in groups

	Overall (*N* = 932) %	+I+WC (*n* = 222) %	-I+WC (*n* = 195) %	-I-WC (*n* = 252) %	+I-WC (*n* = 253) %
Home and garden landscaping ideas for yards	51.0	54.5	54.9	47.6	47.8
Irrigation management**	22.4	22.5	22.6	16.7	28.9
Fertilizer and pesticide management	21.9	23.9	24.6	16.3	23.7
Community actions concerning water issues	20.3	20.7	14.9	21.4	22.9
Water policy and economics	19.7	18.9	19.5	19.0	21.3
Fish and wildlife water needs**	18.9	12.2	19.5	19.0	24.5
Landscape buffers	17.7	16.2	21.0	16.7	17.0
Shoreline cleanup	17.0	14.4	18.5	16.3	19.0
Restoring fish and aquatic habitat	16.6	14.9	20.5	13.9	18.2
Septic system management	11.7	12.2	6.7	12.7	14.6
Private well protection**	10.1	8.1	6.7	9.1	15.8
Watershed management**	10.0	5.0	7.7	11.1	15.0
Watershed restoration	9.8	6.8	8.2	9.9	13.4
Forest management and water issues	9.4	9.0	8.2	8.7	11.1

Note. *$p < .05$.

CONCLUSIONS

This study identified differences in characteristics of HWUs based on their perceived importance of plentiful water and their engagement in water conservation behaviors. Four primary groups of respondents were identified: High Importance/High Engagement, Low Importance/High Engagement, Low Importance/Low Engagement and High Importance/Low Engagement. These groups were significantly different in terms of gender and race. For respondents who perceived plentiful water to be of high importance, men reported significantly less engagement in water conservation than women. Likewise, for Hispanic HWUs respondents who perceived plentiful water to be of high importance, they reported significantly less engagement in water conservation than respondents of other ethnicities.

HOA membership does appear to impact perceived importance of plentiful water and their engagement in water conservation behaviors. High Importance/High Engagement Respondents were significantly more likely to reside in an HOA and to be required to abide by water restrictions for their lawn than other respondents. In terms of communication needs, websites were the overall preferred communication channel for all audiences, while High Importance/Low Engagement respondents demonstrated a significantly greater preference for TV coverage than other respondents. In terms of subject interests, all of the respondents were most interested in home and garden landscaping ideas for yards. High Importance/Low Engagement respondents, however, were significantly more interested in irrigation management, fish and wildlife water needs, private well protection and watershed management than the other respondents.

IMPLICATIONS AND RECOMMENDATIONS

As communicators seek to promote water conservation behaviors, it is essential to understand consumers' attitudes and behaviors. Communicators seeking to understand HWUs must identify their unique characteristics and communication channel preferences in order to develop effective communications content and programs. This study reveals that HWUs' behavior does not always correspond with perceived importance of water conservation. Situational Theory of Publics (STP) provides a framework for understanding why HWUs might perceive water conservation to be important (problem recognition) but may not feel personally responsible (involvement recognition) and may perceive barriers to changing their behaviors (constraint recognition). STP is especially useful in identifying publics with high potential for communication impact. In this case, communicators should consider targeting messages to male HWUs who perceive plentiful water to be of high importance but are not engaging in water conservation behaviors.

One group with potential for communication impact is HWUs with a Hispanic ethnicity indicating that some communication messages may be more effective if they are translated into Spanish. Messages may also be more effective if they are situated within cultural contexts for Hispanic audiences. These may differ widely for audiences in different cities or those from different countries of origin and it is suggested that research be done within a region or specific location to determine relevance. Regional and county Extension agents, that know their local audiences well, can play an important role in developing messages that will resonate with the audiences they serve. Communicators should also consider focusing some of their efforts on High Importance/Low Engagement respondents. This group has distinct communication preferences (TV) and subject interests (irrigation management, fish and wildlife water needs, private well protection and watershed management than the other respondents). A communication program targeted toward this group could result in measurable impact for increasing water conservation behaviors among HWUs. There is great potential here for video-based messages to visually demonstrate the importance of water conservation and help contextualize the issue for audiences by relating it to issues they care about. These could then be placed strategically on local stations and disseminated through online mediums for maximum effect.

Future research with this audience could further extend the application of STP, measuring and describing other perceived constraints that keep citizens who value plentiful water from adopting water conservation behaviors. In addition, a qualitative approach targeting high importance/low engagement respondents could be used to further discuss how perceived constraints are limiting engagement and how they can be overcome through communication campaigns. Finally, communication materials could be made based on these recommendations and tested to determine their level of effectiveness.

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RESEARCH

Using Q Methodology in Agricultural Communications Research: A Philosophical Study

Holli R. Leggette and Tobin Redwine

ABSTRACT

Communication rests on human experience and the uniqueness of subjectivity. Varying research methods and designs measure subjectivity, but few measure subjectivity using rigorous statistical analysis. Q methodology offers such design and rigor. Yet, agricultural communications has been slow to adopt Q methodology. Therefore, the purpose of this philosophical study was to establish a contextual and philosophical understanding of Q methodology and articulate its uses in agricultural communications research. This philosophical study was without traditional research design and methods. Thus, knowledge gained from the literature and best practices were synthesized with the intent of creating a discussion of the philosophies, concepts, and application of Q methodology. To conduct human subjectivity research, Stephenson proposed Q-methodology. It uses a small number of participants to represent the variance of perspectives about a topic. By focusing on and capturing the holistic perspectives of participants, knowledge bases and understandings of humanistic elements within agricultural communications could be enhanced. Benefits of Q methodology include harnessing subjectivity as a means for testing ideas and characterizing perspectives about an idea, limiting researcher bias, and gaining meaningful data from fewer participants. Challenges include misconceptions and misinterpretations related to terminology, concourse development, and generalizability. Agricultural communications depends on human experience and subjectivity related to food and fiber production. Thus, implementing Q methodology research into the agricultural communications discipline diversifies the research toolbox and provides researchers and practitioners with opportunities to explore perspectives related to diverse agricultural issues.

KEY WORDS

Human Subjectivity, Q Methodology, Research Methods

INTRODUCTION

Communication has been the basis of human relationships for years. It materializes when information selection, utterance, and understanding act in one accord (Luhmann, 1992) and transpires at four levels—interpersonal, small-group, public, and mass communication (Telg & Irani, 2012). Communication is a substantial component to "environments that view freedom, liberty, justice, equality, individual responsibility, and the importance of the individual as primary values" (McCroskey, 2001, p. 4). Such communication dynamics have been investigated using textual analysis, qualitative research, and quantitative research paradigms (Berger, 2014) within a variety of contexts.

Textual analysis facilitates the interpretation of the meaning behind visual or recorded messaging (Frey, Botan, & Kreps, 1999) and is inclusive of semiotic analysis, rhetorical analysis, ideological criticism, and psychoanalytical criticism (Berger, 2014). Such research designs are broad in scope (e.g., speech, writings, radio, television, film, images) and have grown

in popularity with the power of mass media (Berger, 2014). Fairclough (2003) described texts as being "parts of social events" (p. 21), which should be interpreted within the context they represent. Textual analysis is impactful in communications research because texts can influence change in knowledge, beliefs, attitudes, and values (Fairclough, 2003).

Furthermore, communication researchers have a continued interest in qualitative analysis and phenomenological description (Stephen, 1985) because of their ability to provide insight into the human experience and to understand the holistic human (Allen, Titsworth, & Hunt, 2009). Some would describe qualitative research as the dominant methodology within communication inquiry (Lindolf & Taylor, 2011), providing researchers with a means of "describing everyday life" (p. 12) and allowing participants to "attribute meaning to events and to their environment" (Bryman, 2012, p. 399). Important to the understanding of the communication phenomena is qualitative research's ability to bring beauty to the human experience (Lindolf & Taylor, 2011). Indeed, qualitative research designs neither provide basis for generalizability nor yield data that can be used for numerical analysis (Stephen, 1985), which has caused researchers, at some points, "to struggle to justify" (Lindolf & Taylor, 2011, p. 14) its use within communications.

Quantitative communication research investigates human action using scientific methods and analysis (Allen et al., 2009). Such research designs can be more efficient and powerful even though they are not appropriate for all studies within communication (Stephen, 1985). Quantitative research measures are typically intentional and can be replicated and validated (Allen et al., 2009), unlike methods dependent on the human instrument. Because quantitative research can be verified and replicated, researchers can use quantitative designs to establish "universally true" theory (Allen et al., 2009, p. 8). It, therefore, provides answers to the "what?" questions, offering researchers the opportunity to generalize beyond the population under investigation. Thus, researchers who employ quantitative research methods are typically interested in relationships and differences within and among populations and cultures (Allen et al., 2009).

Beyond textual analysis and qualitative and quantitative research paradigms, William Stephenson proposed Q methodology to conduct human subjectivity research (e.g., communication; Stephen, 1985). At its core, Q methodology examines the subjective "values and preferences held by the public" (Steelman & Maguire, 1999, p. 362). It helps researchers "analyz[e] the phenomenological world of the individual … without sacrificing the power of statistical analysis" (Stephen, 1985, p. 193). Q methodology uses people to measure tests or statements (Stephenson, 1935); whereas, traditional R methodologies (e.g., traditional correlation research methods) operationalize, marginalize, and minimize subjectivity by using tests to measure people. Thus, such methodologies close the window on data-rich perspectives associated with inherent operant subjectivity, which are captured in Q methodology (Brown, 1996).

Stephenson designed Q methodology to emphasize human subjectivity as it relates to social science disciplines (Brown, 1993). Humanistic elements can be hard to measure, but Q methodology provides a rigorous means (McKeown & Thomas, 1988) "to construct typologies of different perspectives" (Steelman & Maguire, 1999, p. 363). Brown characterized the strength of Q methodology as describing "life as lived from the standpoint of the person living it that is typically passed over by quantitative procedures" (Brown, 1996, p. 561). The "subjective science" methodology recognizes subjectivity without discarding the importance of objectivity (Stephenson, 1993/1994, p. 1-2). Yet, Q methodology has often been neglected or misunderstood by social scientists (Stephen, 1985).

Integrating Q methodology into the communication research toolbox provides a research methodology emphasizing contextual human subjectivity without sacrificing robust statistics (Brown, 1993). The qualitative angle of Q method is its ability "to investigate the diverse subjective experiences and perceptions" (Killam, Timmermans, & Raymond, 2013, p. 24) with robust tools. But, the statistical component—correlation and factor analysis—provides the rigor of and similarities with quantitative methods (Simons, 2013).

THE PROBLEM

Disciplines, including communications, are strengthened by the inclusion of diverse research studies investigating various questions using an array of approaches (Allen et al., 2009). Yet, the agricultural communications discipline, an applied communications paradigm, uses the same approaches to continuously investigate the same issues without much research depth (Edgar, Rutherford, & Briers, 2009; Naile, Robertson, & Cartmell, 2010). "Agricultural communications research lacks diversity of research methodologies and scope, and perhaps depth and quality—if one assumes that depth and quality are indicated by methods that move toward cause and effect relationships" (Edgar et al., 2009, p. 30). Edgar et al. documented 47.3% of the research published from 1997 to 2006 used quantitative survey methodology, followed by content analysis (15.4%) and case studies (9.9%). In a follow up study conducted by Naile et al. (2010), 39.3% of the research published from 1990 to 2006 used quantitative mail survey methodology, followed by multiple method (14.8%), content analysis (8.6%), and online survey (7.4%). Thus, Edgar et al. (2009) and Naile et al. (2010) called for diversity of exploration—methodologies and research designs—in agricultural communications.

One way to enhance the research done within agricultural communications is to expand the repertoire of research methods and approaches. Such paradigm shifts have been championed in similar social sciences (e.g., nursing, rural sociology, mass communications) to achieve a research agenda inclusive of post-positivistic strategies and methodologies, including Q methodology (Durning, 1999). Research methodologies and approaches must be chosen on the basis of answering the question and not on the basis of convenience.

Therefore, the purpose of this philosophical study was to establish a contextual and philosophical understanding of Q methodology and to articulate its uses in agricultural communications research. To meet this purpose, the following objectives were used:

1. Clarify the basics and terminology of Q methodology,
2. Articulate the theoretical underpinnings of Q methodology,
3. Identify and operationalize the benefits and challenges associated with Q methodology, and
4. Articulate the practical application of Q methodology in agricultural communications research.

METHOD AND PROCEDURE

In meeting these objectives, we followed methods and protocol for philosophical inquiry, rather than a typical research study. This article shares the nature of philosophical inquiry and its application with atypical headings and organization to allow for greater clarity in discussing the role of Q methodology in agricultural communications research.

Thus, this philosophical study was inherently and implicitly without traditional research design and methods. Philosophical inquiry is meant to "synthesize and summarize" theory in effort to "guide practice and inquiry" (Roberts, 2006, p. 18). Burbles and Warnick (2006) noted philosophical inquiry should be developed through a rigorous review of related literature, narrowed focus, and inclusion of multiple perspectives. As such, we synthesized knowledge gained from the literature and best practices with the intent of creating a discussion of the philosophies, concepts, and applications of Q methodology.

Therefore, we began with a cursory review of literature, using databases and search engines including Google Scholar, Education Resource Information Center (ERIC), Journal Storage (JSTOR), and Texas A&M University library. Initial search terms included "Q method," "Q sort," "Q methodology," and variations of associated and contextual terminology. We were careful in selecting seminal articles and foundational writings from peer-reviewed journals to provide a basis for the study. Relevant articles from the initial search were mined for additional sources, eventually leading to monograph sources, including textbooks and similar resources. Additionally, we used Google Scholar to identify recent peer-viewed journal articles citing seminal and foundational Q methodology research. We specifically sought studies that applied Q methodology in social science research disciplines and agricultural contexts (e.g., agricultural communications, agricul-

tural economics, communications, journalism, and nursing) to provide relevance and application to this philosophical study. Further, best practices in Q methodology were identified by examining peer-reviewed literature for studies using Q methodology and by using our experiences with implementing Q methodology in previous studies.

This discussion will guide practice by explaining basics of Q methodology, its theoretical underpinnings, its benefits and challenges, its potential for use in agricultural communications, and recommendations for researchers and practitioners based on this philosophic inquiry.

Basics and Terminology of Q Methodology

Q methodology, influenced by Sigmund Floyd, Charles Spearman, and R.A. Fisher, rests on subjectivity (Stephenson, 1993/1994) and "finite diversity" (Stainton Rogers, 1995, p. 182). Stephen (1985) characterized Q methodology as a measurement "for assessing beliefs, attitudes, or values; as an alternative method of data collection in large-sample, public opinion research …; as the basis for assessing connectedness in sociometric or social network research; or as a rating system for observational research" (p. 194). Brown (1997) noted Q methodology uses people to test items, emphasizing variance among perspectives (Kitzinger, 1987). It does not reduce participants to a single understanding but provides elaboration of their "contextual, discursive, and social" perspectives (Goldman, 1999, p. 592). Q methodology establishes the ability to reveal patterns of perspectives and quantify subjectivity (Killam et al., 2013) by focusing on statement construction and not statement constructors (Stainton Rogers). Thus, Q methodology is a tool to capture opinions and perspectives about an idea, in a different and more holistic way than traditional correlational research.

The process of Q methodology is carried out in five stages—concourse development, Q sort identification, Q sort activity, factor analysis, and factor interpretation (Simons, 2013). Essentially, Q method studies involve participants sorting items (statements, images, etc.) from negative (not like me) to positive (like me). This is known as the Q sort and makes up the primary means of data collection.

Before conducting a Q method study, researchers must identify the **concourse**—all perceptions, opinions, and beliefs related to the topic under investigation (Brown, 1993)—which is the origination of the **Q set**. The Q set, statements used in the sorting process (Brown), is commonly developed using qualitative data and should represent all facets of the topic (Stephen, 1985). Therefore, the Q set is equivalent to the sample in R methodologies, and the **P set**, study participants, is equivalent to the experimental condition of such methodologies (Cross, 2005).

During the **Q sort**, process of rating objects or items, each participant physically sorts and assesses the items based on their perspectives of the statements. Simons (2013) argued a Q sort can be conducted with a small number of participants because Q methodology is the classification of individual perspectives and points of view. The P set uses a **form board**, a forced-distribution board, to sort the Q set from most like to least like their perspectives (Stephen, 1985; Tuler, Webler, & Finson, 2005), which is often followed by a discussion related to how each member sorted the set (Fairweather & Keating, 1994; Previte, Pini, & Haslam-McKenzie, 2007). The P set uses the **condition of instruction**, the central question, as a guide for the Q sorting process (Previte et al., 2007). Last, a unique **data-analysis software** such as PQMethod, a free software downloaded from the Internet, is used to run the factor analysis (Killam et al., 2013).

Theoretical Underpinnings of Q Methodology

Stephenson (1936) created Q methodology because he believed participants' differences were ignored when variables were isolated. Therefore, to study individual differences (individual differences between members of the P set rather than individual differences compared to the P set), researchers need to study holistic individuals and not isolate variables. Q methodology yields data representative of personified viewpoints and typified perspectives by investigating holistic individuals and using their experiences, values, psyche, and beliefs to understand phenomena (Watts & Stenner, 2012). At its most basic tenet, Q methodology is an innovative and adaptive approach at factor analysis (Watts & Stenner, 2012).

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As such, to understand Q methodology, one must first understand factor analysis. Field (2009) defined factor analysis as a technique used "for identifying groups or clusters of variables" (p. 619). Field further noted factor analyses reduce a set of variables into a smaller set of interrelated factors. Traditional approaches to factor analysis measure variables across a population of participants and then use correlations to determine which variables exhibit signs of co-variation (Watts & Stenner). This elegant and effective system provides insight about how variables manifest in a population. Although such information is valuable, it misses out on how variables differ for each individual in a population (Stephenson, 1936).

Essentially, Stephenson (1936) sought to evolve factor analysis to investigate factors by person rather than by variable. He articulated this idea as follows:

> Factor analysis … is concerned with a population of *n* individuals each of whom has been measured in m tests or other instruments or estimates. The (*m*)(*m*-1)/2 correlations for these m variables are subjected to … factor analysis. But this technique … can also be inverted. We may concern ourselves with a population of N different tests (or other items), each of which is measured or scaled relatively, by *M* individuals. The (*M*)(*M*-1)/2 correlations again can be factorized by appropriate theorems. (Stephenson, pp. 344-345)

In summary, Stephenson believed differences in the aggregate population are as important as individual variable differences (Watts & Stenner, 2012).

Hence, the main idea of Q methodology is to invert, or flip, the traditional *Spearman's r* factor analysis to measure items across individuals (Watts & Stenner, 2012). Instead of using instruments to test the performance of an individual and make comparisons to the population, Q methodology uses each individual, complete with all the subjectivity and holistic diversity, as tests for the performance of items. Ultimately, Q method harnesses subjectivity and the concourse theory, which traditional methods neglect and de-value (Watts & Stenner), to provide data representing varying perspectives and viewpoints.

Examples of Q Methodology Research

Singer (1997) used Q methodology in mass communications and found journalists had three perspectives of online media (benevolent revolutionary, nervous traditionalist, and rational realist). To identify those three perspectives, she identified 18 reporters to sort 52 statements related to new media technology. In another example, Paige and Morin (2015) asked 44 nurse educators to rank 60 statements related to simulation design, which revealed one primary and two secondary perspectives. Further, Work, Hensel, and Decker (2015) found three perspectives of poverty (judges, allies, and observers) when they asked 23 Midwestern nursing students to sort 30 statements about poverty.

Additionally, Fairweather and Keating (1994) used Q methodology to define and describe the goals and management styles of New Zealand farmers. They identified descriptors of various farmer groups, adding participants' subjectivity and perspective to the research results. Ultimately, they found farmers have three management styles (perspectives) and offered implications for farm management practices, using 50 participants in their P Set. Further, Delnero and Montgomery (2001) offered extensive implications for professional development of high school agriculture teachers in California, drawing from the holistic perspectives represented by a P set of 23.

Other examples of ideas explored using Q methodology within social science research include Internet savvy users (Hashim & Meloche, 2007), media writing student attitudes (Popovich & Massé, 2005), farmers' management styles (Brodt, Klonsky, & Tourte, 2006), agriculturalist and community relations (Brodt, Feenstra, Kozloff, Klonsky, & Tourte, 2006), environmental attitudes (Davies & Hodge, 2012), writing skill development (Leggette, 2015), and student change as a result of agricultural study abroad programs (Redwine, 2014). Although these are just three of many Q methodology studies, they provide a glimpse of perspectives generated using the design.

Benefits and Challenges of Q Methodology

Benefits of Q methodology include limiting researcher bias (Previte et al., 2007), using subjectivity to gather holistic understanding (Watts & Stenner, 2012), and gaining meaningful data from fewer participants because of flipped population and item scales (Simons, 2013). Challenges include misinterpretation of Q methodology practices, most noted by inaccurately measuring Q methodology against traditional R methodology terminology, concourse development, and generalizability. Each of these benefits and challenges are discussed in detail in the following paragraphs.

Limiting researcher bias (Previte et al., 2007; Simons, 2013) is a documented strength of Q methodology because of participants' role in "the development of reflexivity, consciousness-raising empowerment and locally situated understandings" (Billard, 1999, p. 365). Q methodology is more intuitive and subjective than quantitative research and provides the participant opportunity to become part of the phenomenon (Simons, 2013). Dryzek and Berejikian (1993) described Q methodology as "affording less interpretative latitude to the analyst" (p. 50) because the output is statistical and not biased by the researcher (Simons).

Brown (1996) posed the inclusion of holistic subjectivity as a strength of Q methodology. Durning (1999) called Q methodology a post-positivistic paradigm shift subverting objectivism. Its adaptability to humanistic nature makes it easy to identify participants' unique characteristics (Simons, 2013), "aim[ing] to accurately reproduce an individual's views in a manner consistent with his/her own experience" (Stephen, 1985, p. 205). Subjectivity cannot be overlooked because understanding "life as lived from the standpoint of the person living it" (Cross, 2005, p. 208) is important in social science research. Q methodology provides participants with freedom in deciding what is meaningful and what is not based on their perception of the phenomena (Watts & Stenner, 2005).

Additionally, because of its interpretive ability of diverse perspectives and its nature of operant subjectivity, few participants are needed to conduct a Q methodology study. Participants are the variables and not the population, and the population of the study becomes the concourse (the collection of comments and ideas gathered about the topic under investigation; Tuler et al., 2005; Watts & Stenner, 2005). Thus, researchers seek perspectives and not inferences (Brown, 2002). "By inquiring of people with unique points of view, Q researchers can reveal patterns in how elements of perspectives are related" (Tuler et al., 2005, p. 250) and how those perspectives describe the human experience.

The nature of populations in Q methodology leads to a potential misconception and challenge. Reviewers and critics may be tempted to interpret a small P set as a detriment because researchers typically revert to rules of quantitative research. This logic is well-intentioned but misapplied. Practitioners and researchers should remember the population in a Q methodology study, as described by Tuler et al. (2005), is constructed with a concourse of ideas not the participants conducting the sort. Those accustomed to looking at the number of participants in a study as a measure of effectiveness, or who seek to calculate effect size or power, may initially be tempted to discredit the effectiveness of Q methodology. This is analogous to seeking power and effect size in a qualitative study or seeking trustworthiness and member-check in a quantitative study. Q methodology studies have a large population when the concourse of ideas is large (Tuler et al., 2005), not when the number of participants is large. Thus, Q methodology studies have a large sample when the number of items in the Q set is large.

Another misconception about Q methodology is concourse development. Because the concourse is the population, developing an accurate and reliable concourse impacts the overall quality and reliability of the factors derived from the Q sort (Simons, 2013). Often, the concourse is developed through field data collection, most notably qualitative research methods (Brown, 1993; Tuler et al., 2005). Participants are forced to make decisions, categorize the Q set based on perspective, and demonstrate why they believe the perspectives should be retained. As such, a well thought out and developed concourse should provide enough choice but not too much (Simons, 2013).

Furthermore, despite some arguments, Thomas and Baas (1992/1993) contended Q methodology can be generalized in a qualitative sense as "*substantive inference* 'about' a phenomenon" (p. 22). Again, typical R methodology logic

might seek parameters of a sample and transfer them to statistics in a population. Instead, Q methodology transfers perspectives about an idea, rather than to a population. This notion is better quantified by Valenta and Wigger (1997): "Generalizations in Q-methodology research are based on the validity and theoretical implications of identified opinion types, and not on their numerical distribution among study participants" (p. 508). Therefore, if the P set is diverse, then all perspectives on a given subject are represented. For example, in Redwine (2014), the P set contained every gender, classification, major, ethnicity, and level of study possible given the population. Different populations may include different perspectives across some of the characteristics mentioned (for example, business students rather than agricultural science students). However, participants' viewpoints and perspectives will still be represented by gender, ethnicity, classification, and level of study.

Brown (2002) noted Q methodology studies yield data about perspectives, not inferences, and those perspectives come from the whole person. In practice, one cannot separate the part of their holistic subjectivity that comes from being male, or from their age, or any other specific characteristic. As such, Q methodology defines a perspective based on a person's characteristics.

Use of Q Methodology in Agricultural Communications Research

In 2009, Edgar et al. recommended agricultural communications researchers "diversify their research methodological portfolios to include more variety in research methods and designs" (p. 31). The discipline is broad and encompasses many topics affecting the agricultural industry. Thus, opportunities for diversifying research questions and approaches in agricultural communications could begin with including Q methodology.

For example, GMOs continue to create strong debates among local, regional, national, and international audiences. These debates are time consuming and may not be scientific based. Understanding the various perspectives within the audiences, gathered through a Q methodology study, would assist agricultural communicators with disseminating scientific-based information to the diverse audiences. Knowing characteristics and descriptors of each perspective would simplify the communication process because the audiences would receive typified information relevant to their needs.

Additionally, Q methodology would be one way to investigate the perspectives related to water conservation, such as implementation and adoption of water management plans. Perhaps, researchers could begin to classify perspectives into groups and seek to define those groups using Q sorts related to conservation, management, and adoption practices. One type may be the ultimate conservers—practicing water management practices in everything they do from cooking to watering the lawn. The next type may be moderate conservers who exercise water management practices when they cook but may not when they water their lawn or vice versa. The last type may not practice water conservation or management practices at any cost. Understanding how and why each of these types of people behave and perceive water conservation and management will help the industry more effectively disseminate targeted messaging.

Water and GMOs are just two examples of how Q methodology research could be applied in agricultural communications. In truth, Q methodology could be used to investigate many agricultural issues, including obesity, nutrition, labor practices, tax and estate management, and animal welfare. Investigating perspectives is not a substitute for descriptive or inferential studies but rather an extension. Understanding the characteristics and descriptors of unique groups within the society will assist with disseminating relevant, targeted information. Thus, Q methodology could provide new perspectives on dated issues, enhanced research approaches, humanistic nature, or subjectivity to understanding agricultural issues and audiences.

Q methodology provides diversity in research methods and fits within agricultural communications and applied communication paradigms. Agricultural communications researchers seek to understand perspectives related to various topics and issues within agricultural communication but often rely on positivistic methodologies to investigate such topics on the surface-level. Q methodology allows researchers to begin with statements derived from field method research and use those statements to identify perspectives and develop constructs within a research paradigm (Previte

et al., 2007). Therefore, such research designs could lead to deeper exploration of issues and add diversity and value beyond the surface level.

Because Q methodology is the understanding and grouping of statements and not of people, the small number of participants with varying perspectives fits well in agricultural communications. Identifying and working with large sample sizes can be expensive and time consuming. However, with a smaller number of participants, Q methodology allows a researcher to develop an understanding of different perspectives related to a topic and provide descriptors and identifiers related to each perspective. This is accomplished by Q methodology's unique ability to flip traditional correlational research. Remember, the population is made up by the collection of ideas, and the test items are participants in the P set (Simons, 2013). Therefore, because of Q methodology's statistical rigor, agricultural communications researchers can obtain meaningful and usable research to guide practice without seeking large samples and power and effect size. Q methodology is not designed to be a replacement for large quantitative studies, but rather it should add to the explanation of complex research questions in agricultural-based disciplines.

Research in agricultural communications has employed diverse methods to answer important questions, but failing to capture the subjectivity of human perspective may be a loss for critical interpretation and implementation. As such, vast opportunities exist to enhance the knowledge base and enrich understanding of humanistic elements of the discipline by focusing on and capturing holistic perspectives. The practice of agricultural communications rests largely on the subjectivity behind producers' and consumers' perceptions, behaviors, feelings, and values. Using Q methodology to explore such perceptions could strengthen the agricultural communications knowledge base. Including Q methodology research designs does not discredit or replace other research approaches, but it does add depth to the agricultural communications research toolbox.

DISCUSSION AND RECOMMENDATIONS

The applications of Q methodology in agricultural communications are plentiful because of its subjectivity component. Implementing the methodology into the discipline diversifies the research toolbox and provides opportunities to explore perspectives related to diverse agricultural issues. Several Q methodology studies related to agricultural communications have been published in various publications. However, no studies citing Q methodology as the research design were found in the *Journal of Applied Communications* (the academic journal of the discipline). Thus, Q methodology is one potential answer to Edgar et al.'s (2009) call for diversity in research methodologies because it adds research depth to the journal.

Additionally, agricultural communications researchers often seek consumers' and producers' perspectives related to agriculture and the truth behind feelings, behaviors, and attitudes of certain groups within society. It can be hard to find adequate numbers to study behaviors and attitudes using quantitative research designs, but Q methodology could be used to gain valuable, useful, and rich information from stakeholders in a short amount of time. Using Q methodology to study behaviors and attitudes (Tuler et al., 2005; Watts & Stenner, 2005) will begin to facilitate classification of different perspectives related to agricultural issues and topics.

Beyond research, Q methodology could be used as a teaching practice in agricultural communications because it provides "enhanced learning, encouraged participation, increased understanding of the study, enriched feedback and alleviated scheduling conflicts" (Killiam, 2013, p. 27). Redwine (2014) recommended a Q sort be used as a reflection tool encouraging students to think about and make meaning of an experience. Implementing Q methodology into agricultural communications classrooms could help students learn about producers and consumers in the industry, about themselves, and about their culture and social context.

Agricultural communications depends on human experience and subjectivity related to food and fiber production. Yet, agricultural communications has been slow to adopt Q methodology to measure human subjectivity. Adopting Q methodology would provide researchers with another research method to further their understanding of agricultural stakeholders and constituents.

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RESEARCH

What Side Are You On? An Examination of the Persuasive Message Factors in Proposition 37 Videos on YouTube

Amber Krause, Courtney Meyers, Erica Irlbeck, and Todd Chambers

ABSTRACT

California's Proposition 37 was a ballot initiative to mandate labeling for products containing genetically modified organisms (GMOs). Although it eventually failed, it generated immense media exposure regarding GMOs and their possible regulatory, health, and economic impacts. The purpose of this study was to compare persuasive message factors in Proposition 37 videos on YouTube. A purposive sample was taken from an auto-generated YouTube channel, which resulted in 174 videos. Using content analysis, researchers identified the message position (for, against, or neutral), sources used, message frames, and message appeals. The majority of videos in the sample presented messages in support of the proposition. Citizens were the most common on-camera source. Proponent videos used more emotional appeals, while both videos against and neutral to the proposition incorporated more logical appeals. In addition, the research found three frames were used more by the videos in favor of the proposition than in videos identified as neutral or against. Overall, the results provide insight to how the videos representing for, against, and neutral message positions utilized various sources, frames, and message appeals. Recommendations for future research and practice are provided.

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KEY WORDS

Content Analysis, Framing, Genetically Modified Foods, Labeling, Persuasive Communication, YouTube

INTRODUCTION

Agricultural communicators need to recognize the escalating consumer demand for information regarding the industry's practices and products. When making food choices, Americans consider more factors than just taste and cost. Now they look for information about where the food comes from and how it was produced (International Food Information Council, 2011). Catering to these needs, media outlets have increased their coverage of modern food production issues, including food technology (International Food Information Council, 2012). With the general consumers' limited understanding of the production process, specifically genetically modified food and crops, it is to be expected that they will be hesitant and question the safety of the process (McHughen, 2013). The public's concern regarding the legitimacy and moral authority of information about genetically modified food has generated the need for new scientific communication methods (Augoustinos, Crabb, & Shepher, 2010).

Even after decades of existence, skepticism surrounds the term genetically modified organisms (GMOs), which fuels an intense debate in agriculture (Azadi & Ho, 2010). The medical field introduced GMOs in the 1980s to improve medicinal products; however, the use for GMOs has expanded to include food products (Azadi & Ho, 2010). There are

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now four consumable GM crops being produced: soybeans, corn, canola, and sugar beets (Chrispeels, 2014). GMOs are a common ingredient in 70% of packaged, bottled, or frozen items in American grocery stores (Chrispeels, 2014). In 2012, the dispute regarding GMOs became a mainstream concern in the United States, specifically regarding labeling requirements for products containing GMOs. According to Premanandh (2010), the purpose of labeling is to help consumers have a choice when selecting food products by providing content information. Chrispeels (2014) stressed that labeling is meant to be neutral. However, Angoustinos et al. (2010) reported the debate of labeling genetically modified organisms is not just about science. GM labeling discourse relied heavily on the economic interests of stakeholders, the morality of feeding the world verses creating "monstrous" food products, and the image of a manipulative government, which created a social, moral, and political debate (Angoustinos et al., 2010).

Introduced in 2012, Proposition 37 was a ballot initiative in California described as the "first major policy attempt to transition from voluntary to mandatory labeling" of genetically modified foods in the United States (McFadden & Lusk, 2013, p. 174). Contrary to the poll results leading up to the election indicating support for the measure, the proposition failed. McFadden and Lusk (2013) said "support for [Proposition] 37 repeatedly polled around 70% until less than a month before the election" (p. 175). After tabulation, the proposition was narrowly defeated with 51.5% of voters opposing the proposition and 48.5% in favor of mandatory labeling (Zilberman et al., 2013). McFadden and Lusk (2013) claimed the failure might be largely due to campaign advertisements. Although the proposition failed, it served as catalyst for activists in other states to organize a fight for labeling using social media platforms (Plagakis, 2013). In 2013, 26 states introduced bills to label genetically modified foods (Center for Food Safety, 2014). Consumer surveys indicated more than 90% of Americans are in favor of labeling products containing GMOs (Kopicki, 2013; Langer, 2013). Therefore, monitoring the initiatives is not only important, but also necessary. The discourse could be an indication of public opinion about genetically modified foods, which could have eventual impacts on production practices.

People have progressively moved toward online media as their source for information consumption (Yoo & Kim, 2012). YouTube in particular has surpassed cable networks in reaching 18 to 34 year olds (Glenn, 2013). YouTube was one channel used to inform consumers about Proposition 37. YouTube has the ability to reach a wide audience, which can serve as an influential tool in shaping individual preferences (Susarla et al., 2012), and it is important to recognize not only who is using it, but also how it is being used. Currently, it is the second largest search engine (YouTube, 2013). One hundred hours of video are uploaded to YouTube per minute, and 60% of people on social media use YouTube as a social networking tool (Meeker & Wu, 2013). Individuals are not only watching videos, they are also sharing, liking, and commenting on videos, transforming consumer engagement (Susarla, Oh, & Tan, 2012). This social aspect, along with effortless usability, is driving its success (Cheng, Liu, & Dale, 2008; 2013).

With user-generated content and the swift dissemination of information, it is important to monitor content related to agriculture available through this platform. Goodwin and Rhoades (2011) looked at the presence of California Proposition 2 on YouTube. Proposition 2 was a ballot initiative that passed in 2008 that "outlawed the use of battery cages for laying hens, gestation crates for sows, and veal crates for veal calves by 2015" (Goodwin & Rhoades, 2011, p. 22). Researchers determined what message appeals were used to increase viewers' support for the legislation and found that emotional appeals were used in a majority of the videos. They encouraged others to replicate the study with other issues posted on YouTube and extend the research to other social networking sites (Goodwin & Rhoades, 2011). In addition, Rhoades and Ellis (2010) studied how food safety was framed on YouTube videos and found several authors were posting multiple videos, concluding that "establishing a presence and publishing multiple videos can help the reach of a communication campaign and establish your credibility with the social network found on YouTube" (Rhoades & Ellis, 2010, p. 172).

Professionals and traditional communicators need to not only be aware of messages that could counter their communications efforts (Christensen, 2007), but monitor what videos are posted relating to their specific field of interest. The controversy of genetically modified food could potentially have a negative impact on agricultural production. For example, mandatory labeling will impose additional costs to regulate proper testing and labeling procedures (Legislative Analyst's Office, 2012). Additionally, although labels are intended to provide objective information, negative media

coverage can prime consumers to view GM labels as warning signs (Chrispeels, 2014), thus decreasing demand for GM products. In 2013, more than 90% of corn, cotton, and soy producers used GM varieties (USDA, 2013). The decreased demand in GMO products would greatly impact those producers. Moreover, GMO policy regulation would complicate further development of technologies (Premanandh, 2010).

LITERATURE REVIEW/THEORETICAL FRAMEWORK

YouTube has experienced immense growth in users and viewership due to its "usability and functionality" (Susarla et al., 2012, p. 23). Since its development in 2005, YouTube has become a popular platform for Internet users, businesses, advocacy groups, and even political parties as a free service to upload and share videos (Church, 2010; Paek, Kim & Hove, 2010). Unlike watching television and film, people watch YouTube when they have little time (Kavoori, 2011), making it essential to have effective and interesting videos. Kavoori stated, "If the video is poor, the sound is bad, and the context is problematic, it is time to play something else" (p. 8). As viewing conditions change, it is critical to continue and expand communication research on content and message features. The Obama 2008 campaign successfully utilized these components and, through YouTube videos, brought politics to the digital realm (Kavoori, 2011).

With activist groups and scientists supplying information on the negative effects of GMOs (Du & Rachul, 2012), advocates need to address how to effectively combat these messages by providing additional information on the positive impacts of agricultural biotechnology. McHughen (2013) stated, "scientific experts need to share their knowledge to enable a more informed populace and a healthier society" (p. 10). However, this is not an easy task. The constant access and exposure to persuasive communication efforts have made consumers cautious of what is truthful (Perloff, 2010). Therefore, it is important to research what persuasive tactics are most effective in presenting scientific information to ultimately impact political outcomes.

The theoretical framework for this study draws upon the Elaboration Likelihood Model, framing, and message appeals. The Elaboration Likelihood Model (Petty & Cacioppo, 1986) explains the basic processes underlying persuasive communication. The model states that attitudes can be formed through two routes to persuasion, the central route and the peripheral route (Petty, Cacioppo, Strathman, & Priester, 2005). The central route is for individuals who have a high degree of elaboration when processing a message. Petty and Cacioppo (1986) defined elaboration as "the extent to which a person thinks about the issue-relevant arguments contained in a message" (p. 128). For individuals to generate issue-relevant cognitive responses to a message, or centrally process a message, they have to be motivated and able to process the message (Petty et al., 2005). If motivation is not present or ability is impaired, individuals will rely on simple cues and will not scrutinize the quality of the message (Petty & Cacioppo, 1986). Harrington et al. (2006) described peripheral route processing as when "individuals rely upon affective states or simple heuristics to generate conclusions" (p. 145). Message length and source characteristics are examples of simple cues used in peripheral processing (Petty et al., 2005). For example, Metzger and Flanagin (2013) stated "people are likely to believe a source whose name they recognize as more credible compared to an unfamiliar source, with little inspection of the actual content" (p. 214). Attitudes formed by peripheral processing are less accessible and resistant than attitudes formed during central route processing (Harrington et al., 2006). This model is important to apply to videos, as it provides a framework for both visual elements and message content.

Another area of research focusing on message persuasion is Goffman's (1974) theory of framing. Framing describes how mass media present information by selecting or ignoring particular aspects of an issue (Stone, Singletary, & Richmond, 1999). Framing is determined by an individual's set of expectations, using them to create understanding in a given social situation (Baldwin, Perry & Moffitt, 2004). This definition is consistent with Goffman's (1974) explanation that individuals use previous experiences to process information. Traditionally in communication research, framing studies have examined news coverage, but the same process can be used when individuals view videos for information (Rhoades & Ellis, 2010). Regarding GMOs, Abbot et al. (2001) found the media used frames such as human health, environmental, regulatory, business, and morality. Rhoades and Ellis (2010) stated that it is important to understand the frames used in videos because they can influence an audiences' perception of a given topic depending on how the information is presented.

Particular message characteristics, such as appeals, can influence the persuasive ability of messages (English, Sweetser, & Ancu, 2011). Muller (1986) defined message appeals as the designing of messages to motivate consumer purchases. The two message appeals most often used are logical or emotional (Goodwin & Rhoades, 2011). Logical appeals provide factual information allowing the audience to evaluate and decide if the information is valid (English et al., 2011). Stemming from information processing models of decision making, logical appeals rely on factual arguments about a given topic assuming the consumer bases behavior on rationale (Albers-Miller & Stafford, 1999; Goodwin & Rhoades, 2011). English et al. (2011) said logical appeals rely on source credibility and statistics.

Emotional appeals are used to motivate consumer behavior by arousing positive or negative emotions about a given product (Kotler & Armstrong, 2010). They deal more with affective processing and generate consumer feelings to persuade behavior (Albers-Miller & Stafford, 1999). Taute, McQuitty, and Sautter (2011) found that individuals process emotional information to form attitudes and behavioral intentions. Alhabash et al. (2013) echo this statement and describe affective responses as "a major component of attitude expression and formation toward people, issues, or objects" (p. 176). Types of emotional appeals can be categorized by specific emotions including fear, anger, and humor, or by the emotional valence (positive or negative).

English et al. (2011) examined political communications and the use of message appeals. Their results indicated humor appeals impacted how the viewers assessed the credibility of the message. They concluded that information presented in a humors manner was seen as less credible versus if the information was presented as a factual argument. Additionally, Valentino, Brader, Groenendyk, Gregorowicz, and Hutchings (2011) researched message appeals and the impact they have on politics. Specifically, they found anger appeals to be highly effective in motivating individuals to participate in politics. Taute et al. (2011) stated both positively and negatively valenced emotional appeals can impact message effectiveness, but found individuals differ in their ability to manage emotional information. Therefore, emotional appeals can influence individuals differently (Taute et al., 2011). Jones et al. (2013) stated some individuals are more likely to use their affective responses when making decisions. These studies exemplify the impacts emotional appeals can have on individuals. By utilizing emotional appeals, campaigns can dramatically alter the democratic process (Valentino et al., 2011).

PURPOSE AND RESEARCH QUESTIONS

Part of the *American Association for Agricultural Education's 2011-2015 National Research Agenda* (Doerfert, 2011) is to help the public and policy makers understand agriculture and natural resources by recognizing the potential of emerging social media and messaging strategies. It is vital for agricultural communicators to understand the platforms consumers use to seek information about their food supply and how agricultural issues are represented on popular media platforms. Therefore, the purpose of this study was to compare persuasive message factors in Proposition 37 videos on YouTube among the different message positions of the debate. The message position indicated if the video content supported the proposition to pass, fail, or remained neutral when discussing the debate. Specifically, the research identified the type of sources used in YouTube videos, how Proposition 37 videos were framed, and the message appeals used to convey information about labeling GMO products. Researchers recognized these message factors as common tactics used to persuade audiences. According to previous research, each factor can influence how an individual processes information and forms attitudes, which are vital to voting outcomes. This study allowed researchers to establish a fundamental understanding of Proposition 37 messages and how each position used message features to persuade the YouTube community. To accomplish this purpose, the following research questions guided the study. For each of the message positions:

RQ1: What sources are used in YouTube videos about Proposition 37?
RQ2: What message appeals exist in YouTube videos about Proposition 37?
RQ3: What message frames exist in YouTube videos about Proposition 37?

METHODS

This research used quantitative content analysis to evaluate YouTube videos about Proposition 37 in California. Content analysis is "a method of studying and analyzing communication in a systematic, objective, and quantitative manner for the purpose of measuring variables" (Wimmer & Dominick, 2003, p. 141). Using content analysis can provide new insights, increased understanding of a particular phenomenon, or practical actions (Krippendorff, 2012). Content analysis can be conducted using either a qualitative or quantitative design. If the researcher establishes variables a priori and is able to use the variables to draw conclusions, the design is quantitative (Ary et al., 2006).

On November 11, 2013, the search term "California Proposition 37" on YouTube yielded about 33,500 individual video results (YouTube, 2013). Therefore, the researchers decided to study a particular YouTube channel. Using the same search term in the main search bar and applying a filter to only display results that were channels, the population was chosen. Collected in mid-November 2013, the researchers utilized an auto-generated channel, established by YouTube, making the population of the study 287 videos. An auto-generated channel is created using an algorithm to collect videos on prevalent topics (YouTube, 2013). A purposive sample was taken from the population, which resulted in 174 videos. The sample was chosen based on the average length of YouTube videos, which was approximately 4 minutes (Pew Research Journalism Project, 2012). Cheng et al. (2013) also found medium-length (2 minutes and 52 seconds to 4 minutes) videos were more popular than longer videos. Therefore, the researchers omitted any videos longer than 4 minutes. In addition, 12 videos were eliminated including one duplicate video, one video not relevant to the research, four videos unavailable at the time of data collection, and six radio advertisements. The useable sample consisted of 162 videos ranging from 15 seconds to 4 minutes.

To analyze the sample, a code book was developed based on material adapted from previous literature (Abbot et al., 2001; Abrams & Meyers, 2009; Paek et al., 2010). This code book allowed coders to determine the message position, sources, frames, and appeals used to portray GMO labeling in Proposition 37 YouTube videos.

To ensure accuracy and meet intercoder reliability, coders were trained and a pilot test was conducted. Intercoder agreement is "a measure of the extent to which independent judges make the same coding decisions in evaluating the characteristics of messages" (Lombard, Snyder-Duch, & Bracken, 2002, p. 587). Following the coder training guidelines set by Lombard et al. (2002), three coders independently analyzed 10 videos, separate from the research sample. All disagreements and concerns were addressed and the code book was altered to clarify any unclear descriptions. Once the lead researcher believed coders were adequately trained, they proceeded to assess intercoder reliability by conducting a pilot test. Thirty videos were randomly selected from the sample to test reliability.

Following De Swert's (2012) advice, Krippendorff's alpha was used to calculate intercoder reliability. Of the 37 variables, 16 variables met the reliability of .70 or higher, which is acceptable for Krippendorff's alpha and exploratory research (Lombard et al., 2002). The variables that did not meet the set reliability standard were evaluated and clarified with the coders. A second reliability test was conducted and Krippendorff's alpha met the minimum requirement of .70 on all variables. These reliabilities were recorded to verify the consistency between coders. Two coders then divided the remaining 132 videos evenly and proceeded to collect data over a three-day period. The data for each video were recorded in the code book, and later entered into a single Microsoft Excel document.

The final code book was established after all training and the pilot reliability test were complete. Each video could be coded for one of three message positions (for, against, or neutral). If the video presented messages that clearly expressed a desire for the proposition to pass, it was coded as the "for" position. Conversely, if the video contained messages stating the proposition should not pass, it was coded as the "against" position. If the video showed both positive and negative aspects of the proposition, the coder selected the "neutral" message position.

Additionally, coders could select multiple on-camera sources: citizens, celebrities, scientists, farmers, doctors, industry, non-governmental organizations, governmental organizations, and other. If "other" was selected, the coder recorded a description of the source (or lack thereof). Table 1 provides a detailed explanation of the sources in the code book.

Table 1

Possible On-camera Sources Used in YouTube Videos About Proposition 37

Source	Description
Scientists	A scientific study, researcher, PhD, or reference to a university professor, researcher, or extension agent (exclude students).
Public Officials	Holding or have held office or serving in a public capacity such as senator, judge, attorney general.
Industry	Owner or representative of a business, not a farmer
Citizens	An ordinary citizen or consumer.
Farmers	A farmer also called producer. Owners or managers of farms also qualify as a farmer. However, owners of food businesses (i.e., Cascadian Farms, Horizon, etc.) are NOT farmers.
Governmental organizations	Representatives from USDA, FDA, EPA.
Non-governmental organizations	Non-government organization. Such as farmer organizations, organic food groups.
Celebrity	A famous person
Doctor	A person with a medical degree, or certification representing the human health sector such as M.D. or nutritionist.

The code book also included seven predetermined frames: *human health, environmental, regulatory, business, morality/ethics, right to know,* and *other* (Abbot et al., 2001). These were chosen based on Abbot et al.'s research on GMO media coverage, excluding the *right to know* frame. This frame was added after training due to its prevalence in the coder training videos. In addition, the *morality/ethics* frame was originally just morality, but was extended to include ethics to clarify coder understanding. Depending on the information provided in the videos, coders could select multiple frames per video. Table 2 provides a detail description of each frame.

Table 2

Possible Message Frames Used in YouTube Videos About Proposition 37

Frames	Description
Human Health	GMOs *will/will* not affect human health
Environmental	GMOs *will/will* not affect the environment. (Ex. cross pollination, biodiversity).
Regulatory	GMOs *will /will* not influence how food/crops are regulated. Such as labeling costs, labeling standards, processes to test the presence of GMOs.
Business	GMOs will impact the current state of business.
Morality/Ethics	GMOs call to question morality or ethical standards. Examples: honesty, business transparency, help feed the world, against biblical principles.
Right to know	Address Proposition 37 as a consumers Right to Know
Other	Does not fit in any of the above frames.

Note. Adapted from Abbot et al. (2001)

Lastly, the code book guided coders to select if the video used logical appeals, emotional appeals, or both. This is another area in the code book that needed additional clarification in its description after coder training and the pilot test. Once coding was complete, the lead researcher formally evaluated reliability using 10% of the full sample (n = 17). The sample was randomly selected, excluding the pilot test subsample. Reliability was calculated using Krippendorff's alpha with the online ReCal program (Freelon, 2013). All variables met the acceptable reliability standard for the measurement and type of research, which was .70 or higher (Lombard et al., 2002). To describe the sample of Proposition 37 YouTube videos, the researchers calculated frequencies and percentages. Cross tabulations were analyzed to explore and compare the persuasive message factors with the message position.

RESULTS

Of 162 videos sampled, 116 (71.6%) supported the proposition, 26 (16.1%) were against, and 20 (12.3%) were neutral to passing mandatory labeling of GM products. The creator most frequently recorded was the category labeled user-generated, or individual creator (n = 67, 41.4%), followed by the undefined (other) creator (n = 41, 25.3%). The final two video creators identified were media (n = 28, 17.3%) and non-governmental organizations (n = 26, 16.0%). The video length was recorded with a minimum length of 15 seconds and a maximum length of 4 minutes. The average video length of the sample was 1 minute and 40 seconds (SD = 1.00 minute). All videos were uploaded to YouTube between July 1, 2012, and November 1, 2013. The majority of the videos were uploaded October 2012, the month prior to the election (n = 92, 56.8%).

RQ1: For each message position, what sources are used in YouTube videos about Proposition 37?

The sources present on camera were identified by the coders using the predetermined source categories: citizens, celebrities, scientists, farmers, doctors, public officials, industry, non-governmental organizations, governmental organizations, and other. The "other" category was the most prominent with 44.4% (n = 72) of the videos not fitting a pre-established category. All the "other" sources were then categorized to provide an accurate description of the sample. Table 3 displays the frequency and percentage of each source, including the original sources and the "other" sources. The "other" sources are denoted in the table by a subscript. Coders identified actors as individuals acting out a role in the video; a celebrity was identified as a famous person. Pamm Larry, a principal campaign leader, was shown in multiple videos and described herself as the "initial instigator of Proposition 37." Her grassroots campaign was significant surrounding Proposition 37.

Table 3

Types of On-camera Sources Used in YouTube Videos About Proposition 37 (N=162)

Type of Source	Frequency	Percent (%)
Citizens	48	29.6
No sources [a]	27	16.7
Celebrity	20	12.5
Actors [a]	16	9.9
Scientists	16	9.9
Farmers	15	9.3
Doctors	10	6.2
Reporters [a]	7	4.3
Pamm Larry "initial instigator of Proposition 37" [a]	6	3.7
Industry	4	2.5
Non-governmental	4	2.5
Public officials	3	1.9
Radio hosts [a]	4	2.5
Chefs [a]	3	1.9
Campaign representatives [a]	3	1.9
Characters [a]	3	1.9
Governmental	2	1.2
Not specified	2	1.2
Veteran [a]	1	0.6

Note. [a] source originally coded as "other". Coders could select multiple sources; percentages do not equal 100%

A crosstab was conducted to determine the frequency of sources used compared by the message position (for, neutral, and against). Citizens (*n* = 34), no sources (*n* = 21), and celebrities (*n* = 20) were utilized most in videos for the proposition. The videos against the proposition integrated scientists (*n* = 8) more frequently than any other on-camera source. Similar to proponent videos, neutral videos most frequently incorporated citizens (*n* = 10) as on-camera sources. Table 4 provides the frequencies of on-camera sources by message position.

Table 4

Crosstab of On-Camera Sources by Message Position

Type of Source	For	Against	Neutral	Total
Citizens	34	4	10	48
No sources [a]	21	4	2	27
Celebrity	20	0	0	20
Actors [a]	11	4	0	15

Scientists	3	8	5	16
Farmers	9	3	3	15
Doctors	7	3	0	10
Reporters [a]	1	1	5	7
Pamm Larry "initial instigator of Proposition 37" [a]	5	0	1	6
Industry	3	0	1	4
Non-governmental	3	0	1	4
Public officials	2	0	1	3
Radio hosts [a]	4	0	0	4
Chefs [a]	3	0	0	3
Campaign representatives [a]	1	0	2	3
Characters [a]	2	1	0	3
Governmental	1	1	0	2
Not specified	1	0	1	2
Veteran [a]	1	0	0	1
Total	132	29	32	193

Note. [a] source originally coded as "other".

RQ2: For each message position, what message appeals exist in YouTube videos about Proposition 37?

The message appeals used in the sample videos were identified as emotional or logical, as they are the appeals most often used (Goodwin & Rhoades, 2011). If the video presented information via objective statements that used logic and reasoning, coders indicated logical appeals to be present. If the coders indicated the video used emotional appeals, the information was more subjective and appealed to the viewer's emotion. Of the 162 videos, 140 videos (86.4%) used an emotional appeal and 112 videos (69.1%) used a logical appeal. A majority of videos used both types of appeals (n = 93, 57.4%). The contingency table (Table 5) presents the frequencies of message appeals used according to the message position. The videos for the proposition tended to integrate more emotional appeals (n = 110) than the messages against (n = 17) or neutral to the proposition (n = 13). Messages against and neutral to the proposition used more logical appeals than emotional appeals.

Table 5

Crosstab of Message Appeals by Message Position

Message Position	For	Against	Neutral	Total
Logical	71	22	19	112
Emotional	110	17	13	140
Total	181	39	32	252

RQ3: For each message position, what message frames exist in YouTube videos about Proposition 37?
The seven frames provided in the code book were *human health, environmental, regulatory, business, morality/ethics, right to know, and other*. The most frequently used frame in the sample was *right to know* (*n* = 97, 59.9%), followed by *human health* (*n* = 83, 51.2%). The *regulatory* frame was used in 44.4% of the videos (*n* = 72), while the *morality/ethics* frame was used in 42% of the sample (*n* = 68).

The researchers conducted a crosstab to illustrate which message frames were incorporated by each position of the proposition. The position in favor of the proposition used the *right to know* (*n* = 84), *morality/ethics* (*n* = 61), and the *human health* (*n* = 61) frames more frequently than other frames. In videos against the proposition, the *regulatory* frame was most commonly incorporated frame (*n* = 17). The neutral videos primarily utilized the *regulatory* (*n* = 16) and the *human health* (*n* = 15) frame. Table 6 presents the frequencies of messages frame depending on the message position.

Table 6
Crosstab of Message Frames by Message Position

Message Frame	For	Against	Neutral	Total
Human Health	61	7	15	83
Environmental	14	2	4	20
Regulatory	39	17	16	72
Business	22	9	9	40
Morality/Ethics	61	6	1	68
Right to Know	84	3	10	97
Other	8	1	6	15
Total	289	45	61	395

CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

Increased consumer interest in agricultural practices reinforces the importance of effective communication methods. According to Doerfert (2011), one way to support public understanding is through the development of message strategies on emerging social media outlets. By analyzing message positions, on-camera sources, frames and message appeals the research was able to compare the persuasive message factors in Proposition 37 videos on YouTube.

To describe the presence of Proposition 37 YouTube videos, data were collected using a researcher-developed code book. First, the sample was described by identifying if the videos supported, opposed, or were neutral to the proposition. Out of the 162 videos, 116 (71.6%) supported the proposition and wanted mandatory GMO labeling to pass. This finding is consistent with polls leading up to the election indicating a majority of the public wanted the proposition to pass (McFadden & Lusk, 2013). The remaining videos were 26 (16.0%) against the proposition, and 20 (12.3%) neutral to the proposition.

The first research question was to identify the sources used in YouTube videos about Proposition 37. Examples of the other on-camera sources included no sources, actors, reporters, Pamm Larry, radio hosts, chefs, campaign representatives, characters, and a veteran. Citizens were the most common (*n* = 48, 29.6%) source. This finding aligns with the nature of YouTube, which allows individual users to upload content effortlessly, thus providing an outlet for citizens to broadcast their own content. As mentioned previously, users were the most common creators of Prop 37 videos. Given this finding, we can conclude that the most accessible source would be fellow citizens, rather than experts in the field, doctors, or celebrities. Moreover, many of the identified sources were not originally included in the code book (*n* = 72,

44.4%). This could be because YouTube does not follow the typical gatekeeping processes, such as filtering sources based on professional news criteria. This difference allows other sources to be used that may not have met the more rigorous standards of traditional media outlets. Videos against the proposition used scientists as their primary on-camera source. According to the Elaboration Likelihood Model, this type of source could be beneficial if the viewers are using peripheral cues to process the message. Because a scientist is typically seen as credible, viewers relying on simple cues would assume the information is also truthful. English et al. (2011) stated expert sources are influential in changing an audience's attitude and behavior. However, as mentioned by Perloff (2010) and Augoustinos et al. (2010), consumers are wary of scientific information.

The second research question sought to determine what message appeals exist in YouTube videos about Proposition 37. Emotional appeals (*n* = 140, 86.4%) were used more frequently in the sample than logical appeals (*n* = 112, 69.1%). This finding is consistent with Goodwin and Rhoades' (2011) finding that emotional appeals were used more frequently in YouTube videos about Proposition 2, another ballot initiative in California. These results are not surprising given the research evidence suggesting emotional responses are highly relevant when individuals make a decision to participate in politics (Valentino et al., 2011). However, another possible explanation of the prevalence of emotional appeals in this sample is user-generated content tends to be more subjective in nature and therefore may be more emotionally charged.

In addition, the videos supporting the proposition used more emotional appeals than logical appeals, while videos opposed or neutral to the proposition had more logical appeals. Those videos against the proposition and those neutral to the proposition utilized statistics and objective statements, rather than statements that could provoke emotions. However, in this research, a majority of videos used both types of appeals, typically providing rational and subjective statements to persuade viewers to vote for or against Proposition 37. This finding illustrates that video creators, whether aware or not, capitalized on the multiple ways individuals could form attitudes. According to the Elaboration Likelihood Model, political videos with logical and emotional content have the ability to engage both highly motivated publics, as well as those who would rely on affective cues during processing. Jones et al. (2013) discussed the importance of understanding the role of emotions in the democratic process, and this study provides insight to this area of research.

The final research question asked what message frames exist in YouTube videos about Proposition 37. As Rhoades and Ellis (2010) stated, understanding how frames are used in videos is important because these frames can impact how audience members perceive a certain topic. Right to know and human health frames were the most prominent in the sample, present in the majority of the videos. By identifying how GMO labeling was framed on YouTube, agricultural communicators can better address the questions and concerns consumers face, as framing makes some information more salient and can influence how the audience understands the information (McCombs et al., 1997).

The *right to know* frame deserves recognition, as it was not originally incorporated into the code book. After conducting a pilot test, the researchers noticed its frequency in the sample and included it for the final coding procedure. Although earlier studies identified many frames used by newspapers and mass media outlets to convey GMO issues (Abbot et al., 2001; Lore et al., 2013), they did not recognize the *right to know* frame. However, in this sample it was the most prominent (*n* = 97, 59.9%). It is a unique finding because it addresses a more emotionally-driven, standalone concept of human rights while the other frames can be supported by facts. The idea of the consumers "right to know" is not isolated to GMO labeling; rather, it connects to other agriculture issues, such as the Farm Animal and Research Facilities Protection Act of 1990. This act was intended to protect agricultural operations from outside parties securing and/or altering data, stealing or releasing animals, and breaking and entering (Congressional Research Service, 2015). This act is the premise for more recent "Ag-gag" laws that limit the ability for unauthorized individuals to interfere with agricultural production, and prohibits the release of photographs or videos of the operation (Lee, 2013). These laws further limit the transparency of the agricultural industry, which can have tremendous effects on consumer's attitudes when facing political decisions. Those unfamiliar with the industry may favor product labels or video footage to gain the information needed to form attitudes and make decisions. The very suggestion to take away someone's rights is enough to spark an emotional reaction. This could possibly pose a significant obstacle for the agricultural industry because those in the industry tend to rely on fact to help communicate the processes and products they developed. The prevalence of the *right to know* frame indicates it may be important to consider other communication approaches or type of messages to reach non-agricultural audiences.

The second most common frame was *human health* (*n* = 83, 51.2%). The *human health* frame was used to communicate health risk, as well as to reassure the safety of GMO products. When videos cited negative human health effects and provided a source, the most noted was a French study (Seralini et al., 2012) that indicated genetically modified corn produced tumors in rats. Since its release, that study has faced numerous criticisms and has been removed from the journal in which it was published (Chrispeels, 2014); however, the impact still prevails in this sample of YouTube videos. With the majority of the videos using a *human health* frame, it implies that the safety of genetically modified organisms is still a concern.

Another important finding was the presence of the *morality/ethics* frame (*n* = 68, 42%). Although this frame was found in other studies, in this sample it was incorporated much more frequently (Abbot et al., 2001; Lore et al., 2013). This finding was interesting because this frame focused more on ethical and moral standards, such as business transparency and honesty, rather than the negative or positive effects of labeling genetically modified organisms. Augoustinos et al. (2010) recognized the need for new communication tools when science is challenged by social, moral, and political standards.

The three prominent frames were used more in the videos in favor of the proposition than those coded as neutral or against. Neutral videos utilized the *regulatory* and *human health* frame most frequently, and the videos opposing the proposition predominantly used the *regulatory* frame. These findings support and explain why videos for the proposition, as well as the overall sample, had more emotional appeals present. All three of these frames can easily incite emotional responses.

Based on the results of this study, several recommendations for future research can be specified. One limitation of this study is the sample size. It is possible videos that better represent Proposition 37 on YouTube were missed using the auto-generated channel. Future research should take a random sample of videos to help obtain an accurate representation of all Proposition 37 YouTube videos. In addition, by restricting the sample to videos 4 minutes or shorter, the sample does not represent the entire population of Proposition 37 YouTube videos. Longer videos could expose proportions of frames, appeals, or sources not reported in this manuscript. Moreover, research should be conducted to address the *moral/ethical* frame more extensively. Exploring why consumers are concerned with business transparency and honesty can provide ways to build a better relationship with consumers. Future research should examine, through qualitative or experimental methods, which source is most favorable among viewers when supplying scientific information to the public on social media platforms.

The findings of this study have some implications for future practice. First, it is important to note the amount of videos related to Proposition 37 on YouTube. The keywords for "California Proposition 37" alone returned more than 33,000 results, which indicates that YouTube is now a platform where agricultural issues are presented. Therefore, there is a definite need for practitioners to use YouTube as a communications outlet. The complexity of political discourse makes it difficult to assert that YouTube alone could change poll results; however, it would be wise for practitioners to be aware of its content when developing messages. It provides insight on public opinion, an outlet to reach a younger audience, and an additional channel to supply information.

Finally, the findings associated with message frames used in the sample highlight an important issue. The most prominent frame in the sample was the *right to know*. This finding has important implications for developing campaigns against mandatory labeling because it is not a fact-based argument. Agricultural communicators need to be aware of these types of arguments to sufficiently approach and overcome such opposition. Although this particular proposition failed, the race was very close with the "Vote No" campaign spending more than four times the amount of money ($44.4 million versus $10.6 million) than the "Vote Yes" campaign (McFadden & Lusk, 2013). This implies that if the campaign spending had been equal, a different outcome may have occurred. By recognizing competing arguments, and the popular points of debate, communicators can improve their messages and provide citizens the information needed to make sound voting decisions.

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RESEARCH

Communicating Climate Change: A Qualitative Study Exploring how Communicators and Educators are Approaching Climate-Change Discussions

Katie Rohling, Cassie Wandersee, Lauri M. Baker, and Peter Tomlinson

ABSTRACT

The scientific community has come to the conclusion that the climate is changing, but the existence of climate change continues to be rejected or doubted, creating communication challenges for professionals. The purpose of this study was to determine how education and communication professionals involved in climate-change communication are framing the discussions about climate change with agricultural producers. Semi-structured phone interviews were conducted to address terminology usage, challenges encountered, overcoming challenges, and utilization of social media when educating and communicating about climate change. Responses from professionals indicated: 1) they do not avoid using the term "climate change" but are concerned about jargon in materials; 2) the majority agreed the public believes climate change is happening; 3) not addressing the root causes of climate change; 4) framing messages; 5) addressing adaption options using local data; and 6) climate organizations are promoting materials on social media. This study recommends practitioners frame conversations depending on the audience and avoid using terminology that is not accepted by the target audience. Future research should investigate the effectiveness and uses of social media to engage desired audiences.

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KEY WORDS

Climate Change, Communication, Educational Materials, Social Media, Terminology

INTRODUCTION

Scientists and governments around the world largely accept the scientific conclusion that the climate is changing and that climate change has been accelerated through the burning of fossil fuels and land clearing (Macdonald, 2013; Melillo, Richmond, & Yohe, 2014). The vast majority of papers (97%) published during the last quarter century support that conclusion (Cook et al., 2013). However, what is considered scientific fact has come under debate and question by the general public (Weber & Stern, 2011). The current United States administration, under the guidance of President Obama, announced plans to reduce net emissions of carbon by over 120 million metric tons by 2025 (Obama, 2013). Agricultural producers have been tasked with limiting contributions to greenhouse gas emissions and adapting to a changing climate through voluntary and incentive-based actions (United States Department of Agriculture, 2015). The agricultural industry has already experienced the impact of climate change in both positive and negative ways. Warming trends in global climate result in longer growing seasons as well as expanded plant hardiness zones (Melillo et

al., 2014). Negative impacts and disruptions are occurring within the agricultural industry in the form of drought, extreme heat, disease, insects, and heavy downpours (Aalst et al., 2014), which impact crop yields and livestock health. Even with short-term benefits, long-term impacts of climate change are expected to have negative impacts on livestock and crop yields (Field et al., 2014). An increasing world population that is projected to reach two billion by 2050 (United Nations, 2014) will rapidly increase global demand for agricultural products, including food (Beek, Meerburg, Schils, Verhagen, & Kuikman, 2010). As global agricultural production increases to match food demand, an increase in greenhouse gas emissions is projected to occur simultaneously as a result of agricultural practice (Beek et al., 2010). To meet growing food demand and mitigate the impacts of agricultural production, adaptation in agricultural practices must be made at the farm-management level (Howden et al., 2007) and within governments (Vergé, De Kimpe, & Desjardins, 2007).

REVIEW OF LITERATURE

Public Perception of Climate Change

While the vast majority of scientists agree that climate change is occurring and has been accelerated by human activity (Cook et al., 2013), a significant portion of the American public doubt that climate change is occurring (Leiserowitz & Maibach, 2011). Public perception of climate change is reflected in political views (Hamilton, Hamilton, Duncan, & Colocousis, 2007). Strongly held conservative views are typically associated with doubts about climate change (Nisbet & Myers, 2007). Conservative politicians have been proponents of climate-change denial since its onset, as accepting climate change impacts would impede upon their belief in progress created by the free market and the increased possibility of government regulations (Dunlap & McCright, 2011). Manufactured doubt, also known as organized climate change denial, is partially responsible for the decline of public concern over climate change (Lewandowsky, Gignac, & Vaughan, 2013). However, individuals have been more willing to attribute long-term climate shifts to human causes after they had been informed of the scientific consensus of anthropogenic climate change (Lewandowsky et al., 2013).

Campbell Hibbs et al. (2014) noted producers questioned the scientific validity of climate change for numerous reasons including receiving mixed messages and observations that historical variations in precipitation and temperature are naturally occurring climate fluctuation. Producers still expressed profitability and productivity concerns based on uncertain climate conditions, whether or not they believed in climate change (Campbell Hibbs et al., 2014). Barnes and Toma (2012) found only about half of the 590 dairy farmers surveyed in Scotland believed climate change would negatively impact their operations in the future. Adaptive actions focused on preparing for extreme weather events are largely supported by producers; mitigative actions through government action are not (Arbuckle et al., 2014). Campbell Hibbs et al. (2014) discovered that producers who were adapting to climate change considered their actions to be risk-management strategies to maintain productivity.

Climate-Change Communication

There is an increased urgency to adapt agriculture to climate change with many potential adaptation options available at the farm-management level (Howden et al., 2007). Agricultural communicators and climate professionals have been tasked with the mission of relating climate change information to the general public and agricultural producers so they can increase their climate knowledge and be better equipped to make management decisions (Howden et al., 2007). However, farmer beliefs about climate change and the need for adaption and mitigation vary with trust and perceived risk of climate change (Arbuckle Jr., Morton, & Hobbs, 2013a).

A values-based approach to climate-change adaptation and vulnerability acknowledges that individuals and cultures have subjective, qualitative reactions to climate change (O'Brien & Wolf, 2010). Different values between groups also means that efforts to satisfy one group's needs through climate policies can create conflict amongst those groups (O'Brien & Wolf). In response to these challenges, audience segmentation has been suggested as a possible strategy to develop effective communications that are targeted to specific groups within the public who share similar values, beliefs, behaviors, and/or policy preferences about climate change (Hine et al., 2014). One strength of audience segmentation and framing is that people respond and pay closer attention to persuasive messages that match attitudes

and behavior (Fujita, Eyal, & Chaiken, 2008). Individuals can be influenced to develop a particular conceptualization of an issue or reorient the way they think about an issue, through the process known as framing (Chong & Druckman, 2007). Communication framing is increasingly being used to influence the way individuals perceive climate change and to encourage sustainable behavior (Spence & Pidgeon, 2010).

Since the 1980s, the term "global warming" has been used to describe the impact of increasing levels of greenhouses gases linked to human activities (Whitmarsh, 2009). Global warming may describe the concept of global risk and capture the attention of the public, but it obscures the complex and potentially devastating range of effects resulting from what scientists refer to as climate change (Houghton, 2009). Awareness, affect, and knowledge largely vary among the public depending on whether the term climate change or global warming is used in communication (Whitmarsh, 2009). Choice of terminology also impacts how the public understands and evaluates the issue (Whitmarsh, 2009).

Terminology used by communications professionals, educators, and agricultural producers has expanded beyond the use of global warming and climate change. Agricultural producers make distinctions between climate variability and anthropogenic climate change (Campbell Hibbs et al., 2014), and discuss climate shifts (Arbuckle, Morton, & Hobbs, 2013b). It is important to realize that individuals perceive climate change in a variety of ways and prioritize different values, making it clear that climate change cannot be responded to in a single way (O'Brien & Wolf, 2010). Efforts to include agricultural producers in voluntary climate-change initiatives should consider framing climate-change impacts and behavioral goals (Haden, Niles, Lubell, Perlman, & Jackson, 2012).

Messages about climate change that are "dramatic, sensational, fearful, shocking" (p. 375) are capable of capturing the public's attention and creating a general feeling of importance for the topic (O'Neill & Nicholson-Cole, 2009). Framing climate change in this way can also overwhelm individuals causing them to disengage from the topic. Messages on climate change that use scare tactics can create barriers to an individual's engagement. Messages addressing an individual's personal beliefs, environment, and experiences are more likely to create engagement (O'Neill & Nicholson-Cole, 2009). Social media has been identified as one way for organizations to interactively communicate and build relationships (Jun, 2011). Climate-change organizations in the United States that promote their social media pages on their websites use Facebook, Twitter, and YouTube, most often (Jun, 2011). Researchers credit failure to identify key publics as the main challenge for climate-change organizations working to relay climate-change information between experts and the public. It is important to note that only one-third of the total organizations connected their social media networking sites to their website (Jun, 2011). Anderson (2009) found that past mass media news coverage has mainly contributed to mitigation rather than adaptation options.

PURPOSE AND RESEARCH QUESTIONS

Previous literature looked at broad challenges in climate-change communication, but the specific challenges faced by education and communication professionals when communicating climate-change information remains unknown. Another gap in the literature is what specific communication tools, like social media, are being used to promote educational materials by education and communication professionals working in climate change. The purpose of this study was to determine how education and communication professionals involved in climate-change communication are framing the discussion of climate change with agricultural producers. Framing was the theoretical base for this study. It is of additional interest to learn the specific frames used, challenges in effective communication, and communication tools that are most effective. The following research questions guided this study:

RQ 1: What terminology do communication and education professionals use?
RQ2: Do communication and education professionals encounter challenges when discussing climate change?
RQ 3: How are challenges overcome when communicating climate change information?
RQ4: Are organizations utilizing social media to promote climate change education and information?

METHODS

In order to address the research questions, qualitative, semi-structured phone interviews were conducted with 16 participants who communicate with agricultural producers about climate change across the United States. Phone interviews are the best way to obtain information when researchers do not have direct access to participants (Creswell, 2007). The semi-structured interviews contained 15 questions related to terminology used by participants, challenges encountered, how to overcome these challenges, and if social media is used. Two researchers at Kansas State University, with an understanding of climate-change and communication practices, conducted the semi-structured interviews. To refine the interview questions a panel of experts reviewed the questions. The panel consisted of a Kansas State University assistant professor in agronomy with an Extension appointment and an associate professor in agricultural communications. Extension has extensive background working with climate change adaptation and mitigation methods in agriculture. The associate professor is an agricultural communications professional trained to handle controversial issues surrounding agriculture. Kansas State University institutional review board considered the ethical issues to this study and approved the study prior to participant recruitment. The institutional review board number for this study was 7766.

The purposive sampling frame for this study was communication and/or education professionals who are involved in communicating to, or educating adults about climate change. Participants were found by conducting a Google search for adult climate change curriculum and/or were suggested by the panel of experts. Participants were also asked if they knew of others working in the area. Information obtained from the Google searches included name, title, organization, and contact information. Researchers then used this information to conduct the semi-structured phone interviews from June 2015 to August 2015. Researchers conducted follow-up phone calls for any participants they were initially unable to reach. The participants ranged in occupation from university professors to government agencies. Participants represented the following organizations: land-grant universities, Cooperative Extension Service, non-governmental organization, and government agencies.

Researchers explained the purpose of the study to all participants. After covering consent information, emphasizing confidentiality and no costs or anticipated risks to participate, the participants provided verbal consent for the study to proceed. The average length of the phone interviews were 20 minutes. To address transferability as much description of the participants' responses were provided in the results as possible (Creswell, 2007). All interviews were digitally recorded and transcribed verbatim by the researchers. The audit trail kept by the researchers aided the dependability of the study (Ary, Jacobs, Sorensen, & Walker, 2013).

The data for this study was analyzed using a grounded theory approach, coding and comparing the data (Creswell, 2007). Researchers used open coding to create categories and subcategories of the data. Researchers also kept member checks and low-inference descriptors by using quotes to aid the credibility of the study (Ary et al., 2013). Another step to ensure credibility was participation by both researchers in the coding and identification of six major themes. This technique, stepwise replication, was also used to ensure the dependability of the study (Ary et al.).

Disadvantages to phone interviews include the cost of long distance phone calls and the lack of visible, non-verbal communication cues on behalf the participant (Creswell, 2007). Another limitation to this study was the timing of the calls. Due to the large number of university participants in the study, many were away from their office during the summer. To protect participants' confidentiality, pseudonyms were assigned during the analysis of the data. Transcripts of the semi-structured interviews were printed and analyzed by hand for themes in accordance with Glaser's (1965) constant comparative method. This study utilized Glaser's first approach to the analysis of qualitative data, coding participants' responses into categories then analyzing the categories in an effort to answer a research question (Glaser).

RESULTS

RQ 1: What Terminology Do Communication and Education Professionals Use?

Participants were asked what terminology they used when speaking about climate change. Data shows the majority of participants are not afraid to use the term climate change, but they also provided other terms that have appeared recently.

Terminology. Eight of the participants said they use the term "climate change" and do not "side step" the politics of using the term. Carl outlined the importance of being honest when speaking about controversial topics "I will use climate change, and I know it's not a popular phrase in this part of the country but to just honestly talk about it and not try to disguise it as something else." Another participant, Albert, also called for honesty stating "Well I mean you can't get completely away from the term climate change since the climate is changing."

Not everyone in the study agreed with this view. Diane suggested the term "changing climate." She said "Changing climate does not apparently have the political association with anthropogenic climate change that climate change does." Walter agreed that, "You can present it
in such a way that effectively communicating the idea that the risks are changing without using politically charged buzz words."

Participants were concerned about the use of jargonistic terms in climate-change materials. Terms not seen as favorable by participants included global warming, "climate disruption," "cycles," "anthropogenic climate change," and "greenhouse gases". Carl in relation to available climate-change material said:

> In general a lot of what I'm familiar with out there on the web is more geared towards people who are going to be a meteorology student or there tends to be a lot of jargon in them, so I'm a little hesitant to just throw those out there. The content is fine, but it needs to be in a language that is more understandable sometimes.

RQ 2: Do Communication and Education Professionals Encounter Challenges When Discussing Climate Change?

Participants were asked how they addressed challenges when relaying climate-change information to the general public. Major themes were participants felt there was a general acceptance of climate change. Although participants identified a general acceptance of climate change, they recommend not addressing the root causes when discussing the topic with audiences.

General acceptance of climate change. The majority of participants (14) in the study agreed the public has accepted that climate change is happening. Although there will always be the minority that believe differently, professionals are ready to work with the segment of the population that has accepted climate change. Carl said "We work with the ones who want to have that conversation and there are plenty of requests we get, more than we can handle. Usually we're calling up our partners trying to say, 'Can you go to this one?'."

The public's views have shifted in recent years and many believe it's due to the public experiencing the effects of climate change. Bethany believes educators are open to climate change "which is different from what I saw four years ago. Things have changed. First off the public attitude toward climate change has softened. I think people are seeing the heavier rainfalls and stronger events predicted by climatologists."

Two participants did not believe the general public and agricultural producers are ready to accept climate change. However, they referred to research that contradicted their personal assessment of public acceptance of climate change. Jack and Edward referred to Becerra, Middendorf, Tomlinson, and Hibbs' (2015) study which shows 67% of Extension educators in Oklahoma and Kansas believe the climate is changing. Edward said "My perception is that there is [a large resistance to climate change], but when I see some of the surveys that come out they aren't quite as anti-climate change as my perception." Diane supported this viewpoint stating "I don't think people are really as denialist as the general perception is."

Avoiding Root Causes. Participants in the study stressed that the public is not ready to hear about the root causes of climate change. Many professionals stated they intentionally avoid talking about the root causes of climate change or mitigation options. Albert stated, "Our goal is not to get into a political discussion as to what is causing [climate change]." "Human caused," "anthropogenic," and greenhouse gases are all terms participants recommend avoiding when speaking about climate change. Diane supported avoiding these terms stating she didn't see "necessarily an opposition to [climate change] but a lack of belief in it and/or a lack of belief in anthropogenics."

Henry said "I think I'm seeing a little bit more concern among individuals, but not that they know what to do, but at least they want to learn." The public is ready to learn about climate change, but the message they want isn't how to mitigate climate change. Glenn supported this viewpoint saying "It's not an accepted fact of the causes that's a controversial topic."

RQ 3: How are Challenges Overcome When Communicating Climate Change Information?

Participants were asked questions related to how they address opposition of climate change and how they overcome challenges when communicating to resistant audiences. Themes that appeared in the data included that professionals frame conversations to convey messages. Aspects of framing climate-change communication included addressing adaption options and using local data.

Framing communication. Participants recommended using tailored messages and scholarly information to frame communication with agricultural audiences. Diane is working to educate Extension professionals on climate change who in turn provide information to agricultural producers. The information she is gathering are "largely federal reports, but it's sort of vetted government produced or peer reviewed information that is accessible and written for a lay audience." The consensus of the participants was to not push climate-change information on those who are not ready or willing to hear it. Carl pointed out "The bottom line is that it's important that everybody has access to this and learns as much as they care to learn." Robert supported this school of thought saying:

> Our philosophy on this is that there is a learning curve and we are more interested in providing education and information to people that are ready to receive it than we are in changing the minds of people that may not be ready for it.

Professionals recommended not lecturing to an audience. Thomas believes professionals need to understand that "a lot of these farmers are pretty sophisticated now, even those that don't have a lot of education." Professionals indicated they use PowerPoint to engage audiences with specifically framed messages. When presenting tailored messages Walter said, "I may get through five slides out of 40 because you know older people are more likely to engage and interact and so forth."

Carl pointed out "[I] use a number of things to illustrate and try to use actual data where I can so it's not just illustrations or schematics." Ralph also heavily relied on tailored presentations saying:

> I probably give 50 or 60 of these talks a year. They are all subtle variations of a theme depending on where I'm going and who I'm talking to… And we make a lot of this stuff too, as far as products and pieces of information and different kinds of outreach materials.

Participants cited that they often use local and geographically relevant data for their tailored presentations. Donna said, "You can tell people what climate change is, but when you actually teach it you have to give them a tool or a method and so I've been using maps because you can use local data." Carl uses materials he finds on the Internet, "there are some really good modules that are available and the National Weather Service has a site JetStream that some, it was really well done I think."

Addressing adaptation options using local data. When providing the public with information on how to adapt, professionals recommend using data that is local to the area. Adaptation was the main focus of professionals' conversations when communicating about climate change. "How not necessarily to prevent it [climate change], but how

to adapt to it, how to deal with it," said Caleb when explaining what information his constituents look for in regards to climate change. He also pointed out:

> Rather than stressing climate change, or the causes of climate change, we've taken a more proactive approach of how to adapt to these changing conditions. You need to focus on what is relevant to them, which is drought. Drought is going to be the biggest one, changes in rainfall.

"That's another point I've learned, is to kind of show them the data and also try to relate it to local situations," said Edward. Henry agreed saying:

> What we found in our interview with the ag science teachers, and also the producers throughout the state, is they want local data…The other suggestion that I have, if you're looking specifically at ag producers is target it to the information that is relevant to them.

Edward echoed Henry's viewpoint of needing local data saying:

> I tailor it to the audience I expect to have…I try to talk about local information as much as I can as far as changes in rainfall, changes in drought, or less snowfall, so I try to make it as much local and then I'll get into the global, but I think it's more important to show some local relevance.

RQ 4: Are Organizations Utilizing Social Media to Promote Climate Change Education and Material?

Participants were asked if they promoted any type of climate change information through their personal or organizational social media. Researchers found that the majority of participants provided social media accounts for organizations, and not their personal accounts.

Promoting materials on social media. "I'm not a big Twitter or Facebook person. I don't do a whole lot of social media, now I know the USDA does," said Albert. Gerald is also seeing this in his organization's promotion of climate change on social media saying:

> …one of the problems is the educators we're finding don't use social media for professional purposes. They use it for personal purposes so they go to Twitter for their personal reasons. And that's a challenge for us to figure out where the engagement strategy using digital tools for our target audience is.

Gerald's organization is syndicating educational materials and recently signed a contract with PBS LearningMedia. PBS LearningMedia offers free digital content to preschool through high school educators and promotes the material through their website and social media accounts. Diane also provided social media information for her organization instead of her personal sites saying "Maybe 10 to 20 percent of our posts are things like we posted today, a cool sort of infographic. Like a chart that you can play with what shows the different forgings of climate and the global temperature."

Two participants provided personal Twitter pages where they publish climate information from their job to their personal site. "What they [Climate Change Agriculture and Food Security Research Program] do is they post stuff about climate smart agriculture and climate smart villages and how to adapt to climate change…so then I'll retweet that stuff," said Edward. Overall, participants provided organizational information for eight Facebook sites, eight Twitter pages, one blog, one YouTube channel, and one podcast.

CONCLUSION AND DISCUSSION

The results of this study indicate climate educators and professionals believe in speaking honestly when talking with agricultural producers. Participants did not avoid using the term climate change. However, key findings suggest other terms such as climate disruption, cycles, anthropogenic climate change, global warming, and greenhouse gases should be avoided in climate-change materials and discussions.

The majority (97%) of scientific writing supports the fact that the climate is changing (Cook et al., 2013). The challenge now becomes addressing the causes of climate change, as well as adaptation and mitigation options. Participants in the study indicated the general public is not ready for cause and mitigation discussions. Because these topics can disengage the audience, they should be avoided. O'Neill and Nicholson-Cole (2009) also recommended not providing information that might overwhelm audiences and cause them to disengage from the conversation.

Participants frame messages when communicating about climate change, in consideration of the audience. They also provide local data to audiences. Information related to an individual's personal beliefs, environment, and experiences are more likely to create engagement in climate change communication (O'Neill and Nicholson-Cole, 2009).

This study revealed participants are not promoting climate change through their personal social media accounts. Participants referenced climate-change organizations' social media sites. The top two social media sites provided by participants were Facebook and Twitter. Similar to Jun's (2011) study of climate change organizations, which found Facebook, Twitter, and YouTube are the top three promoted social media sites. This study found social media preferences of climate change education and communication professionals are to promote adaptation options.

Recommendations for Practitioners

Several recommendations for practitioners surfaced from the study. Audience segmentation and framing repetitively appeared as a theme throughout interviews. Communications and education professionals should avoid using terminology that is perceived negatively or not accepted by the target audience. Specifically, respondents said use of climate disruption, cycles, anthropogenic climate change, global warming, and greenhouse gases should be avoided when discussing climate change. Framing should also occur when selecting data and information. Local data and tools were received the best by the target audiences and should be utilized in communication.

Respondents often relied on climate organization's social media for content to share with their constituents. Communication and education professionals depend on social media material from climate organizations to share with their respective organization's social media presence. A few respondents shared climate information to their personal accounts.

Recommendations for Research

Additional research should investigate the use of social media to relay climate-change information. It would be of additional interest to examine the effectiveness of social media in engaging the desired audience on the subject of climate change. Personal use of social media to share climate change information should also be examined.

Respondents in this survey indicated a wide variety of terminology usage and indicated several motivations for the terms used. Terminology that agricultural producers accept and understand should be further investigated. Sources of trusted information should also be explored since this study focused heavily on professionals involved within the university system.

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RESEARCH

Assessing the Content of Online Agricultural Awareness Campaigns

Joy N. Rumble, Quisto Settle, and Tracy Irani

ABSTRACT

This study explored the content of online agricultural awareness webpages. Content analysis was used to determine the content, image categories, messaging appeals, and frames used. The majority of the pages included images and logos, but they were less likely to include other media components, such as social media plugins. The most prevalent image types were non-farming adults, positive food products, fields, and free-roaming animals, though they were included in less than one-third of the pages. The use of non-farming adult images is likely connecting to a consumer audience, while the images of positive food products, fields, and free-roaming animals are likely providing contextual, cultural, or direct meaning to the viewers. Logical appeals were more prevalent than emotional appeals. The primary use of logical appeals could be limiting webpage effectiveness because emotional appeals are known to create stronger connections with audiences and be remembered. The most prevalent frames were agricultural education and economic. Previous literature indicates that education-only communication is traditionally less effective as consumers consider more than facts when making decisions. It is recommended that agricultural communicators pre-test webpages with target audiences prior to launch, utilize webpage planning to better reach target audiences, and conduct formative evaluations of webpages to assess effectiveness and make any needed adjustments. Additionally, it is recommended that agricultural communicators incorporate more emotional appeals into their communication messages. Future research should continue to assess online agricultural awareness information as well as the impact the information has on a consumer audience.

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KEY WORDS

Agricultural Awareness Campaigns, Agenda Setting, Content Analysis, Framing, Messaging Appeals

INTRODUCTION

Previous scholarly work has said the general public needs a basic understanding of agriculture to make informed decisions about agricultural and natural resource issues (Frick, Birkenholz, & Machtmes, 1995; Meischen & Trexler, 2003). However, expecting the public to have the level of understanding necessary to make informed decisions about agriculture is seen by some as unfeasible due to the disconnect between the general public and production agriculture (Powell & Agnew, 2011).

As industrialization and urbanization have progressed, the number of individuals involved in farming has greatly decreased. The 2012 Census of Agriculture reported 3.2 million farmers caring for 2.1 million acres of United States

farmland (United States Department of Agriculture [USDA], 2015). The total number of farmers in 2012 was down 3.1% from 2007 and equated to just more than 1% of the United States' population (United States Census Bureau, 2015; USDA, 2015). As U.S. consumers have become further removed from the farm and agricultural technologies have continued to advance, consumers have developed concerns with modern agricultural practices and technologies (Weatherell, Tregear, & Allinson, 2003). The agricultural industry has not adequately addressed the concerns of consumers and thus has struggled to integrate production and consumption needs (Goodman & DuPuis, 2002; Weatherell et al., 2003). Failing to address consumers' concerns is due in part to the agricultural industry's historical tendency to communicate with others involved in the industry (Telg & Irani, 2012).

The ever-widening disconnect between consumers and the agricultural industry has prompted many agricultural communicators to retarget their communications to a consumer audience (Telg & Irani, 2012). To increase the amount of agricultural information the public receives, as well as increase the awareness surrounding agricultural issues, many agricultural professionals have been turning to the Internet (Goodwin, Chiarelli, & Irani, 2011). The Internet has allowed agricultural professionals to advocate for the industry while connecting with the public (Advocates for Agriculture, 2007; American Farm Bureau, 2003; Ohio Farm Bureau, 2009; Radke, 2009). The Internet has the potential to reach a large consumer audience, as 85% of all American adults are online (Anderson & Perrin, 2015). Additionally, 91% of adults on the Internet use search engines to find information (Purcell, Brenner, & Rainie, 2012). The Internet provides many outlets for the agricultural industry to communicate to the public about agricultural issues. However, the impact on public understanding and the ability to make informed decisions depends on the content and accessibility of online agricultural information. Given the need for the public to be informed on agricultural topics and the increasing use of the Internet by agricultural professionals to communicate about agriculture, the purpose of this research was to explore the content of online agricultural awareness webpages.

LITERATURE REVIEW

Several studies have assessed the content of online agricultural information. While some studies have compared pro- and anti-agricultural websites (Abrams & Meyers, 2012), others have examined the agricultural content of online information (Goodwin & Rhoades, 2011; Rhoades & Ellis, 2010), and some have examined the online accessibility of agriculturally related information (Boyne & Hall, 2004).

Abrams and Meyers (2012) compared the persuasive content on the websites of two non-profit organizations with opposing views on animal agriculture. The researchers assessed the amount of information for each animal agriculture topic, sources, images and multimedia, and the frequency of pre-determined frames on each website. The opposing organization provided more information, science-based sources, photos, and videos. Many of these photos and videos included anthropomorphized animals. The supporting organization provided more downloadable presentations. The opposing organization used more animal welfare frames, while the supporting organization used more health frames in their communication. The authors concluded that the opposing organization provided information that appealed to audiences with low or high involvement in animal agriculture issues, while the supporting organization provided information that appealed to audiences of only high involvement (Abrams & Meyers, 2012).

In a study aimed at increasing public awareness of rural food and tourism activities in the United Kingdom through online information, Boyne and Hall (2004) found that the search terms used by a potential visitor were not present in the rural tourism websites and were causing the websites to be overlooked or not found at all. The authors recommended that the design and organizations of the websites be reconsidered in order to increase the awareness of rural food and tourism opportunities. Without improvements to the accessibility of the online information, the authors worried that the ability to create a rural brand and to capitalize on potential economic benefits of rural and food tourism would be hindered (Boyne & Hall, 2004).

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Rhoades and Ellis (2010) assessed the food safety topics, credibility, and frames of food safety information delivered through online food safety YouTube videos. The results identified that the videos covered both simple and complex food safety topics such as hand washing and metabolic profiling. Additionally, the researchers found that amateurs, universities, and corporations were creating the video content. Frames covered in the videos included cooking, chilling, bacteria, leftovers, handling, and other frames including local food and genetically modified organisms. The authors recommended that food safety educators use the results of the study to understand what complementary or competing information youth may be accessing related to food safety, in order to strategically develop future food safety messages and educational methods (Rhoades & Ellis, 2010).

Following the methods set forth by Rhoades and Ellis (2010), Goodwin and Rhoades (2011) examined the content of YouTube videos related to California's 2008 Proposition 2, a proposition putting restrictions on the housing of gestating sows, laying hens, and veal calves. The researchers examined the videos for sponsorship, demographics of those featured in the videos, and the messaging appeals used. Of the videos analyzed, 89.3% supported the proposition, 3.9% opposed the proposition, and 6.8% took a neutral stance. Emotional appeals were frequently presented in the videos with the appeals of guilt, empathy, and promise used most often. Goodwin and Rhoades concluded that agricultural communicators should incorporate more emotional appeals into their communication in order to connect with and persuade voters.

Conceptual Framework

The effectiveness, and ultimate success, of agricultural awareness information relies on adequate message content and delivery (Elder et al., 2004). The adequacy of the message content can be impacted by the presentation of the information, the sources, the appeals and frames, and the images used to communicate the message. Communication messages that deliver education-only and fact-based information have traditionally been less effective when reaching the target audience as individuals consider more than logic when making decisions (Durkin, Beiner, & Wakefield, 2009). Additionally, the message content should be based on expert opinions, scholarly research, and have a theoretical foundation (Elder et al., 2004; Randolph & Viswanath, 2004). The audience's perception of the communication message will be influenced by how credible they believe the source to be (Eastin, 2001).

In the social sciences, it is common for messages to be created through the use of framing (Randolph & Viswanath, 2004). Framing allows for information to be presented from a certain perspective and thus influence how the recipient will process the information (Scheufele & Tewksbury, 2007). Another strategy used to influence how the information is processed is the incorporation of messaging appeals into communication messages (Atkin & Salmon, 2010). Commonly, messaging appeals fall into the categories of logical or emotional (O'Guinn, Allen, & Semenik, 2003; Srivastava & Sharma, 2008). Logical appeals communicate with reason, while emotional appeals are more subjective and require interpretation (O'Guinn et al., 2003; Zinn & Manfredo, 2000). Previous research has shown that both categories of appeals have similar influence, but emotional appeals are more likely to connect with and be remembered by the audience (Srivastava & Sharma, 2008; Zinn & Manfredo, 2000). When individuals are able to relate or emotionally connect with a message, they are more likely to incorporate the information to their cognitive structure (Nabi & Oliver, 2010).

The presence of images in communication messages can be used to gain audience attention, provide meaning to written text, and to educate, inform, or persuade (Telg & Irani, 2012). Images allow individuals to make meaning of a message based on historical, cultural, or contextual experiences, but images also allow individuals to examine the direct meaning being communicated (Moriarty, 2005; Rose, 2007). The use of stereotypical images has been shown to add to comprehension among the target audience, allowing simple connections to be made (Tversky & Kahneman, 1974).

Message delivery is also essential to communication effectiveness as the target audience must be exposed, attentive, and able to comprehend the information provided (Elder et al., 2004). Two variables that affect the success of the message delivery include placement control and quality of the information (Elder et al., 2004; Haskins, 1985). Placement control consists of ensuring that the message is accessible to the target audience and that the frequency of exposure is adequate

(Elder et al., 2004; Palmgreen & Donohew, 2006). This includes selecting the appropriate media channels for the target audience (Atkin & Salmon, 2010). Quality information often contains favorable attributes and images that connect on a personal level and are attractive to the target audience (Jacobs & Shapiro, 1994; Sniderman, Glaser, & Griffin, 1990). Additionally, the messages must be noticed and accessed by the audience (Randolph & Viswanath, 2004). To ensure that adequate content and delivery is achieved, it is recommended that communication messages be pre-tested prior to launching with a target audience (Elder et al., 2004).

PURPOSE & OBJECTIVES

The purpose of this study was to explore the content of agricultural awareness information presented on webpages. The exploration of these webpages should allow agricultural communicators to understand messages and content being communicated to the public by the industry. The webpages were assessed through the following objectives:

1. Determine the media content used by agricultural awareness webpages, and
2. Determine the messaging appeals and frames used on agricultural awareness webpages.

METHODS

To determine content used in existing agricultural awareness webpages, a quantitative content analysis was performed. A content analysis is a "research technique for the objective, systematic, and quantitative description of the manifest content of communication" (Berelson, 1952, p. 18). Babbie (2010) added that analysis of latent content is also important. Manifest content is recognized as content that is readily apparent, while latent content requires interpretation (Holsti, 1969). Content analyses are used by researchers to measure frequency of communication symbols as well as make descriptions and inferences from the communication (Riffe, Lacy, & Fico, 2005). Additionally, content analyses are often used to study computer-based content, such as webpages (Ary, Jacobs, & Sorensen, 2010).

The sample of agricultural awareness webpages was obtained in summer of 2011. The researchers attempted to pull a sample of agricultural awareness webpages from each U.S. state, in order to understand how agriculture was being communicated nationally. The webpages were identified by using the search terms "agriculture awareness, 'Alabama.'" "Alabama" was replaced for each respective state search. The search engine used for the study was Google, which accounts for the majority of search engine market share (Netmarketshare, 2012) and is the search engine used by the majority of online adults (Purcell et al., 2012). The first five agricultural awareness webpages in the resulting state search were added to the sample. The researchers elected to focus on the first five usable webpages in each search because research has identified that 87% of Internet users click on the top five listings on a search page (Kantar Media Compete, 2015); however, limiting the analysis to the first five webpages in each search is a limitation to this study. Links were excluded if they were PDF documents, news stories or press releases, duplications of links that had already been included, links that appeared in the search results after the second page, or not related to agriculture. Links appearing in the search results after the second page were excluded as previous literature has indicated that users rarely click through several pages of search results (Höchstötter & Lewandowski, 2009). Several states had less than five usable links to contribute to the sample, and Delaware did not yield any usable results. It is important to note that anti-agriculture webpages were not excluded from the search results, as the researchers wanted a holistic picture of what a user may find if searching for agricultural information.

The initial sample included 166 agriculture awareness links. During the coding of the webpages, an additional 15 links were dropped from the sample due to broken links, irrelevant content, and PDFs, as well as duplicates that were overlooked in the initial sample. The final sample included 151 webpages.

The webpages were analyzed using a coding sheet developed by a panel of experts consisting of university faculty and

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industry communicators. A coding sheet leads the researcher through the analysis process and is where data about the content are recorded (Riffe et al., 2005). Data collected on the coding sheet relative to the media content in objective one included the webpage name, type of webpage (i.e., homepage or second-tier page), URL extension (e.g., .com, .org, .edu, etc.), presence of images, image content, types of media components (e.g., social media plugins, interactive elements, and visual elements including logos, videos, PDF, games, etc.). The content of the images was coded for the presence of different agricultural and natural resource components such as people (e.g., farmer, non-farming adults, farm children, etc.), agriculture (e.g., fields, barns, tractors, etc.), environmental and natural resources (e.g., water, timber, wildlife, etc.), and animals (e.g., free roaming, anthropomorphized, confined, etc.). These possible components were established a priori with the input of a panel of experts.

The coding sheet also collected data relative to objective two including emotional and logical appeals, calls to action, and pre-determined frames. All coding for manifest and latent content was recorded numerically (Babbie, 2010). Most of the recorded data was manifest content; however, the image content, appeals, and frames were latent content and thus required subjective interpretations by the researchers (Lombard, Snyder-Duch, & Bracken, 2002). The emotional and logical appeals used in this study were suggested by O'Guinn et al. (2003) and previously used by Goodwin and Rhoades (2011). The emotional appeals included guilt, emotional, promise, empathy, humor, threat, fear, pride, and sex. The logical appeals included rhetorical question, self reference, gain, loss, informative social modeling, and irony. The pre-determined frames used in this study included frames previously used, in part, by Lundy (2004) and Abrams and Meyers (2012). These frames included moral norms, opportunity for all, prevention, economic, environmental, local food, animal welfare, and agricultural education. In addition to the coding sheet, a coding guide was developed to define the variable categories and ensure consistent coding (Riffe et al., 2005).

To obtain inter-coder reliability, and thus validate the study (Lombard et al., 2002; Potter & Levine-Donnerstein, 1999), two coders underwent coder training and coded a randomly selected 10% (n = 16) of the sample. The reliability measure Cohen's Kappa was calculated for each variable to ensure coder consistency. Coders were re-trained twice before a desirable reliability was achieved for all variables. It is common for several drafts and refinements to be made in coding process (Riffe et al., 2005). All variables had a Kappa score of .64 or higher, with an average Kappa score of .90. Lombard et al. (2002) indicated that a reliability score of .80 or higher is seen as favorable, with .70 acceptable in exploratory studies. Additionally, reliability measures for Cohen's Kappa are more liberally accepted, as it is a more conservative measure (Lombard et al., 2002). Once reliability was reached, the remaining sample was divided evenly among the coders. Coding was completed within two weeks. After coding had been completed, data were entered into Microsoft Excel and analyzed for basic descriptive statistics using SPSS.

RESULTS

Of the 151 agricultural awareness webpages that were analyzed, 98 (65%) were second-tier pages and 53 (35%) were homepages. Additionally, 86 (57%) of the webpages had a URL extension of .org, while 35 (23.2%) had a URL extension of .com. The URL extensions of .edu, .gov, .net, and .info appeared fewer than 14 times each in the sample.

Objective 1: Determine the media content used by agricultural awareness webpages.

To determine the media content present on the webpages, the presence of media links, interactive elements, and images were assessed. Of the 151 webpages, 110 (72.8%) included a logo. The results showed that a limited number of the webpages were using social media plugins, including Facebook (*n* = 63, 41.7%), Twitter (n = 50, 33.1%), YouTube (*n* = 19, 12.6%). Other media and interactive content can be seen in Table 1.

Table 1

Frequency of Media Content on Agricultural Awareness Webpages

Media Component	*f*	%
Logo	110	72.8
Facebook plugin	63	41.7
Twitter plugin	50	33.1
PDF link	28	18.5
Video link	25	16.6
Other	20	13.2
YouTube plugin	19	12.6
RSS plugin	19	12.6
Slideshow link	11	7.3
Blog link	10	6.6
Audio	7	4.6
Flickr plugin	6	4.0
Games	3	2.0
PowerPoint link	2	1.3

Note. Values add up to more than 100% as each webpage was coded for multiple media content.

Additionally, 118 (78.1%) webpages included images. Images featuring non-farming adults were seen on 47 (31.1%) of the webpages. This included images of adults in a non-farm setting or adults not dressed in stereotypical farm attire. Positive food products (n = 48, 31.8%), which included normal appearing food, meaning it was free of evidence of spoilage or abnormal characteristics, and fields (n = 46, 30.5%) were the most common traditional agriculture components to appear in the images. The inclusion of environmental or natural resource components seldom appeared in the images. Water was the most prevalent environmental or natural resource component and appeared on 15 (9.9%) webpages. Free-roaming animals were also seen on 43 (28.5%) of the webpages. Table 2 details all image content found on the webpages.

Table 2

Image Content on Agricultural Awareness Webpages

Image Component	*f*	%
People		
Non-Farming Adults	47	31.1
Non-Farming Children	27	17.9
Farmer	21	13.9
Farmers Working	17	11.3
Non-Farming Families	14	9.3
Farm Families	12	7.9

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Farm Children	5	3.3
Agriculture		
Positive Food Products	48	31.8
Fields	46	30.5
Barn	26	17.2
Tractor or Other Implement	22	14.6
Pastures	19	12.6
Silo	14	9.3
House	9	6.0
Crops Being Harvested	7	4.6
Green House	4	2.6
Orchards	2	1.3
Negative Food Products	1	0.7
Environmental & Natural Resources		
Water	15	9.9
Timber or Forestry	13	8.6
Invasive Species	10	6.6
Wildlife	3	2.0
Biofuels	2	1.3
Animals (Excluding Wildlife)		
Free Roaming Animals	43	28.5
Anthropomorphized Animals	15	9.9
Both Free & Confined Animals	12	7.9
Confined Animals	2	1.3

Note. Values add up to more than 100% as each webpage was coded for multiple image components.

Objective 2: Determine the messaging appeals and frames used on agricultural awareness webpages.

To assess how the content of the webpages might be appealing to the public, the researchers looked for emotional and logical appeals. Some webpages included both emotional and logical appeals. For example, the ABCs of Farm Safety Webpage from the Montana Farm Bureau (n.d.) included an emotional appeal with empathy as well as an informative logical appeal. The appeal to empathy was seen in the statement "People of all ages can be injured or killed in accidents on MT farms, but probably the most painful statistics are those that deal with children" (para. 1); While the informative logical appeal was seen in the following statement. "The National Safety Council reports that each year 300 children die, and at least 23,000 children suffer nonfatal injuries in farm accidents" (para. 1).

Throughout all of the webpages, a total of 116 emotional appeals were used. The threat appeal was used the most (n = 26, 17.2%), while the humor appeal was only used three (2.0%) times. The total logical appeals (n = 286) used in the webpages more than doubled the total (n = 116) of emotional appeals used. The informative appeal was used most often with 146 (96.7%) of the webpages using this appeal. The gain appeal was also used in 82 (54.3%) of the webpages.

A summary of the occurrence of emotional and logical appeals can be seen in Table 3.

Table 3

Messaging Appeals Used in Agricultural Awareness Webpages

Emotional Appeals		
Threat	26	17.2
Empathy	20	13.2
Promise	18	11.9
Guilt	14	9.3
Fear	14	9.3
Pride	11	7.3
Emotional	10	6.6
Humor	3	2.0
Logical Appeals		
Informative	146	96.7
Gain	82	54.3
Loss	28	18.5
Social Modeling	16	10.6
Rhetorical Question	9	6.0
Self Reference	3	2.0
Irony	2	1.3

Note. Values add up to more than 100% as each webpage was coded for multiple appeals.

In addition to the message appeals, the webpages were also analyzed for pre-determined frames. The agricultural education frame (i.e., evidence of activities and actions that are being done to promote education on topics of agriculture) appeared the most (n = 104, 68.9%), followed by the economic (i.e., monetary value or jobs associated with agriculture production; *n* = 77, 51.0%) and environmental frames (i.e., positive or negative impacts of agriculture on the environment; *n* = 65, 43.0%). The opportunity for all (i.e., idea that everyone deserves an equal chance at the benefits life has to offer; *n* = 18, 11.9%), animal welfare (i.e., discusses or promotes issues surrounding animal welfare; *n* = 16, 10.6%), and food safety frames (i.e., discusses issues related to food safety; *n* = 13, 8.6%) were used the least. Table 4 details the frames used in the sample of webpages examined in this study.

Table 4

Frames Used in Agricultural Awareness Webpages

Frames	*f*	%
Agricultural Education	104	68.9
Economic	77	51.0
Environmental	65	43.0
Local Food	44	29.1
Moral Norms	42	27.8
Prevention	37	24.5
Opportunity for All	18	11.9
Animal Welfare	16	10.6
Food Safety	13	8.6

Note. Values add up to more than 100% as each webpage was coded for multiple frames.

CONCLUSIONS

While the public is increasingly disconnected from the agricultural industry (Powell & Agnew, 2011), agricultural communicators are increasingly focusing efforts on the communicating with the public (Telg & Irani, 2012), including online (Goodwin et al., 2011). The purpose of this study was to explore the content of agricultural awareness information presented on webpages. The findings for the manifest content indicated that many of the webpages in the sample were second-tier webpages and contained a URL extension of .org or .com. The media content appearing most frequently on the webpages was logos, followed by Facebook plugins. However, the Facebook plugins appeared on fewer than half of the webpages. Assessment of the latent content revealed that the images on the webpages often included non-farming adults, positive food products, and fields. The message content of the webpages included more logical appeals than emotional appeals, and the most frequently used frames were agricultural education and economic.

Of the 151 webpages analyzed, 98 were housed on second-tier webpages. Depending on the search terms used by a public audience to find agricultural information, second-tier webpages may be less accessible than homepages (Boyne & Hall, 2004). Additionally, understanding where agricultural awareness webpages occur in search engine results is important as Internet users often turn to search engines when looking for information (Purcell et al., 2012) and they are not likely to look past the first two pages of search results (Höchstötter & Lewandowski, 2009). The accessibility of online agricultural awareness information could be improved given the occurrence of several state searches resulting in less than five webpages as well as one state yielding no usable results. Social media plugins among the agricultural awareness webpages were limited. A lack of social media plugins may also be limiting the reach and spread of agricultural awareness information (Elder et al., 2004; Palmgreen & Donohew, 2006).

Although many of the webpages included images, it is unknown whether these were seen as favorable and attractive to the target audience. The most effective images create a personal connection with the audience (Jacobs & Shapiro, 1994; Sniderman et al., 1990). The presence of non-farming adults was likely attractive to a consumer audience. A non-farming individual may see himself or herself in an image of a non-farming adult, providing contextual or personal meaning (Moriarty, 2005; Rose, 2007). The presence of a farmer in an image may provide a stereotypical, historical, or cultural meaning, but it is less likely that a non-farming adult will form a strong connection to an image that they view as different from them (Moriarty, 2005; Rose, 2007). Images or messages that form strong personal connections are more likely to be remembered and used in future decision-making (Nabi & Oliver, 2010). The presence of images of positive food products

and fields among the webpages likely provided contextual, cultural, or direct meaning to the viewers (Moriarty, 2005; Rose, 2007). Additionally, the webpages that did include images were more likely to appeal to individuals with a low interest in agriculture (Abrams & Meyers, 2012).

Framing and message appeals are particularly important because of impacts on how individuals process information, affecting public perceptions (Atkin & Salmon, 2010; Scheufele & Tewksbury, 2007). The results for latent content showed that the number of logical appeals outweighed the emotional appeals. This could impact the effectiveness of the webpages as emotional appeals have been shown to connect with and be remembered by the audience more so than logical appeals (Srivastava & Sharma, 2008; Zinn & Manfredo, 2000). Because logical appeals tend to be based on reason and facts (O'Guinn et al., 2003; Zinn & Manfredo, 2000), the prevalence of logical appeals in agricultural awareness messages may hinder the webpages' effectiveness, as individuals rely on more than logic for decision-making (Durkin et al., 2009) and runs counter to recommendations from previous agricultural communications research (Goodwin & Rhoades, 2011).

Several frames were used throughout the webpages; however, the agriculture education and economic frames were used most often. Although these are important topics, the frequent occurrence of these frames may be decreasing the overall effectiveness of the information presented on the webpages. Previous research has shown that education-only and fact-based content has traditionally been less effective (Durkin et al., 2009). To increase effectiveness, educational and fact-based frames should be mixed with other types of frames and appeals. Despite the presence of images that likely would appeal to many, the education and information-oriented frames and appeals used suggested that the webpages examined in this study are better suited for high-involvement audiences, or those involved or interested in agriculture, rather than low-involvement audiences (Abrams & Meyers, 2012). Therefore, it is unlikely that the webpages assessed in this study will be successful in reaching the majority of the U.S. public, which is not actively involved in the agricultural industry (United States Census Bureau, 2015; USDA, 2015).

RECOMMENDATIONS

Based on the findings, it is concluded that the agricultural industry has room to improve the overall effectiveness of their agricultural awareness webpages. Agricultural communicators should create agricultural awareness webpages based on theory and academic research (Elder et al., 2004; Randolph & Viswanath, 2004). Any agricultural awareness webpages should be pre-tested through qualitative methodologies or usability techniques prior to being launched to the public (Elder et al., 2004), which should improve webpage effectiveness. Webpage planning should also include an assessment of competing information and an understanding of the psychographics and demographics the target audience as well as the information wanted by the target audience (Randolph & Viswanath, 2004). Assessing these things will allow agricultural communicators to identify what public issues might need to be addressed and ensure the quality and effectiveness of the webpage is greater than that of the competition.

Current and future agricultural awareness webpages should work toward moving away from education- and fact-based, information-heavy messages (Durkin et al., 2009). Additionally, the incorporation of more emotional appeals should be pursued (Srivastava & Shara, 2008; Zinn & Manfredo, 2000). It is also recommended that agricultural communicators look carefully at the channels and frequency through which the target audience will be receiving the agricultural awareness messages (Atkin & Salmon, 2010). For all webpages, whether current or future, it is recommended that a formative evaluation be conducted to ensure that desired effectiveness is being achieved and any needed adjustments are made (Randolph & Viswanath, 2004).

This study is limited by the search terms, the webpages included in the sample, and the variables included in the instrument. Additionally, the study assumed that the webpages in the sample were created for a consumer target audience. An effort should be made to identify the intended target audience for the webpages examined in future research. It is also recommended that future studies reassess the effectiveness of agricultural awareness webpages and measure any improvements that might be present. In addition, future research should test consumer perceptions of a sample of web-

pages to fully grasp the effectiveness and impact of the messages. The search terms used by a consumer audience to find agricultural awareness information should also be assessed. Future research should test the effectiveness of agricultural awareness webpages among those with high and low involvement or interest in the agricultural industry. Another limitation of this research is that it does not compare pro-traditional agricultural and anti-traditional agricultural sites. Future research should compare webpages from pro- and anti-traditional agricultural organizations, expanding the line of research from Abrams and Meyers (2012) and along the same lines of the recommendation from Rhoades and Ellis (2010) to assess complementing and competing information. As the need for agricultural awareness continues to increase, it is important for the agriculture industry to regularly assess the effectiveness of awareness webpages in order to ensure that our communication is impacting the decision making of the public on agricultural topics (Frick et al., 1995; Meischen & Trexler, 2003).

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RESEARCH

Farmed and Dangerous? A Case Study of Chipotle's Branded Entertainment Series and Polarized Reactions to its Satirical Depiction of Farming and Agribusiness

Nathan Gikerson, Rebecca Swenson, and Betsy Anderson

ABSTRACT

This study follows Chipotle's innovative strategy of using branded entertainment and satire to enhance its brand image and positive consumer perceptions, while negatively portraying an entire industry. The study explores audience reactions to Chipotle's satirical Farmed and Dangerous *program, part of the company's broader "Food with Integrity" campaign. Increasing agricultural literacy and understanding among the general public is a priority (Doerfert, 2011). Yet marketing communication campaigns—and responses or reactions to those campaigns—that simplify issues into distinct "sides," or focus on attacks, prevent deep discussion of the complexity of our food system and efforts to collaborate on solutions. Research presented uses a case study, supported by focus group methodology and in-depth survey responses of YouTube commenters, to examine consumer and stakeholder reactions to Chipotle's content. Findings reveal sharply divided reactions and significant anger and frustration within the agricultural community toward Chipotle for its satirical portrayal of the food production industry. Findings also reveal generally positive attitudes toward Chipotle from those without agricultural experience, and clear perceptions of "sides" in the food debate. Discussion of Chipotle's marketing strategy explores whether the negative sentiment the company has generated among agricultural stakeholders through efforts like its* Farmed and Dangerous *webisode series is worth it for the brand, considering the broader positive image the company has gained among much of the general public, as well as related implications for the company linked to more recent struggles with food safety issues and attacks from political groups.*

KEY WORDS

Agriculture Communication, Branded Entertainment, Food Marketing, Public Relations, Satire, Sustainability

INTRODUCTION

In 2014, the fast-casual food chain Chipotle released a four-part online "webisode" series titled *Farmed and Dangerous*. Through the free format, in which video content can be streamed online, Chipotle offered an entertaining storyline that unfolded over four, 20- to 23-minute episodes. While heavily marketed by the company through online advertising and promotional trailers, and in-store promotions such as branded soft drink cups (Chipotle Adverts, n.d.), the Chipotle brand itself was minimized in the satirical comedy program, only serving as an occasional backdrop in the narrative. *Farmed and Dangerous* is particularly interesting from a strategic communication perspective because the storyline lambasts the "Big Ag" industry, depicting the industrial farm business as alternatively depraved, money-hungry, and amoral. ***AdAge*** noted the clear message of *Farmed and Dangerous*: "Eat at Chipotle, because it doesn't have anything to do with that scary world" (Chipotle Hits, 2014, para. 2).

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Chipotle received significant media coverage for this original branded entertainment, with advertising and public relations industry outlets enthusiastically touting the bold strategy behind the campaign (Nudd, 2014; Young, 2014). Not all viewers were receptive to the message, however, and farming communities in particular expressed outrage at Chipotle's vicious depiction of the industry. Outspoken members of the ag community accused Chipotle of using farmers as a punching bag to sell burritos, and news outlets covered Chipotle's controversial approach and the self-inflicted public relations challenge the company faced through its critique of and disassociation from industrial agriculture (Barrett, 2014; Doering, 2014).

This qualitative case study examines reactions to Chipotle's unique messaging strategy using a multi-method approach, including a series of focus group sessions and an in-depth survey of individuals who commented on *Farmed and Dangerous* on YouTube. Findings show strong evidence of polarized reactions to Chipotle's marketing and a clear perception of distinct "sides" in the food debate. Chipotle, it appears, alienated itself among some viewers, while strengthening its corporate image among others.

History of Chipotle and Its "Food with Integrity" Campaign

Founded in 1993 in Denver, Colorado, Chipotle Mexican Grill has grown rapidly to more than 1,600 locations in 43 states (Nath, 2015). Numerous articles have highlighted Chipotle's revenue growth as a publicly traded company (Munarriz, 2015; Solomon, 2014). Early expansion was partially supported through the McDonald's Corporation, which became a major investor in 1998, but partnership between the chains ended in 2006 when McDonald's fully divested itself from the burrito maker (Yohn, 2014). In recent years Chipotle's financial success—including a twenty-five percent profit margin on $2 billion in sales in 2011—has been the subject of food industry and business media articles (Nath, 2015; Yohn, 2014).

Chipotle's marketing has heavily emphasized its "Food with Integrity" campaign, which the company boasts on its website is a symbol of Chipotle's commitment to using ingredients "raised with respect for the animals, the environment and the farmers" (Chipotle Food, 2015, para. 1). Chipotle also claims that "whenever possible" its food includes meat that is free from antibiotics or added hormones, and that it sells organic and locally grown produce "when practical" (Chipotle Food, 2015, para 4). Emphasis on sustainable, organic and natural foods has resonated with many consumers, with annual sales growth over the past decade outperforming most competitors in its category (Nath, 2015). Growth, however, has also meant that Chipotle has not always been able to match its natural food rhetoric to its day-to-day business practices. Chipotle preemptively acknowledges this reality on its website: "We can't always purchase food from the little farmer down the road. In order to serve our customers, we sometimes work with larger farms and food distributors" (Chipotle People, 2015, para 2).

In January 2015, news outlets reported Chipotle would temporarily stop selling pork in one-third of its locations after discovering a supplier had violated the company's animal treatment policies (Peterson, 2015). Media reported quick resolution: Chipotle worked with other meat producers in its supply chain to purchase pork that met its animal treatment standards and returned the offering to its menus (Scherer, 2015). Although the crisis was short-lived, analysts noted the high-profile decision likely drove down revenue. Some predicted Chipotle's "natural" food sourcing policies would continue to be difficult to sustain long-term (Lutz, 2015).

During the fall of 2015, Chipotle faced a corporate crisis and associated drop in sales linked to a series of food safety issues. That November, the company temporarily closed restaurants in Oregon and Washington due to an extended E.coli outbreak that sickened dozens of customers (Fox, 2015). Weeks later approximately 140 people were sickened due to a norovirus outbreak linked to a Chipotle restaurant in Boston. The company attempted to address its sales and public relations crisis in December by taking out full-page ads in more than 60 major newspapers, featuring an apology from CEO Steve Ells, conveying remorse over customer illnesses and plans to implement improved food safety procedures (Trotter, 2015). But problems continued when Chipotle was served with a subpoena linked to a U.S. Attorney's

Office investigation into yet another norovirus outbreak in California (Choi, 2016). In the aftermath of Chipotle's food safety scare, media questioned whether the company's "food with integrity" message would still resonate (Zarroli, 2016).

Recent company marketing efforts have relied heavily on highly negative portrayals of "big agriculture." In 2011, the company released an animated YouTube video titled *Back to the Start*, which depicted the story of a family farmer who began to adopt industrial farming techniques, only to eventually realize these methods were harmful and unnecessary, and thus happily returned to simpler, more traditional farming. Two years later Chipotle released a second animated video called *The Scarecrow*, which told a similar tale about the harmful nature of industrial agriculture and the benefits of natural and traditional farming and food sourcing techniques. Scholars have examined the company's emphasis on sustainability and rejection of "Big Ag," noting that Chipotle's depictions of industrial food production cause audiences to think critically and draw natural conclusions that Chipotle's products are preferable and an obvious choice (Czaplewski, Olson, & McNulty, 2014).

Farmed and Dangerous

In February of 2014, Chipotle escalated its criticism of the agricultural industry by launching the online satirical series *Farmed and Dangerous*. Featuring the program's three main characters—including a villain ominously holding a devil's pitchfork—and website described the show as, "A Chipotle original comedy series that explores the outrageously twisted and utterly unsustainable world of industrial agriculture" (Farmed and Dangerous, 2014, para 1). *Farmed and Dangerous* depicts the nefarious deeds of a fictional agribusiness company called Animoil, which aims to make billions of dollars selling a newly developed animal feed laced with oil (dubbed the "petropellet"), before being exposed and thwarted by a down-to-earth, likeable, free-range cattle farmer (named "Chip," presumably to represent Chipotle). The humorous series includes outrageous and preposterous moments, including an exploding cow and a bio-engineered, eight-winged chicken. The narrative is driven by a romance between Chip and the aggressive yet naive public relations "flack" for Animoil, who eventually realizes the evils of big agriculture and comes to value the sustainable food movement (Farmed and Dangerous, 2014).

Advertising industry press hailed *Farmed and Dangerous* as ambitious and a continued example of Chipotle's innovative marketing (Nudd, 2014). The series received a 2014 "Clio" award for Branded Entertainment and Content (Coloribus, 2015). In one article on the increasingly blurred line between "where brand marketing ends and Hollywood begins," *Farmed and Dangerous* was touted as an exemplar of the trend toward sponsored entertainment content for strategic public relations and marketing purposes (Stein, 2015, para.1).

LITERATURE REVIEW

Branded Entertainment

Chipotle's unique marketing efforts have been the subject of multiple academic studies within communication literature, including research examining the company's success in communicating "brand sincerity" and corporate social responsibility (Ragas & Roberts, 2009), and research that holds up the company as an exemplar for studying the unique functions of brand attribute saliency among virtual brand communities (Ragas & Roberts, 2009). Additionally, the company has frequently been discussed in the business press, often as a marketing innovator, with its use of branded entertainment content (Nudd, 2014; Stein, 2015). Growing use of branded entertainment as a sales and marketing strategy has also become the focus of academic research. Scholars have studied effects of branded entertainment as part of the broader "blurring of the lines" between entertainment content and persuasive marketing efforts (Shrum, 2012). Research has explored whether the tactic is indeed a "new" form of advertising, or just a more subtle and sophisticated form of product placement, a longtime strategy (Hudson & Hudson, 2006), as well as the ability of branded entertainment on social media platforms to increase brand awareness and build consumer-brand relationships (Zhang, Sung, & Lee, 2010).

Satire as a Persuasive Messaging Tool

Often described as a satirical comedy, Chipotle's *Farmed and Dangerous* series can also be explored in the context of a

growing body of literature examining satire as a persuasive messaging tool to illustrate weak or foolish qualities of another person or organization and to convey complex and ambiguous information. Research has examined the role of biased message processing in how viewers understand and interpret intended meaning of ambiguous political satire entertainment content, with findings suggesting that an individual's political ideology can influence the nature of biased processing (LaMarre, Landreville, & Beam, 2009). Other research has examined the nature of different types of satirical content and its effectiveness as a tool for political persuasion (Holbert, Tchernev, Walther, Esralew, & Benski 2013). Unique persuasive effects and the cognitive nature of how satire is processed have been the focus of recent studies (LaMarre, Landreville, Young, & Gilkerson, 2014; Lee & Kwak, 2014). Recent research focused on the documentary *Food, Inc.* explored how perceptions toward agriculture can be influenced by entertaining media content (Holt & Cartmell, 2013).

Political Consumerism and Online Activists

Americans have been engaging in acts of political consumerism since the pre-revolutionary period with boycotts of British goods (Breen, 2005). Yet, scholars of corporate communication, political consumerism and online activism have typically focused on helping corporations respond to attacks from activist groups, rather than strategically launching the attacks themselves. Chipotle's decision to go on the offensive with *Farmed and Dangerous* is more aligned with activist strategies described by Spar and La Mure (2003) in their discussion of non-governmental organization (NGO) communication tactics than traditional corporate public relations strategies. Most scholars have focused on ways for corporations to build relationships with opposing groups and understand their concerns on a personal level (Veil et al, 2014).

PURPOSE AND RESEARCH QUESTIONS

Chipotle intentionally carved a niche within the competitive fast food industry, and created a distinctive brand based on opposition to conventional agriculture. Considering Chipotle's use of branded content and ambiguous messaging about agriculture embedded within satirical entertainment, this research examines the effectiveness of the company's approach and explores the range of consumer reactions to *Farmed and Dangerous*. In light of Chipotle's novel marketing strategy and the relevant academic literature, this study focused on three questions:

RQ1: What are participants' general perceptions of Chipotle?
RQ2: What messages did Chipotle's *Farmed and Dangerous* series convey about the company?
RQ3: How do viewers respond to Chipotle's marketing strategy?

RESEARCH METHODS

To address these questions, a multi-method case study approach was adopted. As argued by Yin (2013), the case study method allows for the study of complex and contemporary social phenomena in a real-life context—and is conducive to deploying multiple methods to search for converging findings from different data sources and the "triangulation" of evidence. This study combined focus groups and in-depth survey data to identify and validate common findings through consistent patterns of evidence, and to provide multiple levels of analysis (Yin, 2013).

Focus Groups

During March 2014, three focus group sessions were conducted at three Midwestern universities. Following distribution of a research consent form, undergraduate participants were asked to describe Chipotle as a brand, including any "personality characteristics" they associated with the company. Participants then viewed the initial episode of *Farmed and Dangerous*. Participants wrote down their thoughts and reactions during and following the viewing of the program, including anything they might consider posting to social media.

Next participants were led in a guided discussion of the program and asked a set of questions about their perceptions of the program, the Chipotle brand, and the *Farmed and Dangerous* series. Focus groups ranged from 11 to 23 people, for a total of 47 participants. While a few had seen promotions for *Farmed and Dangerous*, the vast majority of focus group participants were either unaware of or had not seen the program. Two of the digitally recorded sessions were conducted with participants enrolled in a "Communication and Journalism" or "Strategic Communication" program, while the third was conducted with participants enrolled in a communication-focused course housed in the university's "Food, Agriculture and Natural Resources" program.

In-Depth Online Survey

Following Chipotle's February 2014 release of the *Farmed and Dangerous* series, a social media content tool called "NCapture" collected YouTube users' comments. Approximately 1,000 unique comments were captured during the two-week period following the series launch. (Software used during the research limited collection to 1,000 online comments, and a small number of intelligible or non-human generated comments—i.e., "spambot posts"—were sorted for and removed.) Instead of conducting a content analysis of the social media posts, which would have limited perspective of users' thoughts and motivations, an in-depth qualitative survey of active commenters was developed to gain a more nuanced understanding of perceptions of Chipotle and its marketing.

Drawing from the original universe of 1,000 social media comments, comments were categorized by the number posted by each unique YouTube user. The online survey was distributed to users who had submitted multiple distinct comments related to *Farmed and Dangerous*, or who had engaged in multiple exchanges with other users who had also commented on the video. Using the user "contact" mechanism within YouTube, individual survey participation invitation emails were sent to each user's YouTube account, directing the individual to a research consent form and access to the online questionnaire. Participants were told the research "focused on the branding and marketing strategies used by food companies to promote sustainability and environmentalism," and that they would specifically be asked to answer questions about Chipotle's *Farmed and Dangerous* campaign. The survey was distributed and collected using a university-owned Qualtrics tool, and participant identifying information was not collected. An original total of 163 unique YouTube users who had commented on the video at least three times was identified, and survey invitations were sent to 150 users' accounts; those without no-contact restrictions on their YouTube accounts. In total, 13 individuals participated in the survey, for an 8.6% response rate.

Data Analysis

In analyzing data from both the transcribed focus group sessions and the open-ended survey responses, Strauss and Corbin's (1998) grounded theory approach to open coding was used. Participant comments were closely examined to identify various concepts and themes within the data, which were then grouped into general categories, and then, using an axial coding process, collapsed into categories representing significant themes and perspectives (Strauss & Corbin, 1998). Key findings of this qualitative analysis process are presented below, along with selected illustrative quotes from participants.

FOCUS GROUP FINDINGS

General Perceptions of Chipotle

Of the three focus group sessions conducted, two consisted of undergraduate students studying communication or strategic communication, while the third consisted of students with majors in the field of food production and agriculture. The most striking finding from these sessions was a stark contrast and polarization in attitudes about Chipotle and its marketing. Participants in the communication programs were neutral to overwhelmingly positive in their overall attitude toward Chipotle and, specifically, their response to viewing *Farmed and Dangerous*, while participants from the agriculture-focused program were almost unanimously negative in their views toward Chipotle and its broader marketing strategy.

Perceived Messages and Viewer Reactions—Strategic Communication Focus Groups

Subtle and Effective Branding

Among the communication program students, themes among participants' reactions related to the quality and effectiveness of the messaging strategy itself. One participant, representative of others in the group, commented that they thought the satirical entertainment format was "a good way to get audience engagement," and that the story's dramatic narrative would motivate them and others to seek the content online in order to "see what happens next." Another participant noted that Chipotle's marketing through *Farmed and Dangerous* was "very subtle" branding, and that it was going to be successful because Chipotle was "getting their name out there, but in a very secret way." While some participants reported that they thought the webisode was dramatic and entertaining, not all participants were laudatory of the satire's value as entertainment, with some expressing that they felt that the program and its narrative was "over the top," "extremely cheesy," or just "trying too hard."

Other participants commented that watching the webisode strengthened their already positive view toward Chipotle and the "higher quality" of the restaurant's food. Reflecting this idea, one person noted, "it kind of reaffirms my beliefs in Chipotle, because it is all organic and good…" while another participant said that what Chipotle was doing was creating "a really positive image for organic farms" and generally promoting the value of food.

Genuine, Transparent, and Honest

Multiple participants from the two communication student focus groups said that they felt the message from *Farmed and Dangerous* was that Chipotle was a "genuine," "transparent," "authentic," and "open and honest" company. One participant believed Chipotle's objective was to "tell the truth about the food industry." One participant argued that, "you could create something like this only if you were 100% confident and transparent in your company," while another said that, with Chipotle's brand, "what you see is what you get," and that the *Farmed and Dangerous* program "shows they have nothing to hide." One participant noted that the title character, Chip, represented Chipotle and described him as "authentic" and "confident":

> I also think you look at Chip and you think of him as an authentic, down to earth guy, which kind of goes with what Chipotle's trying to be. And it almost seems, how confident he is, is kind of like...and it might be a far stretch, but it might be Chipotle's confidence in their brand and their tactic of being organic, or being as organic as possible… and then obviously the other side...they're kind of scared right now and a little flustered.

This notion of "sides" in the food industry came up multiple times during the communication student focus groups. Participants argued that Chipotle's aim was to "educate" the public and position the company as a "good guy" within the system:

> In addition to it being educational, because I think that's a large part of it, I think they (Chipotle) are trying to distinguish themselves as a brand, like look, these are our values, and a lot of other companies are bad and people who want your money… so I think (their goal is) distinguishing themselves as the good guys.

Many participants from the communication student focus groups seemed to share this interpretation of Chipotle as a generally altruistic and sincere company, and a well-intentioned organization that was on the "right side" of the food debate.

However, one participant stood out and expressed strong negativity toward Chipotle and the *Farmed and Dangerous* webisode. Shown below, these comments contrasted with others in the group by conveying anger and describing Chipotle as "playing dirty":

> I think in a way they're kind of playing dirty with this, and that made them look negatively about this, like the way the series was, instead of educating 'why it's good to be sustainable,' they're kind of in your face. 'I'm going to be really obnoxious about it,' and that made me view it very negatively. I actually come from a small family farm, so [the video] made me kind of angry, because some of the things, I believe, were false… what they were saying.

Notably, this was the only participant from the focus groups composed of communication students to indicate having a farming background. This participant discussed the complexity of the farming business and categorizations made within the agriculture industry, and a dislike of what they viewed as an oversimplification of types of farms and the notion of sustainability:

> I don't like that they (Chipotle) put two sides, like there's either industrialization or there's sustainable, small family farms because I come from a 500-acre crop, dairy, and meat farm, so we do all three of them. It makes me frustrated that there are really small farms out there that can't afford to get the really good medicines, and they can't have enough space and stuff like that, so their cows might not be as healthy as a bigger farm that can, and that isn't necessary industrialized… they're just bigger, so they're viewed as industrialized, but that's false. So I think it should be paired, there can be sustainable while being industrialized. It's just, where's the line of being inhumane? That's the issue I think, that's my opinion.

Perceived Messages and Viewer Reactions—Ag Communication Focus Group

Lack of Factual Information

The tenor of the focus group discussion among students from the field of food production and agriculture was in stark contrast to the generally positive attitudes expressed toward Chipotle by members of the other focus groups. When asked about their initial reaction after viewing the *Farmed and Dangerous*, one agriculture student immediately described it as "ridiculous" and "frustrating." Criticizing the video, another argued that "there's no presentation of any facts…" and that the webisode didn't "actually define industrial agriculture, ever". Participants expressed frustration that Chipotle had, in their mind, misrepresented the entire agriculture industry:

> I think that they're just negatively representing ag business in general. Like most consumers who see this are not going to be as educated as we are, and they don't understand the industry, and that they think…. They're (Chipotle) presenting that every company is unethical which is clearly not true. I think it's pretty wrong.

Focus group participants argued that Chipotle didn't *understand* the ag industry, and that its marketing efforts were harming everyone in agriculture. One participant said, "I don't think they're aware that bad publicity for conventional agriculture is bad publicity for all types of agriculture." Another added, "I also don't think they realize they're talking about family farms and being sustainable… I don't think they know what a family farm really is, if that is what they define as being sustainable." There was general agreement in the group that Chipotle and its marketers didn't really understand the industry.

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Chipotle as Unethical, Hypocritical, Manipulative and Deceptive

Many of the agriculture participants in the focus group discussed their feeling that Chipotle as a company was a "manipulative," "deceptive," or "hypocritical" organization. Conveying this perspective, one participant quipped, "I think it's funny that Chipotle is calling conventional agriculture manipulative, when *they're* being extremely manipulative the way they are trying to advertise." Participants discussed what they viewed as hypocrisy in Chipotle's harsh critiques of farming, noting that the company depends on the industry to produce the very food products that it sold:

> I think that's part of where they're being extremely deceiving. I mean they're tearing down conventional agriculture, but they're feeding people products of conventional agriculture. That's kind of disappointing that they can't support the people that help their business.

The broader theme of Chipotle's hypocrisy came up many times during the focus group, with participants expressing a feeling of betrayal related to Chipotle's marketing:

> Yeah, I was kinda surprised about like, how negative they (Chipotle) portrayed agriculture, since you know, they are an agriculture, you know, company, even though they may have like slightly different ways of feeding people. They're still agriculture, and to be making such a negative statement about, just like a slightly different sector of your own group, seems odd to me.

Participants felt Chipotle's depiction of the agriculture industry in *Farmed and Dangerous* was intentionally dishonest and deceptive. Discussing the satire, one participant argued, "… if you're going to do something like this, like, make sure that you're presenting it honestly and fairly."

Several participants discussed Chipotle's marketing rhetoric and stated devotion to organic and natural products, and how it conflicts with the company's regular use of conventionally raised food. One participant argued, "…without the conventional farmers, who they (Chipotle) get the food from, they wouldn't even have a business because they can't support themselves with their own principles or values," while another noted that they were aware that Chipotle's chicken products were sourced from "Gold N' Plump," a large poultry agribusiness.

Being Attacked

Many participants from the agriculture focus group described feeling that Chipotle was intentionally attacking farmers and "tearing down" people in agriculture in order to build its brand and boost sales. Discussing the negative depiction of agriculture in *Farmed and Dangerous*, one participant argued that Chipotle was not trustworthy:

> In the video, they portray agriculturalists that would pretty much do anything to get to the top, anything to make a buck, which is like exactly what they're doing. They're tearing down everyone just to make their company better, they're hypocrites. They're saying other people tear each other apart, or like they'll do anything to make a buck, but that's exactly what they're doing. I don't know, they're hypocrites, trustworthy is the farthest thing from my mind.

Other participants said that Chipotle was only interested in profits and, despite the company's rhetoric about caring for and respecting farmers, its marketing was concerned solely with increasing sales. One participant from the agriculture group lamented that Chipotle's marketing meant that farmers were being forced to work harder to have a positive image in the public's mind: "It's just like tearing us down so that we have to work that much harder to make a positive image for agriculture in general." Another participant argued that Chipotle was proactively, "tearing down everybody else around them to try to get to the top." Expanding on this notion, the participant said, "…agriculture as an industry is trying to take two steps forward and Chipotle's pretty much dragging us two steps back."

Us Versus Them

Many participants from the agriculture focus group had already formed a negative opinion of Chipotle from its previous marketing, in particular *The Scarecrow* video. Along with communicating that, as members of the agricultural community, they felt as though Chipotle was "attacking" them, participants also frequently conveyed an "us versus them". Expressing concern that viewers who were unfamiliar with the real world of agriculture would see *Farmed and Dangerous* and believe that it was more or less true, one participant commented that they were "outnumbered" in their conflict with Chipotle:

> I just worry there's not enough of us, there's just so many people out there that don't even know a farmer and know an agriculturalist or someone out there who knows an agriculturalist, who will never have access to the real story that we have to tell, and so they're just going to see this and immediately believe it whole heartedly because they just don't know and it's unfortunate they don't have access to someone who will tell them the right story. That's a big problem because we are largely outnumbered.

Many participants conveyed a notion that the agriculture community was in an oppositional or antagonistic relationship with Chipotle. One participant mused that Chipotle's marketing efforts were "extremely innovative and smart on their end," and that they wished that the agriculture industry had some sort of sophisticated rebuttal message. One participant even said, "They have an excellent marketing team, no doubt about it."

Multiple participants described Chipotle as unnecessarily "ripping on" or "bashing" the agriculture industry. One comment focused on the company's CEO, and noted that the executive didn't have a background in agriculture, and didn't fully understand the issues:

> So this guy (Chipotle's CEO), as far as I know, doesn't even have an education in agriculture at all, and I think that's part of where the problem stems from, like, he's not even in agriculture, so, as far as I know he hasn't taken the time to try and understand the industry that his company now is pretty much bashing.

Another participant was more thoughtful and reflective, and acknowledged that some of the issues within the agriculture industry that Chipotle was critiquing were indeed real problems, that needed fixing—but that Chipotle's superficial portrayal of the faults of the industry and demonization of big agriculture was not a way for those problems to be solved.

Differences in Viewer Responses Linked to Affiliation with Agriculture

Overall, focus group participants with backgrounds in agriculture seemed to view Chipotle, and its *Farmed and Dangerous* marketing, as opposing or threatening the ag industry—and something they needed to fight and overcome. One participant mentioned a personal boycott of Chipotle because of its treatment and depiction of farmers. Emphasizing the unfairness of Chipotle's depiction of agricultural workers, one participant emphatically stressed, "they're families that do this, and they're good people." Those participants with connections to agriculture held largely negative views toward the company, which they viewed as disingenuous and deceptive. None of these sentiments were expressed by members from the two general communication program focus groups, except for one participant who indicated a farming background. Instead discussion from the general focus groups conveyed nearly universally positive sentiment toward Chipotle, and focused on the sophistication of the company and its marketing, which were viewed as genuine, honest and ethical.

ONLINE SURVEY FINDINGS

As described earlier, this research also included an in-depth, open-ended, online survey of 13 unique users who had commented at least three or more times on the Chipotle *Farmed and Dangerous* YouTube page. This approach examined attitudes among individuals who demonstrated high engagement with the content and presumably strong-enough opinions of Chipotle and the webisode program to post comments. Analysis of the comments section showed that many of the single comments posted by YouTube users were predominately superficial.

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In examining findings, it was striking how similar many of the themes were to those found in the earlier focus group sessions. Some respondents' comments were generally very positive toward Chipotle and the messages of *Farmed and Dangerous*, while others were extremely critical of Chipotle's marketing efforts. Put another way, polarization in the different focus group reactions was also highly evident among survey respondents. While the survey did not explicitly ask participants to indicate whether they worked in the agriculture industry, or otherwise identified with farming or agriculture, it was evident through the content of the survey responses that many participants were part of, or strongly identified with, the agriculture community. Similar to findings with agriculture participants, many respondents seemed to have held a previous dislike of Chipotle's marketing strategy, and had posted to the YouTube comments section of *Farmed and Dangerous* to voice their displeasure with the company.

When asked during the survey what they believed to be the program's "main message," many responses conveyed anger and displeasure with how Chipotle depicted farmers, saying the goal was "to attack legitimate farmers and disparage them" or to tell audiences that "agriculture producers are unethical." One respondent boiled the program's message down: "Corporate ag is bad, Chipotle is good." Another survey respondent said *Farmed and Dangerous* was "Making agriculturists, those in the food system, and agribusiness people look like complete idiots... and based on the title, that farming is dangerous!"

Similar to the contrast in focus group sessions, however, other respondents conveyed sincere appreciation of Chipotle's message and agreement with the company's marketing strategies. Respondents indicated that message was, "That industrial farming isn't healthy and will eventually hurt us," and that "Big agriculture [is] hurting our economy and progress toward a sustainable and healthy future." One respondent connected Chipotle's message to broad environmental concerns like global warming and the planet's ecosystem:

> Corporate food production and farming has negatively affected our planet — the ecosystem and the animals, plants and humans that inhabit our planet — and what we eat and drink all in the name of profits and supposed ultruistic (sic) aims to "feed the planet" and a growing, out-of-control population. It is this that is dangerous to our future, especially in the context of global warming.

Despite the presence of a few such positive comments, the majority of survey respondents were highly critical of Chipotle and the series, with one calling it "very misleading." Regarding a question about their perceived "relationship" with Chipotle and whether viewing *Farmed and Dangerous* had influenced their opinion of the company, one respondent wrote, "I already knew they were liars and based their marketing on fear." One respondent connected to agriculture succinctly made this argument: "All they do is lie. I have lived and breathed production agriculture and know their accusations to not be true." The two contrasting participants' comments shown below, which appeared next to each other in juxtaposition within the survey data, are perhaps most symbolic of the highly polarized reactions viewers had toward Chipotle's *Farmed and Dangerous* series, and the company's larger "Food with Integrity" campaign.

> I hated Chipotle to begin with. I only hate them even more now. I will never eat there and also encourage everyone I come in contact with not to eat there. I liked them before. Now I like them more. :)

DISCUSSION AND CONCLUSION

The research presented shows evidence of mixed and, at times, highly polarized consumer opinions about Chipotle as a company, and the brand's "Food with Integrity" campaign. Research Question #1 focused on general perceptions of the company. As a testament to the chain's wide popularity and positive reputation, many participants used words like "fresh," "ethical," "innovative," and "delicious" to describe Chipotle. In contrast, however, other participants (especially those with ties to agriculture) described Chipotle as "deceptive," "ridiculous," "hypocritical," and "unethical." Arguably, Chipotle's longstanding marketing approach has been to intentionally adopt an "offensive" messaging strategy that negatively depicts much of the agriculture business while proactively positioning the company as distinct, separate from,

and more ethical than the rest of the food industry. Chipotle has built its brand by highlighting to consumers' negative aspects of the industrial food system while aligning itself with more positive notions of animal welfare protection and environmental advocacy.

Research Questions #2 and #3 specifically considered Chipotle's unique approach of using satirical and humorous branded entertainment content to market to consumers, and explored differences in how the messaging strategy in *Farmed and Dangerous* was perceived by consumers with varied levels of exposure and affiliation to the agriculture industry. Findings showed strong evidence of anger toward the company among members of the agriculture community, which is ostensibly one of Chipotle's key stakeholder populations. Participants affiliated with agriculture conveyed feelings of being offended, betrayed and personally attacked by Chipotle's marketing, with many participants seeming to adopt a defensive, "us against them," adversarial stance toward the company. What perhaps remains to be seen is whether this strategy, which has arguably done significant damage to Chipotle's relationship with the agriculture community, will have any long-term negative impact on the company's broader reputation or profitability. Many participants in the research conveyed strong positive attitudes toward the brand, and demonstrated little to no concern with how Chipotle satirically depicted agriculture in its marketing. Considering the general public's support for Chipotle's "Food with Integrity" message, including the satirical branded entertainment content examined here, angering and alienating farmers may do minimal harm to the company's broader success and, in fact, the divisive strategy may even serve to boost the brand's overall popularity.

It is interesting to note Chipotle's use of humor and satire within the *Farmed and Dangerous* series to convey its critical messages toward practices in the agriculture industry, as the inherent ambiguity and lightness of tone of satire allows the company to make negative claims about "big agriculture" without ever needing to be overly specific or forced to substantiate its criticisms of the industry. In a 2014 *USA Today* article following the launch of the series, Chipotle's director of communications Chris Arnold is quoted describing the comedy series as an "effective tool" to engage and educate consumers who aren't paying attention to issues in the food industry, predicting that the brand's strategy of helping people to "understand food and where it comes from" would pay dividends for the company (Doering, 2014). Reflecting the findings of this research, however, the same article also discusses multiple farmers and agriculture groups upset that the *Farmed and Dangerous* series portrayed an "unrealistic picture" of farming — and quotes an Iowa farmer as objecting "to Chipotle's bullying tactics 'that pick on someone and knock them down' to stoke demand for their products" (Doering, 2014). Another farmer in the article accused Chipotle of "using fear and twisting the truth," as part of its marketing and advertising strategy, a perspective shared by several participants in this study. The article quotes Arnold, the Chipotle executive, rejecting this notion, arguing: "the industrial ag folks tend to read it (Chipotle's marketing) as attacks on them or criticism of them. It's never our intention to produce things where that is the aim" (Doering, 2014).

As a case study, this research shows evidence that Chipotle's marketing tactics have fostered salience of a conflict or battle frame between the general food-consuming population and members of the ag community who work to grow the public's food. An ethical discussion regarding Chipotle's "Food with Integrity" campaign could be held, considering so many members of the ag community consider the company's efforts to be deceptive, manipulative, and deceitful. However, it could also be argued that due to the satirical (and therefore ambiguous) nature of a series like *Farmed and Dangerous*, members of the ag community are misinterpreting the series' exaggerated depictions of the industry—and failing to see the humor within the satire. Like many messages, branded satirical content may leave audiences—from both sides of the issue—with the unfortunate tendency to only see what they want to see.

Chipotle's brand and reputation for food quality suffered significant damage during the fall and winter of 2015, following a series of high-profile food safety issues related to E.coli and norovirus outbreaks. It is important to note that the research reported in this study was conducted before these events occurred and, therefore, consumer responses today would likely vary from those who participated in this study. It is interesting to consider, however, that the recent challenges facing Chipotle's reputation have not gone unnoticed by the agriculture community. Writing about the company's food safety and public relations issues in a January 2016 commentary appearing on Beef Magazine's website, a rancher

acknowledged feelings of "schadenfreude" toward Chipotle's struggles: "For those of us who took exception to their anti-meat, anti-mainstream agriculture messages, it is hard to have much sympathy for their mistakes and problems" (Marshall, 2016, para. 3). While any headlines of food safety issues do harm to the broader image of the food industry, in this case it is evident some within the agriculture community were not sad to witness Chipotle facing its own public image challenges.

Furthermore, Chipotle and its "Food with Integrity" campaign have seemingly become a political lightning rod and target within the broader, often partisan, debates about healthy foods, humane animal treatment, and environmental sustainability issues. In September 2015, a website titled www.chubbychipotle.com was launched, along with a full-page newspaper ad appearing in major U.S. newspapers, which declared Chipotle to be "fast food hypocrites" and outlined ways in which the company's food is fattening and unhealthy and "its marketing is highly unscientific and harms animal welfare" (Chubby Chipotle, 2016). The website and newspaper ads were created by the "libertarian leaning" group The Center for Consumer Freedom (Fickenscher, 2015), a Washington D.C. non-profit that describes itself as working to promote "personal responsibility and consumer choice" (Consumer Freedom, n.d.). In November of 2015, the same group also ran full-page ads with the headline, "You Can't Spell 'Chipotle' without 'E-coli'" and statements that described Chipotle as "Food with Deception" (Wohl, 2015). An AdAge article written about the Center for Consumer Freedom's campaign against Chipotle reported the group does not divulge the identities of its funding sources, and that the organization only "says it is funded by undisclosed restaurants and food companies" (Wohl, 2015). Other news outlets have reported that the group has received funds in the past from Philip Morris, fast food chains Wendy's and White Castle, and Tyson Foods, among others (Fickenscher, 2015). The aggressiveness of the "Chubby Chipotle" campaign shows evidence that the burrito chain and its marketing has fostered enemies not just among members of the ag industry, but conservative players in the national political sphere as well.

This research serves in part as response to recent calls by scholars to address gaps in the literature related to how organizations strategically use online content for relationship-building efforts and improved understanding of how publics respond to marketing content on social media platforms (Saxon and Waters, 2014). Findings from this study offer new insight into the ways in which audiences and consumers react to and interpret advertising and marketing messages about food and agricultural production issues. While Chipotle's "Food with Integrity" message has drawn the ire of industry and political groups, the broader strategy has arguably been effective among consumers since it was first used as the title of the company's mission statement in 2001 (Maze, 2015). This research also helps to raise new questions about the implications, risks and ethical considerations for companies considering the use of similar marketing strategies and tactics. Agriculture, marketing and communication professionals should fully explore these considerations when choosing whether or not, or how to implement similar campaigns.

Future success of Chipotle's marketing strategy, and the impact of the company's food safety issues, will continue to help illuminate some of these issues. The resonance of Chipotle's "Food with Integrity" message, and the company's overall brand promise, have likely been eroded due to the extended 2015 health scare episodes. A January 2016 article reported that Chipotle's sales were down dramatically and that the company's stock value had decreased by 31 percent since the chain's first reported E.coli incident the previous fall (Little, 2016). The same piece quoted industry analysts arguing that the positive "halo" Chipotle had previously enjoyed related to perceptions of its food quality and integrity image may be gone forever as the company has reeled from the negative headlines and been forced to adopt more traditional fast food preparation techniques in an effort to improve food safety (Little, 2016). Food marketers and ag communication professionals alike can gain valuable lessons from Chipotle, as they consider the continued portrayal of the agriculture industry within marketing and advertising campaigns.

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RESEARCH

Influence of Source Credibility on Agricultural Water Use Communication

Alexa J. Lamm, , Courtney T. Owens, Ricky W. Telg, and Kevan W. Lamm

ABSTRACT

As the agriculture industry strives to communicate with the public about its role in protecting natural resources such as water, it struggles to provide messages from sources the public trusts. The purpose of this quasi-experimental study explored public perception of agricultural water use and how perception was influenced by a video message delivered from four different sources including 1) an environmental scientist from the Nature Conservancy, 2) a farmer, 3) a regulator from a Florida water management district, and 4) a water scientist from the University of Florida. The findings revealed that overall the general public had a positive view of how the agriculture industry used water, regardless of message source. Differences between groups were evident when message source expertise and trustworthiness was dependent on domain area. Results indicated the respondents receiving the Nature Conservancy video treatment exhibited a significantly higher level of agreement with negatively framed items related to agriculture's relationship with the natural environment than the respondents receiving the farmer video treatment. Based on the findings from this study, agricultural communicators should consider the trustworthiness and perceived expertise of sources, such as representatives from regulatory agencies, educational institutions, members of the agriculture sector, or environmental organizations, when developing messages about water use targeted at the general public.

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KEY WORDS

Agriculture, Messaging, Source Credibility, Video, Water

INTRODUCTION

Human existence is based on the belief that water will remain accessible and obtainable in people's everyday lives (Oki, 2006). On average 13.2 gallons of water a day is adequate to sustain a single person and approximately 400 billion gallons of water are used in the United States each day (United States Environmental Protection Agency, 2015). Most Americans view water as a never-ending resource (Leal, Rumble, & Lamm, 2015), forgetting that only 2.5% of earth's water is drinkable (Postel, Daily, & Ehrlich, 1996). The reality is that water is a shared natural resource used extensively by people in their homes and landscapes, by businesses and industry broadly, while also being an essential part of agricultural industries (Ercin & Hoekstra, 2014; Schaible & Aillery, 2012).

According to the United States Department of Agriculture (USDA), agriculture is a significant user of ground and surface water, accounting for 80% of the nation's consumption (Schaible & Aillery, 2012). New policies and regulations have been implemented over the last several years to conserve water for agricultural purposes (United States Environmental Protection Agency, 2012). In recent years, the agriculture industry, as a whole, has made changes to conserve and protect water

resources, including farmers implementing best management irrigation practices to conserve water on farms (Schaible & Aillery, 2012), and applying only the minimal amount needed for crops (United States Environmental Protection Agency, 2012). Through improved best management practices, more water is being conserved without sacrifice to crops and livestock production (United States Environmental Protection Agency, 2012).

However, because the public is largely unaware of these proactive efforts, there continues to be many misconceptions surrounding the impact of agricultural water use (United States Department of Agriculture Natural Resources Conservation Service, 2006) which may be attributed to negative media coverage (Gaines, 2014; Whitaker & Dryer, 2000). According to Eyck (2000), media coverage of the agricultural industry is more likely to include stories involving disasters, such as food poisoning, and other general food safety issues, further eliciting fear about the agriculture industry and encouraging a negative public attitude towards agriculture (Laros & Steenkamp, 2004). This enhanced negative environment only increases the gap in understanding between agricultural producers and consumers that make up the general public (Goodwin & Rhoades, 2011; Taylor, 2013). Lundy, Ruth, and Park (2008) found consumers rely on different sources of media to stay informed about agricultural issues, indicating there is an opportunity for agriculture to have a voice in alleviating some of the public's concern. However, if agriculture in general is not trusted, the question remains of who is best suited to deliver positive messages the public will listen to about agricultural water use.

Source credibility theory (Hovland, Janis, & Kelley, 1953) describes the influence of perceived expertise and trustworthiness on how people process information and create attitudes. According to Hovland et al. (1953), source expertise is "the extent to which a communicator is perceived to be a source of valid assertions" (p. 21), while source trustworthiness is "the degree of confidence in the communicator's intent to communicate assertions he considers most valid" (p. 21). Therefore, individuals are more likely to be swayed if the source is alleged to be credible (Hovland et al., 1953). A communicator's expertise, trustworthiness, attractiveness, and power represent the psychological construct associated with source credibility. In particular, the perception of a messenger will influence how a message is perceived and whether it will change attitudes and behavior (Petty & Cacioppo, 1981; Underwood, 2003).

Source credibility theory also examines the level to which people accept information from a person they perceive to have expert status, when compared to a person perceived as less qualified (O'Keefe, 1990). For example, information that is delivered from a person who is well known and considered to be an expert should have more influence (Telg, Irani, Monaghan, Chiarelli, Scicchitano, & Johns, 2012). Therefore, a message delivered by an individual perceived as a credible source about a particular topic – agricultural water usage, for example – may have a more meaningful effect than the same message delivered by someone not seen as credible (Telg et al., 2012).

Ayeh (2015) examined whether source credibility factors and technology acceptance factors were predictors of online travelers' attitude and intention to use consumer-generated media for travel planning. The findings indicated that source credibility factors captured variations in perceived usefulness and attitudes not be accounted for by a model that only included technology acceptance (Ayeh, 2015). The study findings were consistent with earlier studies that confirmed the important effects of source trustworthiness on numerous consumer outcomes, such as attitudes towards a message, source credibility, and disposition towards information (Jin, Cheung, Lee, & Chen, 2009; Kerstetter & Cho, 2004; Lafferty & Goldsmith, 1999).

Barr, Irlbeck, Meyers, and Chambers (2011) interviewed Texas television journalists to determine factors they used to select interview sources for stories on agriculture topics. Results indicated that government sources were considered to be credible, with commodity groups and corporations seen as less credible. Interest groups were regarded as biased. Researchers noted that the television journalists would use sources from special interest groups, even though they were viewed as being more biased, when these groups were perceived to have factual information to support a story. Lundy et al. (2007) studied the effects of a reality television show, to determine whether viewers' observations of individuals working in the agricultural field could alter perceptions of agriculture. Results indicated the reality television show did influence viewers' opinions and behavior. These findings were supported by Meyers, Irlbeck, and Fletcher (2011), who also found the public relied on the media, in general, to acquire information about current events related to the agricultural industry.

PURPOSE AND OBJECTIVES

The research presented in this paper is from a larger study examining the general public's attitudes and perceptions of how the agriculture industry in Florida uses water. The purpose of the study presented in this paper, therefore, was to identify the role source credibility plays in public attitude formation and perceptions regarding agricultural water use. The study was driven by the following research objectives:

1. Identify public attitude towards and perceptions of agricultural water use.
2. Determine if the source of a message influences public attitude towards and perceptions of agricultural water use.

METHODS

This study used a quasi-experimental design delivered through an online survey to answer the research questions. The population of interest was residents of Florida, age 18 or older. The study was limited to this state because water has been recurrently identified as the number one issue facing the state, both from an agricultural and natural resources perspective (Odera, Lamm, Irani, Dukes, Carter, & Galindo-Gonzalez, 2013).

As noted, the research presented here was part of a larger study with two sections of the survey instrument germane to the findings in this study: attitude towards agricultural water use and perceptions of agricultural water use. The study was funded by three major statewide agriculture organizations: Florida Farm Bureau, Florida Dairy Farmers, and the Florida Department of Agriculture and Consumer Services. Prior to answering any questions about their attitudes and perceptions about agricultural water use, the respondents were randomly assigned one of four videos to watch that described how farmers use best management practices to reduce agricultural water use and how the public uses more water than farmers, on average. The videos can be viewed at:

https://www.youtube.com/watch?v=OTLkyAemxEM

https://www.youtube.com/watch?v=5BIHTwk-In4

https://www.youtube.com/watch?v=ba3XV0AtyuM

https://www.youtube.com/watch?v=-ku5-mLEFeI

The four videos were identical except for the source treatment. When the speaker was on screen, a different title (lower third, below the speaker's face) was presented. In addition, a logo and Web address was presented at the conclusion of the video, aligning with the title presented when the speaker was on screen. These four sources were 1) an environmental scientist from the Nature Conservancy, 2) a farmer from CostaFarms, 3) a regulator from the Florida Water Management District, and 4) a water scientist from the University of Florida. Screen shots of where the differences existed within the video can be seen in Figure 1.

Timing was set on the videos to ensure the respondents watched the video in its entirety and a check was put in place asking the respondents if they were able to watch the video upon its conclusion. If the respondents did not spend enough time on the video or check that they were able to watch the video, they were exited out of the survey.

Figure 1. Screenshots of the sources displayed in the video treatments. Top to bottom source was identified as farmer, a water management district regulator, a water scientist from a university, and an environmental scientist from the Nature Conservancy.

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After watching the randomly assigned video, respondents were asked to indicate their attitude towards agricultural water use on a six-item semantic differential scale. Respondents were given the sentence: "When it comes to protecting water in Florida, farmers are…." Respondents then chose where on a five-point scale between two words their attitude most closely aligned. The word pairings were *good/bad, positive/negative, careful/careless, thoughtful/thoughtfulness, cautious/reckless, innovative/old-fashioned.* A score of one indicated a negative attitude, while a five indicated a positive attitude. Responses to the six word pairings were averaged to create an overall attitude towards agricultural water use score. Reliability was calculated ex post facto and was found to be sufficient with an observed Cronbach's α of .95.

Respondents were then asked to indicate their level of agreement with a variety of statements about agriculture and farming practices to determine their perceptions of agricultural water use. Key concepts examined included trust in agricultural water use and protection, agricultural use of resources, agriculture's relationship with the natural environment (positive and negative frames), and the impact of agriculture on open space and wildlife. All questions were asked using a 5-point Likert-type agreement scale with 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree nor Disagree*, 4 = *Agree*, 5 = *Strongly Agree*.

An example of the four items making up the trust of agricultural water use and protection concept is: *Farmers can be relied upon to keep their promises when it comes to water use*. An example of the three items making up the agricultural use of resources concept is: *Farmers should save as much water as possible when irrigating crops even if it means I have to pay more for the food I purchase*. An example of the five items making up the agriculture's relationship with the natural environment - positive frame concept is: *Farming protects our natural environment*. An example of the four items making up the agriculture's relationship with the natural environment - negative frame concept is: *Farming causes water runoff*. An example of the seven items making up the impact of agriculture on open space and wildlife concept is: *Protecting farms is a way to preserve open space*.

Responses to the series of items within each key concept area were averaged to create overall index scores. Reliability of the five indexes were calculated *ex post facto* resulting in Cronbach's α coefficients of .73 or higher. Lastly, respondents were asked a series of demographic questions.

An expert panel with expertise in water quality and quantity issues, agricultural water issues, and public opinion research reviewed the instrument for content, face validity, and survey design and Institutional Review Board approval was obtained. The panel of experts included the Associate Director of the University of Florida Center for Public Issues Education for Agriculture and Natural Resources, the Associate Director of the Office of Agricultural Water Policy at the Florida Department of Agriculture 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 a background in survey design and construction.

To collect public opinion, a non-probability opt-in sample was obtained from a public opinion survey research company. Non-probability samples are often used in public opinion research to make population estimates (Baker et al., 2013). While non-probability samples require adjustments for nonrandom selection and nonresponse, previous literature has shown non-probability samples have yielded results that are as good as or even better than probability-based samples (Abate, 1998; Twyman, 2008; Vavreck & Rivers, 2008).

The public opinion survey research company sent a link to the developed survey to Florida residents representative of the state population based on the 2010 Census data. A response rate of 89% (N = 525) was obtained. Non-probability samples require adjustments for nonrandom selection and the potential for non-response (Baker et al., 2013). Weighting was conducted *post hoc* using post-stratification methods (Kalton & Flores-Cervantes, 2003) based on the 2010 Florida census data to ensure the sample reflected the adult Florida population and to provide results intended to approximate the population of interest. When using non-probability opt-in samples post-stratification weighting methods have been found to yield results that are as good as those obtained using probability-based samples (Abate, 1998; Twyman, 2008). Data was analyzed using SPSS statistical software including descriptive statistics and ANOVAs.

RESULTS

Demographics

Demographic data indicated the respondents were 51.6% female and 48.4% male (Table 1). The majority (75.6%) of respondents were Caucasian/White (Non-Hispanic), with Hispanics representing 17% of the respondents, and African Americans representing 15.8% of the respondents. Over half of the respondents were less than 50 years of age (54%). The number of years respondents had lived in the state were fairly equally distributed.

Table 1

Demographics

Characteristic	*n*	%
Sex		
Female	271	51.6
Male	254	48.4
Race		
African American	83	15.8
Asian	34	6.5
Caucasian/White (Non–Hispanic)	397	75.6
Native American	0	0
Other	11	2.1
Hispanic Ethnicity	89	17.0
Age		
18 – 29	112	21.5
30-39	89	17.0
40-49	81	15.5
50-59	107	20.5
60-69	95	18.2
70-79	31	5.9
80 and older	7	1.3
Years Living in Florida		
0-9	115	21.9
10-19	131	25.0
20-29	133	25.3
30 and above	146	27.8

Note. Percentages have been rounded and may not total to 100.

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Attitude towards and perceptions of agricultural water use

The overall descriptive results were calculated prior to accounting for treatment effects. Results indicated respondents had a generally positive attitude about agricultural water use (Table 2). Respondents agreed agricultural producers should minimize their use of resources even if it means they would have to pay more for products. Respondents also agreed agriculture has a positive relationship with the natural environment, and agriculture has a positive impact on protecting open space and wildlife. Respondents indicated they trusted agriculture's use and protection of water resources. Respondents indicated a neutral response to the set of questions negatively framed around agriculture's relationship with the natural environment.

Table 2

Attitudes and perceptions of agricultural water use based on indexes

	M	*SD*	α
Attitude towards agricultural water use	4.28	.83	.94
Agricultural use of resources	3.82	.89	.85
Agriculture's relationship with the natural environment – positive frame	3.80	.67	.84
Impact of agriculture on open space and wildlife	3.75	.64	.81
Trust in agricultural water use and protection	3.69	.66	.73
Agriculture's relationship with the natural environment – negative frame	3.50	.76	.85

Influence of message source on attitude towards and perceptions of agricultural water use

A series of ANOVAs were run to determine if statistically significant differences existed, based on respondent treatment group (Table 3). The results indicated there were statistically significant differences in responses based on treatment group to the *agriculture's relationship with the natural environment* concept when the items were negatively framed ($F = 2.85$, $p = .04$) and *impact of agriculture on open space and wildlife* concept ($F = 4.71$, $p = .00$). Even though these results were significant, the effect sizes were not very large (.02 and .03 respectively), therefore the data was explored further.

Table 3

Attitudes and perceptions of agricultural water use based on message source received

	Nature Conservancy Scientist *M (SD)*	University Scientist *M (SD)*	Water Management District Regulator *M (SD)*	Farmer *M (SD)*
Attitude towards agricultural water use	4.31 (.80)	4.34 (.77)	4.20 (.80)	4.24 (.92)
Trust in agricultural water use and protection	3.64 (.71)	3.73 (.64)	3.63 (.67)	3.72 (.63)
Agricultural use of resources	3.82 (.80)	3.77 (.94)	3.76 (.95)	3.90 (.89)
Agriculture's relationship with the natural environment – positive frame	3.72 (.68)	3.88 (.61)	3.78 (.72)	3.83 (.67)
Agriculture's relationship with the natural environment – negative frame*	3.64 (.63)	3.52 (.74)	3.47 (.79)	3.38 (.85)
Impact of agriculture on open space and wildlife**	3.60 (.69)	3.82 (.57)	3.73 (.61)	3.86 (.64)

Note. *$p < .05$ level; **$p < .01$

A Bonferroni test was run post hoc and found there were statistically significant differences between the respondents receiving the Nature Conservancy and farmer video treatments within both concept areas. The mean difference (.26) between the group receiving the Nature Conservancy treatment and the farmer treatment on the *agriculture's relationship with the natural environment* - negative frame concept was significant ($p = .03$). The results indicated the respondents receiving the Nature Conservancy video treatment exhibited a significantly higher level of agreement with negatively framed items related to agriculture's relationship with the natural environment than the respondents receiving the farmer video treatment. In addition, the mean difference (.26) between the group receiving the Nature Conservancy treatment and the farmer treatment on the *impact of agriculture on open space and wildlife* concept was significant ($p = .00$). The results indicated the respondents receiving the farmer video treatment had a significantly higher level of agreement with the items indicating agriculture has a positive impact on open space and wildlife than the respondents receiving the Nature Conservancy video treatment.

DISCUSSION

The results of this study provide an empirical analysis of the general public's attitude towards and perceptions of agricultural water use. Additionally, an analysis of the quasi-experimental research design was able to explain whether source credibility and, specifically, message source influence the general public's attitude towards and perception of agricultural water use. The use of a large and demographically representative sample supports the observations and conclusions associated with this research.

Overall, the results indicated the general public had a positive attitude towards how the agriculture industry uses water. Respondents were supportive of agriculture taking the steps necessary to conserve water, even if such actions had a financial consequence to them through increased food prices. Additionally, respondents indicated agriculture had a positive relationship with the natural environment and a positive impact on open space and wildlife. Respondents also tended to agree agriculture used water in an appropriate manner and was committed to protecting water resources. From a critical perspective, respondents were unsure whether agriculture had negative effects on the natural environ-

ment through post-agricultural water use such as run-off. Nevertheless, the general public was inclined to be supportive of agricultural water use and was largely positive across use dimensions.

An implication of these findings is that the general public may have more positive views about agricultural water use than previously thought. For example, Lamm, Lamm, and Carter (2015) found there was a statistically significant knowledge gap between the general public and agricultural opinion leaders regarding water issues in Florida. Specifically, agricultural opinion leaders were found to have a higher level of knowledge of water issues than the general public. However, findings associated with the current research may indicate that the knowledge gap is less relevant than the general public's attitude toward and perception of agricultural water use. Future research is recommended to further analyze whether the general public's attitude is influenced by their knowledge of water issues.

Based on these findings, it would appear that agriculture is well positioned to take advantage of generally favorable public perceptions of agricultural water use. Based on the concepts of agenda setting, framing, and priming within the media (Iyengar & McGrady, 2007), a recommendation would be to continue to cultivate such perceptions and to educate the general public on the current and planned actions the agricultural industry intends to undertake regarding the stewardship of Florida's water resources through available media channels. For example, the 79% reduction in phosphorous flowing agricultural lands near the Everglades was promoted within a newspaper editorial:

> To put this achievement in perspective, state law requires Everglades Agriculture Area farms to achieve an annual 25 percent reduction in phosphorous. Not only did local farmers reduce phosphorous levels by more than three times what the law required, but they continued a 20-year trend in which farmers have reduced phosphorous levels by an average of 56 percent annually (Collins, 2015, para. 2).

Efforts to proactively participate in the agenda setting process and continuing to focus on priming a positive and supportive attitude towards agricultural water use should yield beneficial results.

According to source credibility theory, to maximize the potential value associated with messaging, it is important not only to focus on what information to communicate, but also to ensure the right source is delivering the information (Hovland et al., 1953). The results of the current research support these assertions, and confirm that source credibility is germane to agricultural water use messaging (Hovland et al., 1953) however, given the small effect size, these findings should be used with caution. Acknowledging this, the mean score observed with respondents exposed to the farmer source treatment regarding the impact of agriculture on open space and wildlife was statistically significantly higher than scores associated with the Nature Conservancy treatment. Perhaps farmers are considered experts in the field and, therefore, are recognized as a credible source and listened to more closely (Erdem & Swait, 2004).

To the contrary, mean scores associated with respondents exposed to the Nature Conservancy treatment were statistically significantly higher than those in the farmer treatment related to agriculture's negative relationship with the natural environment. This finding is noteworthy as the experimental videos were constructed from a positive perspective; no negative relationships between agriculture and the environment were indicated. Therefore, the higher mean scores associated with the negative-framed questions in the Nature Conservancy condition may not be so much a consequence of delivered content as with priming associated with the information source.

An implication associated with these findings is that information source must be treated with paramount importance when delivering messages to the general public. As source credibility theory posits, messages should be delivered by individuals with expertise and trustworthiness within the content domain. For example, watershed benefits associated with agricultural actions may be best delivered by an agriculturalist from the area. However, it may also be appropriate to limit messaging to only those areas within which the source may be perceived to be an expert. The same farmer who is credible regarding the local watershed may lack the necessary credentials to be an authority on national water policy. A recommendation for future research would be to examine the boundary conditions that may exist related to domain specific source credibility from both a content and geographic perspective.

A further recommendation associated with these research findings is to engage in message coordination with individuals or organizations that have similar goals (Hahn, Greene, & Waterman, 1994; Lamm et al., 2015). Coordinating messaging should improve coverage and message salience. However, prior to engaging in a coordinated effort, a thorough review of perceived domain expertise and trustworthiness alignment is suggested. Specifically, individuals or organizations with parallel yet non-redundant expertise should result in superior message clarity and benefit relative to those that are composed of entities viewed with disparate levels of expertise. Future research is recommended to examine how audience perceptions are impacted by messages delivered by multiple parties within varying degrees of perceived expertise. Results associated with such research may better inform the flexibility with which coordinating entities are engaged.

It is also recommended that further research examine how individuals' previous experience with agriculture influences how information from a message source is received. Perhaps individuals who have grown up in a rural area, have experience with agriculture, or have family members engaged in agriculture are more likely to perceive a farmer as an expert than those who do not. In addition, perhaps political ideology plays a role in perceived source credibility. Individuals with a more conservative ideology may perceive information from a source, such as the Nature Conservancy, differently than those with a more liberal ideology. Exploring the influences of detailed demographic characteristics could further guide the best approaches to communicating about agricultural water use.

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