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Abstract

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JOURNAL OF APPLIED COMMUNICATIONS

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JOURNAL OF APPLIED COMMUNICATIONS

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RESEARCH

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RESEARCH

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RESEARCH

Marketing with More: An In-depth Look at Relationship Marketing with New Media in the Green Industry

Scott Stebner, Lauri M. Baker, Hikaru Hanawa Peterson, and Cheryl R. Boyer

ABSTRACT

Garden-center businesses have unique challenges related to the marketing of products. New and social media offer a way for garden-center operators to connect with customers and market products online in an effort to compete with box stores. The purpose of this qualitative case study was to explore how some garden-center businesses use social media and email marketing to build relationships with customers. Findings from eight in-depth interviews indicate garden-center stakeholders believe they are practicing relationship marketing through their e-newsletter and Facebook accounts. However, strategic planning is limited to an e-newsletter, marketing efforts show characteristics of one-way communication, and strategic measurement is absent. Lack of measurement could hinder the formation of profitable relationships. Owners, employees, and customers place high importance on educational content shared via social networks, but view advertising through new media differently. It is recommended garden-center owners and employees implement relationship-marketing techniques based on strategic measurement and planning to produce loyal brand advocates.

KEY WORDS

Case study, Green Industry, New-media Marketing, Relationship Marketing, Social-Media Marketing

INTRODUCTION

Ornamental plants are a unique market within the agricultural industry. The relative number of consumer purchases are low, unlike food purchases, which provides challenges for garden-center marketing, (Palma, Hall, & Collart, 2011). Therefore, keeping customers involved and motivated to buy ornamental plants is pivotal to garden-center businesses (Hodges, Hall, & Palma, 2011). Dissatisfying gardening experiences by homeowners in past purchases cause them to be wary of new purchases, and their lack of knowledge often hinders future purchasing potential, serving as a barrier to garden-center profit (Niemiera, Innis-Smith, & Leda, 1993). These experiences may lead to decreased satisfaction of consumers, which impacts repeat buying decisions. Thus, garden-center owners should place more emphasis on educating and delighting their customer base (Hicks, Page, Behe, & Fernand, 2005). As part of the marketing process, Behe and Barton (2000) suggest garden-center staff should seek out the opinions of their customers to ascertain the level of service (and delight) they are providing.

Social media is one way a company can communicate directly with a target audience while allowing customers to communicate with other customers. For this reason, social media is considered a hybrid-marketing tool (Mangold & Faulds, 2009) through which businesses gather essential information about consumers to differentiate and market products while reducing advertising expenditures (Bolataeva & Cata, 2011). Such benefits can be "especially advantageous for smaller to medium-sized firms in the consumer products and services industry, which often lack the resources necessary for employing traditional forms of advertising" (Castronovo & Huang, 2012, p. 117).

MEASURING THE IMPACT OF SOCIAL-MEDIA CAMPAIGNS

The long-term impacts of a social-media marketing program are not always immediately measurable (Yue, Dennis, Behe, Hall, Campbell, & Lopez, 2011), because it consists of multiple channels with many influences (Fagerstrom & Ghina, 2013). Measurement tools have been slowly advancing (Duncan, 2010) to quantify the ability of social media to generate positive buzz, increase awareness, increase sales, or increase loyalty (Castronovo & Huang, 2012). The current benchmark for measuring generated buzz and awareness on social media is engagement, which is generally viewed as "a visitor taking some action beyond viewing or reading...commenting, registering, downloading, retweeting, and so on" (Paine, 2011, p. 60). The level of engagement on social media indicates the consumers' level of interest in the online presence of the organization. Therefore, engagement is an important first step in building a relationship between customers and a brand (Paine, 2011). Tracking and measuring engagement levels can help identify if businesses are listening to customers or simply communicating in a one-way dialogue (Paine, 2011).

Email Marketing

Another way for companies to engage with customers is through email marketing. Castronovo and Huang (2010) stated email can be an invaluable tool in customer relationship management, and offer firms straightforward and cost effective ways to acquire customers and strengthen customer relationships (Heinonen & Strandvik, 2003). Marketers can also use email to reach out to customers, build a stronger brand identity, and increase customer loyalty. Effectiveness of email campaigns can be measured in terms of its delivery and open rates, link clicks, and brand website traffic (Castronovo & Huang, 2010). Newsletters that are sent via email are called "e-newsletters, [and] work by providing information that is relevant to a targeted audience" (Baggot, 2011, p. 166). Subscribers to a business' e-newsletter enter a social transaction where they offer their email address in exchange for valuable or interesting content. In doing so, a firm is viewed as generous and trustworthy, resulting in increased loyalty (Baggot, 2011).

Relationship Management Theory

Theoretical principles of relationship management theory served as a conceptual framework for this study. Ledingham and Bruning (2000) recommend organizations approach public relations as a two-way symmetrical approach "that emphasizes building and maintaining relationships" (p. 65). In 2003, Ledingham further developed a framework for public relations that incorporated four key relational perspectives: 1) recognizing the pivotal role relationships play in public relationships; 2) viewing public relations as management of relationships; 3) identifying various types of public relationships with organizations and its influential characteristics; and 4) the construction of models for organization-public relationships that leave room for relationships, their processes, and the positive and negative consequences of those relationships. Measurement of key components of consumer relationships include the ability to influence each other, trust and integrity, satisfaction, mutually beneficial, symbiotic relationships, and concern for each other's wellbeing. A symbiotic relationship built on shared concern for each party is the pinnacle of relationship marketing. Measurement tools must be used in order to obtain this level of relationship with consumers (Paine, 2011).

PURPOSE AND RESEARCH OBJECTIVES

While social-media marketing and email marketing have been studied in other industries, there is a gap in knowledge related to how these marketing tools are used in garden centers. This study sought to understand how some garden-center businesses use social media and email marketing to build a relationship with customers. For the purpose of this study, we used the term "new media" to describe social media and email marketing as one variable of interest. The following research questions guided this study:

> RQ1: How are selected garden-center employees and owners using new media to build relationships with customers?
>
> RQ2: How are garden-center customers engaging with new-media content?

METHODS

The method of data collection for this exploratory study was in-depth, semi-structured interviews, because these are an effective method for gaining an increased understanding of participants' experiences (deMarrais, 2004). This study is classified as a case study, in that it is an in-depth look at the experiences of the participants in this study. It is not meant to generalize, but to understand the feelings and perceptions of those involved in the study (Yin, 2012). For the purpose of a case study, there is no minimum of participants needed, as it is a look at the experiences of those under investigation. In-depth interviews, by nature, allow the researcher a framework or structure to conduct the interview with the freedom to explore relevant issues to the participant (Legard, Keegan, & Ward, 2003). Based on the recommendations of Creswell (2007), Flick (2009), and Krueger (1998), the interviews were guided by the following principles: lasted 60 to 90 minutes in length; consisted of open-ended questions; used increased specificity as the interview progressed; and followed the opening, introductory, transition, key, and ending principles. Questions were initially broad in scope and narrow in specificity, because a researcher "should ask unstructured questions first and introduce increased structuring only later during the interview to prevent the interviewer's frame of reference being imposed on the interviewee's viewpoints" (Flick, 2009, p. 151). All questions and designed prompts were evaluated and approved by a panel of experts for face validity. The panel included a state Cooperative Extension specialist focused on ornamental crop production and garden centers, a professor in agricultural economics, an associate professor of agricultural communications, and an endowed chair in business administration who focuses on relationship marketing.

A purposively selected list of 23 garden centers was generated by a state Extension specialist with expert knowledge of existing Kansas garden centers. Facebook engagement rate was used to identify high performing and low performing garden centers on Facebook. This method was used because previous work in this area indicated engagement should be the key metric used to evaluate consumers' interaction and the establishment of a relationship with the business (Paine, 2011). In order to accurately measure and compare the engagement rate of one Facebook page to another, Smitha's (2013) formula was used which is: engagement = (likes + comments + shares) / total fans. The engagement rates were averaged over the previous 60 days and metro and non-metro garden centers were ranked from highest to lowest. This resulted in a sample of four garden centers with one metro and one non-metro garden center performing at or above average in Facebook marketing and one metro and one non-metro garden center performing below average (Table 1).

Table 1

Garden-Center Characteristics

Store	Description	New Media
A	Garden center A is family owned and located in rural Northwest Kansas. There are two other garden center locations in Nebraska. In addition to offering retail plant material to customers, the garden center also offers landscape design and construction services and does approximately 20% of its sales online through eBay or Amazon.	B,E,F,G,H,P,T
B	Garden center B is located near Topeka, Kansas, and was established in the 1950's. It has gone through several ownership changes. The primary revenue source for the garden center is in retail sales of plant material and gardening supplies like fertilizer and weed killer.	E, F
C	Garden center C is located in Wichita, Kansas, and is in its fourth generation of ownership. The primary focus of this garden center is in retail sales split across two locations. In addition to retail plant supplies, the garden center also runs a gift store and a microbrewery store.	B, E, F, I, P, T
D	Garden center D is located in a small town in Western Kansas and is currently in its first generation. The store focuses on retail plant supplies and a year-round gift shop is also a significant component of the business.	F

* *Note.* B=blog, E=e-newsletter, F=Facebook, G=Google Plus, H=Houzz, I=Instagram, P=Pinterest, & T=Twitter

Eight interviews were conducted with six participants who were employees or owners and two participants who were garden-center customers. The six employees and owners were used to address RQ1, and the two garden-center customers were used in combination with the six employees and owners to address RQ2. The participants at each garden center included the owner and the employee most responsible for social-media content. After the interviews, participating garden centers were asked to make a Facebook post to recruit volunteers for the study. Participating customers were compensated for their time with a $25 gift card to the garden center paid for by the research team. Three of the four garden-center employees posted the invitation on the garden-center Facebook page. Two participants from different garden centers responded and participated in the study (Table 2).

Table 2

Participant Characteristics

Pseudonym	Participant Description	Store
Annie	Annie is an employee at garden center A. She graduated from Kansas State University with a degree in landscape design and took a class in marketing. She is the sole landscape designer for the garden center and is also the marketing manager. She personally uses Facebook and Pinterest for her personal social media.	A
Andy	Andrew is the owner of garden center A. He spent the majority of his career farming. However, when faced with the difficulty of finding a way for the farm to support his children and his retirement, he decided to build a garden center. He does not use social media in his personal life.	A
Brad	Brad is the general manager of garden center B, and he oversees all of the marketing. Brad does not use social media for personal use.	B
Chris	Chris is the fourth-generation manager of this garden center and received a master's degree in business administration. His current role is president of the garden center. He oversees the operations and marketing of the garden center.	C
Carl	Carl is the third-generation manager and is the current CEO. He identified his primary responsibilities are helping with the daily operations, preparing new media content, and taking pictures for marketing purposes. He operates two blogs for the garden center and has a personal blog.	C
Cassie	Cassie is a customer and identifies herself as a marketing and sales representative. She started gardening to relieve the stress associated with her day job. She heard about the garden center through a television advertisement in the 1990's. Her primary interests are in low-water gardening and yucca plants.	C
Diana	Diana is the owner of garden center D and works alongside her husband. Her primary responsibilities are with customer service and education. She is also the sole manager of the Facebook page and is in charge of television and radio advertisements.	D
Donna	Donna is a customer at garden center D. She and her husband own a house in the same town as the garden center and their primary area of interest is in re-establishing their lawn. They were referred to the garden center by friends after a poor experience with a competing garden center.	D

* *Note.* pseudonyms beginning with A are from garden center A, ones beginning with B are from garden center B, those beginning with C are from garden center C, and ones beginning with D are from garden center D.

Interviews were transcribed by the researcher and an assistant and were entered into NVivo10 (QSR International Pty. Ltd., Doncaster, Victoria, Australia) for coding and analysis. Glaser's (1965) constant comparative method assisted in categorizing responses into relevant major themes. The constant-comparative method allows the researcher to identify

themes that occur in a theoretical fashion and to develop in a natural way from the participants' responses. In this way, the researcher becomes the research instrument by using his or her direct experience with the interviews to identify appropriate commonalities between responses (Flick, 2009).

Credibility, reliability, and transferability are essential components of a qualitative study, and the onus is on the researcher to demonstrate the findings result from data and not subjectivities (Shenton, 2004). All interviews were recorded and transcribed by the research team. All participants were debriefed by a researcher to ensure written data was synonymous with participant perception. Although in-depth interviews can yield rich and meaningful data in exploring the experiences of participants, caution should be used in generalizing the findings beyond the specific units of analysis under specific situations in which they were observed (Flick, 2009). The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Committee for Research Involving Human Subjects / Institutional Review Board for Kansas State University (project #7183) on 19 May 2014. Participants were assigned pseudonyms to protect their identity.

Additionally, researchers must include their own subjectivities within the framework of research and acknowledge such subjectivities both internally and to the public in order to understand the influence such assumptions have on the creation, evaluation, and analyzing of research (Creswell, 2007). An ontological lens grounded in a post-positivist paradigm guided the study. The ontological assumption uses the data collected from participants to show different ideas and is concerned with "the nature of reality and its characteristics" (Creswell, 2007, p. 16). The researcher occasionally entered into a methodological assumption of practice in that prior knowledge, a priori assumptions, and continuous change based upon evidence found in the field which guided the research.

FINDINGS

RQ1: How Are Selected Garden-center Employees and Owners Using New Media to Build Relationships With Customers?

Garden-center owners and employees were asked questions pertaining to the thought process, planning, and scheduling of marketing content. Questions were structured to learn about relationship building prior to asking specifically about building relationships with customers

A Desire for Relationships.

Participants from every garden center identified some desire to use new media to foster meaningful relationships with customers that would translate into increased profit potential. Brad spoke of how he tries to leverage a personal tone through the e-newsletter. "I think it's more effective when content is not just a bunch of bullet points or descriptions… When it's kind of connected with somebody on a personal level…people connect more with [people] than they do a bunch of features." Carl also expressed a desire to step away from traditional advertising and tell human-interest stories in an attempt to build a relationship and said, "Telling personal stories sets us apart from the competition or at least the big box stores."

In regard to how new media can help develop relationships with her customer base, Annie mentioned, "there's a loyalty that you can build. They feel like we're here and we're available to help." Andy had similar sentiments and said, "You've got to reach the person in a way that they know you truly care about their success."

Don't Sell. Build a Relationship.

Most garden-center participants agreed trying to directly sell to the consumer through new media was not a beneficial practice and should, in most cases, be avoided. Brad said, "A business trying to sell stuff [on Facebook] is in the way. That's not what their account is for…I don't know that I'm going to see [Facebook] being used a lot more [for business]." Diana mentioned personal posts "do better than when I try to sell something…every time I try to sell something I get slapped down. Stay away from direct selling…Encourage people to come in."
Carl also viewed his marketing efforts as a relationship management tool and said, "[my goal is] trying to build a con-

nection and build a relationship…You can [build a relationship] one-on-one with a person or through social media." Chris said, "if [my post] is something I would consider an advertisement, I wouldn't expect much engagement with customers."

E-newsletters Are the Medium for Relationships.

Participants at three of the four garden centers preferred e-newsletters for building relationships with customers. The one garden-center employee that did not mention an e-newsletter did not have one. Chris and Carl mentioned relationships are more effectively built through the e-newsletter than through social-media platforms like Facebook. Carl mentioned that if he were to recommend a platform to market to the consumer, he would focus on e-newsletters that tell a story. "You need to be doing an e-news and just tell stories." This platform offered a way for garden centers to show the personal side of the business and share stories of what was happened at the garden center.

Market To the Consumer Through Educational and Valuable Content.

All stakeholders identified the value of content is the most important aspect of any post and all content should provide value to the customer. Andy mentioned the necessity of valuable content and said, "There's no substitute for [good content]…People won't give you their email if they think you're just going to send advertising to them." Annie alluded to the concept that good content has the end result of educating the consumer. "Ultimate success," she says, "would be for customers to be informed about what we have and what to do."

Participants hoped educating customers would produce a profitable relationship. Brad said, "We don't [educate the consumer] for the sake of education. The only reason we're [educating them] is to make money. Not trying to sound greedy, but we're not Extension." Chris mentioned he tries to, "provide information to customers. If we've got an unexpected frost coming…or bag worms are starting to hatch…trying to relay that information to people." Diana posts "things you should be doing with gardening."

E-newsletter Involves Strategic Planning.

All participants who used an e-newsletter believed it was an integral part of their marketing strategy. Brad stated, "We talk about [the newsletter] as a group and try to come up with an outline…[that] will do something for business." Chris spoke of a consistent release strategy and stated, "E-news goes out on Wednesday. [We're] trying to stay fresh in the customer's mind about the upcoming weekend. I think if we go earlier than that, they get forgotten about by the weekend." Annie mentioned she uses more strategy in regard to her e-newsletter than on her Facebook posts, saying, "I do have a lot more strategy that goes into my newsletters than into my Facebook posts."

Social-media Posting is Reactionary.

All stakeholders identified a lack of strategy for social media and viewed it as reactionary in nature with little-to-no strategic planning needed. Brad mentioned, "Social media…needs to be spontaneous." Although Annie identified she spent considerable time evaluating the analytics of her e-newsletter she mentioned, "There isn't a process [for social media]. Most of the [postings] aren't strategized." Chris said, "We really don't have a well-defined strategy," and Andy said, "there's no strategic planning." Diana mentioned, "there is no strategy." When asked about an editorial calendar she replied, "What's that?"

Garden Centers Are Not Learning From Customers Online.

All participants identified communication with customers and fostering a relationship through Facebook or the e-newsletter as vital to differentiating their business from large retailers. However, participants could not identify specific examples regarding what they learned about their customers. Annie said, "I've really never sat down and thought about what I learn about my customers online." Brad, Chris, and Andy had similar responses. When asked what he has learned about his customers from new media, Brad replied "nothing."

RQ2: How Are Garden-center Customers Engaging With New-media Content?

In order to assess this research question, garden-center employees and owners were asked about customer interaction via new media. Additionally, two garden-center customers were asked about their experiences with the garden centers using new media.

Customers Share Positive Garden-center Experiences With Their Friends.

Both customers mentioned a history of praising the garden center for great customer service by creating a post on the "wall" of the garden-center's Facebook page. Donna said, "I shared a post before when I first liked them…When we were in the middle of doing our lawn and they had been very helpful." Cassie recalled one particularly hot day visiting the garden center and said, "I got exceptional customer service one day…I wrote on [the Facebook page] an atta-boy."

Participants at half of the garden centers mentioned customers often post on the Facebook page when they have either a positive or negative experience. Diana alluded to how customers will leave positive feedback when they are either happy with the quality of a purchased product or with the level of customer support they received. She said, "people will comment about the great service. So, I'm getting feedback from the customer on what my level of service is." Annie also identified customers will post praise when products perform well, saying, "I remember one of our customers posted pictures of her limelight hydrangeas that were doing super amazing and looked awesome."

Customers Are Selective With Engagement.

Both customers identified specific intentions regarding how they engage with posts. Donna stated, "The only reason I shared [the post] to someone's page was they were doing what we were doing. [I said] Check this out, it may help you, too…I believe they bought it." Cassie mentioned she would share a post, "if it's something that is a pretty good deal I'll share that." She also said, "if the page had something on there about drought resistant flowers, I'd share that with people because it's just good information to have."

Both customers also identified several reasons for commenting on posts. Donna said, "my husband commented [on a post]. They were doing a give-away or something like that. He commented on it and said I should do it." Cassie mentioned commenting on Facebook posts helps her feel like she is part of the community and only does so "when I have something worthy to say."

Employees and garden center owners identified specific content that customers usually engage with. Annie mentioned, "a lot of times with the pictures, when they're really pretty pictures or interesting, they'll like it." Brad echoed this statement and said, "if we post a picture, someone will post a comment like what is that, can it be grown here, or do we have it in stock?" Chris mentioned when he posts a picture of plant material or products on the Facebook page people will comment with statements like, "oh I need that. Or, they will tag their friends and say check this out." In regards to the specific types of content that generate the most engagement, Chris mentioned, "if it's unique or novel they're more likely to comment."

Customers Desire Meaningful, Educational Content.

Participants at all the garden centers and both customers mentioned a desire for educational content. Andy mentioned a perceived strength of the garden-center's new media is that he "can help you be successful because we know this plant will work." Annie also mentioned a positive viewpoint of the educational content posted on new media and said, "I think people enjoy the educational part of it." Brad views new media, mainly the e-newsletter, as a way to disseminate educational content and views it as, "a great opportunity for us to educate people online."

Customers also identified a desire for meaningful content that was educational or relational in nature. Speaking of the e-newsletter, Cassie stated, "[Carl] gives value and reason for things that he's doing. Rather than just here's the new

plants…come in and buy them. He tells you where to grow them, how to grow them, and what they're good for." Although Donna describes her use of Facebook as, "mostly like the Yellow Pages," she did mention she values educational content and would, "Spend more time looking at it."

Selling is Acceptable.

While all of the employees and owners were hesitant to directly post advertisements or sale information on their Facebook page, the two customers desired some level of advertising. Customers spoke about following the garden centers on Facebook for the purpose of finding out about sales. There was a feeling that they should know about sales before people who weren't following them on Facebook. Cassie spoke of advertising on Facebook and said, "it's perfectly ok for [garden centers] to advertise the time is running out on our half price daisy sales and leave it at that. There's a difference between delivering information and having a 4x6 [mailer]." Donna also mentioned the desire to see some form of advertising and said, "a little would be good. A lot of it I might skip over, but it would be nice to see it…just don't blow up my news feed."

Helpful Sales Staff Produce Customer Loyalty.

Speaking of her experience at the garden center, Cassie stated, "I haven't talked to one person who couldn't answer all of my questions. When you go to Walmart, they can't even spell flower…Social media got me in the door, but the people [and their service] kept me there." She added, "if you're going to pay more to support a local merchant…Having that person explain how to care for it, what to look for, is huge." Donna also identified that the knowledgeable staff was the reason she only visits Diana's garden center, saying "[We visit] because of Diana. Every time we've gone in there she's been able to answer our questions or send us in the right direction."

Customers Are Seeking and Searching for Information.

Although customers want to visit the garden center for specific questions, the two customer participants indicated they use online tools such as Pinterest, Google, and email. Describing how she would find information related to gardening, Cassie stated, "I'll email Carl." And even though Donna mentioned she believes she gets better help when she visits the garden center to ask questions, she prefers the Internet. She described how she is trying to find information about how to grow herbs for the spring, "I start with Pinterest. It used to be Google, and now it's just Pinterest. Pinterest is organized in a way that makes sense in my head. It's obviously, not everything is true. It sends you to a lot of good blogs."

CONCLUSIONS AND DISCUSSIONS

The results of this study indicated selected garden-center operators have a desire to build relationships with consumers, which is a recommendation of relationship management theory. The goal is so ingrained in the employees' and owners' minds that they believe they should not sell at all on social or new-media outlets, which is one area where the customers differed from the employees and owners. The owners and employees thought it was unacceptable to sell to their customers through new media. However, the customers wanted to know about sales on certain products or other forms of advertising. They did note that too much would be negative, but they felt they followed the garden center for the purpose of finding out what was going on and sales were a part of that. This indicates that while garden-center owners and employees were seeking to build relationships, they may not be providing the customers with all of their needs, which is necessary for a symbiotic relationship to work (Paine, 2011).

While the garden centers sought to build relationships with all new media, the e-newsletter was the most mentioned related to building relationships through sharing the story of the garden center. This aligns with the recommendations of Heinonen and Strandvik (2003), who indicate e-newsletters can be a straightforward way to build customer relationships. Additionally, the e-newsletter was something that garden centers felt was an important part of the marketing strategy of the businesses. The owners and employees took time out of meetings to plan the content and focus on creating quality content that was useful to customers. There was a clear process for approaching the use of e-newsletters. Adversely, social media was seen as reactionary. Employees and owners felt that this content needed to be spontaneous and

should not be planned in advance. There was no process for how social-media content was developed and posted. This lack of planning and strategy is a concern and could hinder the building of a strong relationship between garden-center operators and customers.

One way the garden-center businesses sought to build relationships with customers was through sharing educational content through new media that was of value. The garden-center operators hoped this relationship, built on valuable content, would eventually generate sales. This aligns with previous research by Niemiera et al. (1993) that noted a barrier to customers purchasing plants was a lack of knowledge or previously unfruitful experiences with plants. Additionally, this relationship was something garden-center operators recognized as valuable and built on trust. They understood what it meant when someone provided their email. This aligns with Baggot (2011) who said e-newsletters indicate a social contract between two parties.

While garden-center owners and employees sought to build a relationship with customers through new media, they were not viewing this relationship as a two-way function. It is an important part of relationship management theory to not only view public relations as relationship management (Ledingham & Bruning, 2000), but also a shared concern with a two-way symbiotic function (Ledingham & Bruning, 2000; Paine, 2011). Moreover, garden-center employees and owners were not learning from their customers. They were not using analytics to determine the best times to post or the topics that were of most interest to customers. They were not using new media to gain the full potential of online engagement with their customers. Paine (2011) reports that measurement tools must be used to obtain an advanced level of engagement.

Customers were engaging with content from the garden-centers' new media through sharing positive experiences with their friends both online and offline. However, customers were selective with engagement. The content had to be valuable and something that they thought would help them and their friends. If customers felt they had something worthy to say, they were willing to comment or post. This feeling from customers aligned with what garden-center employees and owners thought about the need to deliver valuable content and quality education that customers were not seeing from larger box stores. Customers appreciated content that was unique, educational, and established a relationship with the owners and/or store employees. This indicates these relationships are built on trust and satisfaction, as recommended by Paine (2011).

The helpfulness of sales staff was of major importance to the customers and something the garden-center employees and owners recognized as one of their strengths. Customers and employees realized the value they provide in this area is paramount and this can take place in a new-media format in addition to in person. This could be one component of providing customer delight, as recommended by Behe and Barton (2000).

Customers were continually seeking information online on multiple platforms related to planting and gardening. While the personal connection of the garden centers were important, other sources were also consulted and played a role in making purchasing decisions.

Recommendations for Practitioners

Several recommendations are offered to garden-center employees and owners based on these findings. Since customers are looking at garden centers online for their purchases, garden-center stakeholders should consider using principles of relationship management theory and offer customers an exchange relationship in order to move them along the engagement continuum. The exchange relationship is a key aspect of relationship marketing and this allows the garden-center operators to learn from their customers. By listening to and learning from the customer, employees and owners will be able to better understand customer desires and needs. Understanding customer desires will allow garden-center employees and owners to improve the quality of educational content being shared via new media. The more valuable a business' content is on social media, the more helpful and beneficial its online presence may be.

Recommendations for New-Media Marketers

It is recommended that new-media marketers strategically plan posts or campaigns, in advance, the same way they do other forms of successful traditional advertising like radio, newspaper, television, and other new media like e-newsletters. This study also recommends measurement be considered a vital and integrated part of strategy, especially in regard to relationship management. Measurement should be conducted in order to move the customer to the loyalty phase of customer engagement and to an advocacy level of relationships. This study recommends a measured, methodical use of new media that is focused on collecting relevant data in order to actively build meaningful relationships. It is recommended communicators not view a sale as the ultimate determinant of success of new-media marketing but the presence of loyal, brand advocate relationships.

Limited resources may exist for the proper implementation of new-media marketing and any such position may be split among other responsibilities within the organization. Therefore, this study suggests organizations allocate time during leadership meetings to address all new-media marketing strategies and how to integrate it into the daily operations of the business or organization. It is also recommended that, through shared leadership meetings, daily or weekly tasks related to new-media marketing be assigned to relevant stakeholders to make sure social media is not an afterthought but instead what Mangold and Faulds (2009) identify as a hybrid-marketing element.

Recommendations for Teachers

Faculty should focus on fostering an accurate understanding of the strengths and weaknesses of new-media marketing for agricultural businesses or organizations. In doing so, faculty will ensure students transitioning into the industry will have sufficient knowledge to create new-media campaigns with the building and managing of relationships in mind. More emphasis should be placed on the necessity of accurate and in-depth measurement approaches for social media that extend beyond the basic metrics of likes, comments, clicks, and shares in an effort to establish a relationship with consumers (Paine, 2011). Students must be well versed in analyzing trends and correlations that give insight into behavior and preferences. Students must be equipped with knowledge and understanding that measurement is not an afterthought of new-media marketing but an integrated, essential, and all-encompassing strategy that guides all objectives, strategies, and tactics, and is never finished.

Future research should focus on consumers' perceptions and preferences in regard to new media. Since educational and relevant content is paramount to consumers, this study recommends research be conducted to identify what content garden-center customers desire. This study also recommends research be conducted that identifies what aspects of relationship marketing resonate with the consumer. Additionally, future research should be conducted on how the level of consumer relationships affects buying behavior. In addition to measuring the relationship of consumers who follow local businesses on social media, future research should also identify which new-media platforms yield the greatest return on investment for increased sales, increased reputation, and increased relationships.

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RESEARCH

Using Critical Thinking Styles to Inform Food Safety Behavior Communication Campaigns

Arthur Leal, Joy N. Rumble, and Alexa J. Lamm

ABSTRACT

Consumers have struggled with maintaining consistent food safety behaviors over the years, which has been affected partly by their limited food safety knowledge. Researchers in this study set to determine Florida residents' food safety behaviors while also assessing their critical thinking styles. The social cognitive theory and the University of Florida critical thinking styles (UFCTI) inventory served as the guiding framework. The UFCTI has emerged as an effective tool in measuring how an individual's critical thinking is expressed, performed, or done. Online survey responses were collected from 510 Florida residents and data were analyzed using non-probability and weighting measures. The majority of respondents washed their fresh fruits and vegetables before eating and washed their hands before food preparation. However, respondents were not as likely to disinfect their countertops before food preparation. Respondents exhibited infrequent food label reading behaviors, as well. When receiving food related information, seekers of information preferred printed fact sheets, bulletins or brochures, and demonstration or displays. Whereas, engagers preferred websites. Recommendations included developing communication efforts focused on personalized messages and targeted mediums centered around each critical thinking style. Food safety communication should emphasize the importance and risks of not reading food labels and cleaning countertops. Future research should determine how each critical thinking style uses the mediums where no significant difference was established. Research efforts should focus on expanding the UFCTI and assessing the contributions the social cognitive theory can add.

KEY WORDS

Communication, Critical Thinking, Critical Thinking Styles, Food Safety, Social Cognitive Theory

INTRODUCTION

Food safety was something exclusively discussed in the food industry, and not among consumers, during the 1960s and 70s. This was a time when consumers rarely questioned whether or not their food was safe and the newsworthiness of the topic was rarely pursued (Anderson, 2000). However, the United States has seen a growing trend of people interested in their food, concerned about food hazards and their health (Dimitri, Effland, & Conklin, 2005; Lusk & Norwood, 2011; Miles & Frewer, 2001). The health threats to the public make communicating about food risks unique and different than any other type of communication between the government, industry, consumer groups, and the public (Hallman & Cuite, 2010).

Behavioral Change

Technology has changed the way people obtain information and knowledge (Littlejohn & Foss, 2011). Health campaigns, like those that address food safety, ultimately target changing people's behaviors (Abbot, Policastro, Bruhn, Schaffner, & Byrd-Bredbenner, 2012). People are more receptive to changing their behaviors as the result of food safety educa-

tion when the risk of foodborne illnesses exists (Medeiros, Hillers, Kendall, & Mason, 2001a). Risk of foodborne illnesses serves as just one motivator that can be used to change consumers' food safety behaviors. Ellis, Arendt, Strohbehn, and Paez (2010) found that communication, reward-punishment, and informational sources were additional motivators that had the most impact on consumers' food safety behaviors. But in order for individuals to process and store information for future behavioral use, messages must be relevant and personalized (Abbot et al., 2012; Petty, Barden, & Wheeler, 2009).

Receiving Food Safety Information

Mayer and Harrison (2012) looked at the use of social media to educate college students about food safety. Through the use of a pre-test, they found college students' lack of food safety knowledge was a result of limited "exposure to food safety education and opportunities to learn and practice safe food handling practices" (Mayer & Harrison, 2012, p. 1,460). This study also found that lack of time was the most frequent barrier between people receiving food safety information. YouTube, Facebook, videos, and the internet were not only found as the preferred method of receiving food safety information, but researchers found these mediums contributed to an increase in food safety knowledge among participants (Mayer & Harrison, 2012). Abbot et al. (2012) similarly found that print media, electronic media, and interactive events improved participants' food safety behaviors: self-ratings of food safety knowledge and skills, actual food safety knowledge, food safety self-efficacy, stage of change for safe food handling, and reported hand washing behaviors.

Food Safety Behaviors

Consumers use their food safety knowledge as they evaluate food on many levels, consciously and unconsciously (McWilliams, 1997). Ultimately, deciding whether food is safe is the responsibility of the individual consumer (VanGarde & Woodburn, 1994), but American consumers have been notorious for participating in risky food handling and consumption behaviors (Byrd-Bredbenner, Abbot, Whaetley, Schaffner, Bruhn, & Blalock, 2008). Of the food-borne illness cases reported, large portions of those have resulted from eating raw foods or engagement in unsafe food preparation practices (Cody & Hogue, 2003; Klontz, Timbo, Fein, & Levy, 1995). Several studies have assessed consumers' self-reported food handling and sanitation practices (Abbot, Byrd-Bredbenner, Schaffner, Bruhn, & Blalock, 2009; Altekruse, Yang, Timbo, & Angulo, 1999; Cody & Hogue, 2003).

Cody and Hogue (2003) found that among the respondents in which a family member had experienced foodborne illness, 14% reported no change in cleaning activities. However, when respondents did increase their cleaning behaviors, it was typically in response to a family illness. The same study found that a high percentage of consumers reported washing their hands during food preparation (approximately 90%) but almost one half were extremely or very likely to forget to wash their hands before they began to cook (Cody & Hogue, 2003). Another study found that only 39% of participants reported washing their hands with soap and water before preparing food in their study (Abbot et al., 2009). Studies have also shown that consumers are less likely to wash their hands when handling raw meats, and at times, this includes when handling raw vegetables (Altekruse, Yang, Timbo, & Angulo, 1999; Cody & Hogue, 2003). Over the 3-year span of Cody and Hogue's (2003) study, consumers remained consistent in rinsing or wiping counter tops with soap and water after handling raw meat.

Wang, Zhang, Ortega, and Widmar (2013) evaluated consumers' participation in reading country of origin labels (COOL) on seafood products. These labels are effective vehicles to assess country safety standards and process quality, which differ from each country. COOL are often the only available and free source of information accessible to consumers (Wang et al., 2013). Researchers found that consumers believed country of origin (COO) information to be important. However, 41% of the participants did not observe the COO information on seafood packaging. Older consumers were more likely to care about COOs. Whereas, individuals with high seafood consumption cared more about safety labels (Wang et al., 2013). Loureiro and Umberger (2007) found consumers were more likely to purchase meat with COOL but still preferred food safety information over country of origin information, which is not on COOL. In addition to food safety behaviors, researchers have also explored consumers' food safety knowledge (Abbot et al., 2009; Finch & Daniel, 2005).

Food Safety Knowledge

In a study of young adults, Abbot et al. (2009) found participants to be knowledgeable about foods that were known to cause foodborne disease but not aware of the pathogen causing the disease. Two-thirds of the participants in the same study were knowledgeable enough to keep raw meat separate from ready-to-eat food but only 3% used a thermometer to ensure their meat was cooked to a safe temperature (Abbot et al., 2009). Finch and Daniel (2005) found emergency food relief organization workers also had limited food safety knowledge. Participants were not familiar with proper hand washing practices and safe egg and meat practices. Regularly, peoples' behaviors and knowledge can stem from critically thinking about everyday decisions (Lamm, 2015; Lamm & Irani, 2011).

Critical Thinking

Decisions are made every day, some minor (i.e., when to wake up, what to wear, what to buy at the store, etc.) and some major (i.e., who to marry, whether or not to have children, medical decisions, etc.) (Halpern, 1997). Some of the minor decisions are made without any thought and some major decisions are made with considerable deliberation (Halpern, 1997; Lannon & Gurak, 2014). "Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome" (Halpern, 1997, p. 4). It serves as a method of evaluation using purposeful, reasoned, and goal oriented consideration; critical thinking is used to calculate the outcomes of the thought process (Lamm, 2015a).

"Critical thinking calls for a persistent effort to examine any belief or supposed form of knowledge in the light of the evidence that supports it and the further conclusions to which it tends" (Glaser, 1941, p. 6). No different than any other skill mastered, critical thinking requires training and development (Pally, 1997). Reicks, Bosch, Herman, and Krinke (1994) found the use of role-playing, scenarios, personal relevance, and reflective thinking and practice were effective in encouraging people to critically thinking about food safety. Participants were able to recall previous situations they had experienced, which made the information more meaningful and germane (Reicks et al., 1994).

Consumers' risky food safety behaviors and limited food safety knowledge are likely to serve as a factor in the foodborne illnesses and diseases in the United States. Critically thinking about those decisions can affect food safety issues (Reicks et al., 1994). The focus of this study was to understand Florida residents' food safety behaviors and communication preferences, enabling the agricultural industry to engage consumers with effective communication strategies to encourage proper food safety behaviors, ultimately decreasing consumer-related foodborne illness. This study was in accordance with the American Association for Agricultural Education National Research Agenda priority seven, Addressing Complex Problems (Roberts, Harder, & Brashears, 2016). Empowering consumers through self-awareness can enable them to contribute in addressing complex problems and provide guidance in their decision-making process while creating a sustainable agricultural industry (Roberts et al., 2016).

THEORETICAL AND CONCEPTUAL FRAMEWORK

Social Cognitive Theory

Social cognitive theory served as the guiding theoretical framework for this study. In developing social cognitive theory, Albert Bandura combined the framework of social learning and human behavior (Stajkovic & Luthans, 1998). Social cognitive theory concentrates on individuals who socially interact with others to learn "knowledge, skills, strategies, beliefs, rules, and attitudes" (Schunk, 2012, p. 101). People simultaneously obtain new knowledge and learn behaviors through social environments. Within the social cognitive theory, learning is categorized into two distinct methods of obtaining knowledge: enactive and vicarious. Enactive learners are able to take past experiences, successful and unsuccessful, and apply them to future situations (Schunk, 2012). Some unsuccessful experiences are discarded but others are modified in efforts to produce positive outcomes. Social cognitive theory is unique in the scheme of other behavioral theories, with regards to consequences, in that it "informs people of the accuracy or appropriateness of behaviors" (Schunk, 2012, p.

104). People strive to perform behaviors that have positive consequences rather than behaviors resulting in negative consequences. While enactive learning is driven by what people have learned, vicarious learning emphasizes the observation of others (Schunk, 2012).

Vicarious learning occurs more through the observation of others. This may occur in a classroom, from a film, or through everyday interactions with others (Schunk, 2012). "Human self-development, adaptation, and change are embedded in social systems" (Bandura, 2001, p. 266). Vicarious learning is the most common method of learning for people and is generally a result of being a part of society (Schunk, 2012; Stajkovic & Luthans, 1998). The benefit of vicarious learning is that it comes without the consequences of actually performing actions, even while learning still occurs, and is a quicker method of learning versus performing each action (Schunk, 2012). Through the process of observation, individuals choose what events will have an impact on them and how they will act based on this new information (Bandura, 2001). Several factors play a role in the performance of learned information, which may occur at a later time: "motivation, interest, incentives to perform, perceived need, physical condition, special pressures, and competing activities" (Schunk, 2012, p. 105).

The concept behind the social cognitive theory is the idea that a change in one element will exhibit a change in another (Winham, Quiroga, Underiner, Woodson, & Todd, 2014). Using the concept of the social cognitive theory, Medeiros, Hillers, Kendall, and Mason (2001b) suggested that to change food safety behaviors, individuals must realize the risks associated with a particular action. The expectation of a certain outcome will motivate individuals to change their behaviors associated with food safety. Schafer, Schafer, Bultena, and Hoiberg (1993) found the risk of unsafe food leads to personal health threats (self-efficacy), the notion that an individual has the power to address the threat, and the motivation to maintain good health all served as predictors of food safety behaviors. Respondents who had high self-efficacy scores in this study did not ignore food safety threats but responded by engaging in safe food handling behaviors. The perception that food safety risks exist, and individuals have the ability to control their own food safety, encourages safe food behaviors (Schafer et al., 1993). Knowledge alone does not change behaviors, but rather, as established in the social cognitive theory, the interaction between personal factors, behavioral patterns, and environmental events address behavioral change (Bandura, 2001; Winham et al., 2014). Mayer and Harrison (2012) linked the social cognitive theory with social interactions through social networking, which served as a tool to engage the cognitive development of learners and provided a social learning environment.

Critical Thinking Styles

Although everyone engages in some form of critical thinking (Halpern, 1997), this study focused on critical thinking styles; this is not in reference to the degree to which an individual critically thinks but rather the process of obtaining new information or knowledge (Lamm, 2015b). Individuals typically operate within one of two distinct critical thinking styles: those individuals who seek information when thinking critically and those who engage when thinking critically (Lamm, 2015b). No one source of material contains all the information about a topic, which illustrates the need for individuals to exhibit a balanced critical thinking style. Most individuals tend to naturally work within a specific style, but the ideal critical thinker would be able to operate in both styles when necessary.

Critical thinking styles directly correlate with how individuals express, perform or complete critical thinking (Gay, Terry, & Lamm, 2015; Lamm, 2015b). Individuals who seek information are able to see the larger picture and are genuinely hungry for information. In a desire to understand complex problems in which a multitude of solutions exist, even some that might go against an individual's beliefs and opinions, seekers insist on discovering diverse viewpoints (i.e., research, readings, and questioning; Gay et al., 2011). Seekers are able to identify their own biases, predispositions, and opinions in the pursuit of better understanding complex situations (Lamm, 2015b). They then identify how those factors might influence their understanding and decisions. Engagers, conversely, tend to be more confident in their ability to assess their surroundings and use their reasoning skills in situations: reasoning, problem solving, and decision making. Engagers prefer collecting new information from their environment and via word of mouth. As a confident communicator, engagers are able to articulate the reasoning behind their resolution to others (Lamm, 2015b).

Lamm, Strickland, and Irani (2010) assessed college students' critical thinking styles. The researchers explained through their findings that critical thinking styles were a method of understanding how individuals learn and the necessity of tailoring information to encourage people to seek and engage with information. In creating informational material, educators and/or communicators have the ability to encourage critical thinking and enhance an individual's learning experiences.

Another study explored respondents' water conservation behaviors as it relates to critical thinking styles (Gorham, Lamm, & Rumble, 2014). The findings established that individuals who were seekers of information were more likely to participate in more conservative water behaviors. Conversely, engagers of information were less likely to participate in water conservation behaviors. Gorham et al. (2014) found that individuals' water conservation behaviors were associated with their critical thinking style.

PURPOSE

Researchers in this study sought to determine the relationship between consumers' critical thinking styles and food safety behaviors and to assess Florida consumers' communication preference when receiving information concerning food related issues.

RO1: Determine Florida consumers' food safety behaviors.

RO2: Determine Florida consumers' critical thinking styles.

RO3: Identify preferred communication mediums for seekers and engagers of information

RO4: Determine whether a relationship exists between Florida consumers' critical thinking style and food safety behaviors.

METHODS

An online survey was distributed via Qualtrics survey software to 827 Florida residents, 18 years of age and older; 510 completed responses were recorded. The data for this study were part of a larger survey that assessed Florida consumers' food-related perceptions. However, only three sections were used to meet this study's objectives: critical thinking styles, food safety behaviors, and preferred communication medium. Question development was generated from research-developed questions and previous studies. Respondents were presented with five items to measure food safety behaviors, using a five-point Likert-type scale ranging from 1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often*, and 5 = *Always*. A food safety behavior index was created to assess the relationship between food safety behaviors and critical thinking styles by using the summation and average of the five items to create an overall food safety behaviors index score. Respondents' critical thinking style was measured using the University of Florida Critical Thinking Inventory (Lamm & Irani, 2011), which requires respondents to react to 20 items on a Likert-type scale ranging from 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree nor Disagree*, 4 = *Agree*, and 5 = *Strongly Agree*. The UFCTI identifies learners as either an engager or seeker of information. Critical thinking style scores for engagement were reverse coded, then calculated by the summation of related items from the construct and then multiplied by 1.866. The critical thinking style score was calculated by the summation of items in the respective construct. The summation of both respondents' engagement and seeker scores produced the overall critical thinking style score for respondents (Lamm & Irani, 2011). Critical thinking scores range from 26-130. Scores 79 and above denoted a seeker of information and scores 78 and below denoted an engager of information (Lamm & Irani, 2011).

Respondents were presented with 12 communication mediums and were asked to indicate their preferred communication medium when receiving food related information by selecting all that applied. Reliability was calculated post hoc for the food safety behaviors index and resulted in a Cronbach ⍺ of .79. The reliability was also assessed for each construct in the UFCTI and resulted in a Cronbach ⍺ of .90 for the seeker construct and Cronbach ⍺ of .87 for the engager construct.

Six individuals with expertise in food science, agricultural policy and national affairs, horticulture, and survey design served on the panel of experts to ensure content and face validity of the survey instrument. A soft launch was also used to ensure the validity of the survey instrument. Respondents were recruited via non-probability sampling measures. To ensure validity and selection of a sample representative of the Florida population, demographic information was weighted according to geographic location, age, gender, and race from the 2010 U.S. Census data. Weighting methods allow researchers to compensate for nonresponse, noncoverage, and conform to external values. Weighting methods also allow the data to better represent the population of interest (Kalton & Flores-Cervantes, 2003). Several studies have shown that non-probability samples yielded results that are as good as or even better than probability sampling (Baker et al., 2013).

Data were analyzed using SPSS ® version 22 statistical software. Descriptive statistics were calculated to record respondents' food safety behaviors and critical thinking style. To determine seekers' and engagers' preferred communication medium when receiving information concerning food related issues, a chi square analysis was calculated. A two-tailed Pearson correlation was calculated to establish the relationship between critical thinking style and food safety behaviors. Davis' (1971) convention was used in the interpretation of the correlation coefficient where relative association values were .01-.09 = *negligible*, .10-.29 = *low*, .30-.49 = *moderate*, .50-.69 *substantial*, and over .70 = *very strong association*.

A descriptive analysis was completed to report the demographics of the respondents in this study (Table 1). Respondents were composed of 52.7% female (*n* = 269) and 47.3% male (*n* = 241). Overall, there were 87.3% (*n* = 445) Caucasian/White (Non-Hispanic), 10.6% (*n* = 54) Hispanic, and 9% (*n* = 46) African American respondents. Almost one half of the respondents were between 50-59 years old (24.7%, *n* = 126) and 60-69 (23.5%, *n* = 120). According to the rural-urban continuum code classification, using zip codes provided respondents, 91.8% of respondents lived in metropolitan counties (United States Department of Agriculture Economic Research Service, 2013).

Table 1
Demographics of Respondents

Characteristic	*n*	%
Gender		
Female	269	52.7
Male	241	47.3
Race		
African American	46	9.0
Asian	7	1.4
Caucasian/White (Non-Hispanic)	445	87.3
Native American	5	1.0
Other	12	2.4
Hispanic Ethnicity	54	10.6
Age		
19 and under	10	2.0
20-29	61	12.0
30-39	63	12.4
40-49	75	14.7
50-59	126	24.7
60-69	120	23.5

70-79	42	8.2
80 and older	13	2.5
Rural-Urban Continuum Code Classification		
1 million or more metropolitan area	288	56.5
250,000 to 1 million metropolitan area	153	30.0
Few than 250,000 metropolitan area	27	5.3
20,000 or more, near metro area	30	5.9
20,000 or more, non-metro area	0	0.0
2,500 to 19,999 near metro area	8	1.6
<2,500 near metro area	1	0.2
<2,500 completely rural non-metro area	0	0.0

RESULTS

Determine Florida Consumers' Food Safety Behaviors.

Respondents were asked to indicate the frequency in which they practiced certain food safety behaviors (Table 2). Over 90% of respondents often or always made sure fresh fruits and vegetables were washed before eating (91.3%, $n = 466$) and washed their hands before preparing food (94%, $n = 479$). However, 31% ($n = 158$) of respondents always read food labels for food safety information, and only 45.7% ($n = 233$) always disinfected counters before preparing food.

Table 2
Respondents' Food Safety Behaviors (N = 510)

	Never	Rarely	Sometimes	Often	Always
	%	%	%	%	%
Make sure that fresh fruits and vegetables are washed before you eat them	0.8	1.2	6.7	18.8	72.5
Read food labels for food safety information	3.7	11.0	27.1	27.3	31.0
Disinfect counters before preparing food	2.2	7.3	8.0	26.9	45.7
Wash hands before preparing food	0.8	1.2	4.1	17.3	76.7
Wash hands before eating food	1.2	2.2	9.4	23.5	63.7

Determine Florida Consumers' Critical Thinking Styles.

The 20-item UFCTI instrument for measuring critical thinking styles was used to fulfill objective 2 (Table 3). A continuum is used to measure critical thinking style, indicating that a high or low score is not better than the other. Respondents with scores 79 and above were identified as seekers, and respondents with scores 78 and below were identified as engagers. A total of 268 (53%) engagers and 242 (47%) seekers where identified in this study. Respondents' overall UFCTI scores ranged from 66.45 to 94.98 ($M = 79.09$, $SD = 4.04$).

After reviewing construct scores, scores in the engager construct ranged from 13.06 to 57.85 (M = 26.20, SD = 7.30), with a lower score signifying a respondents' likelihood to engage more with information. Scores in the seeker construct ranged from 31.00 to 65.00 (M = 52.90, SD = 6.51), with a higher score signifying an individual's likelihood of seeking information when thinking critically.

Table 3
Respondents' Critical Thinking Styles

	N	M	SD
Overall UFCTI Score	510	79.09	4.04
Engager Score	510	26.12	7.30
Seeker Score	510	52.90	6.51

Identify Preferred Communication Mediums for Seekers and Engagers of Information.

Respondents' preferred communication mediums for food information were identified for each critical thinking style. Both seekers and engagers preferred websites; printed fact sheets, bulletins, or brochures; TV coverage; newspaper article or series; and videos when receiving food communication, order indicating preference.

Respondents' communication preferences were then compared with each critical thinking style (engagers and seekers) using a Chi square analysis (Table 4). More seekers (n = 155) than engagers (n = 147) preferred *printed fact sheets, bulletins, or brochures* (n = 298; p = .04). A significant association was observed between seekers and printed fact sheets, bulletins, or brochures when receiving food related information. The effect size for this finding, Cramer's V, was *negligible*, .09 (Rhea & Parker, 2014). A similar finding was observed with respondents who chose *demonstrations or displays* (n = 80) as a preferred method of receiving information concerning food related issues. Seekers (n = 47) preferred these mediums more than engagers (n = 35; p = .05). This finding also denoted a significant association between seekers and demonstrations and displays when receiving food-related information. Using Cramer's V, the effect size was negligible, .09. When receiving food related information from *websites* (n = 377), engagers (n = 205) preferred this medium more often than seekers (n = 172) (p = .05). This finding indicated a significant association between engagers interest in websites when receiving food related information. The effect size for this finding, Cramer's V, was negligible, .09.

Table 4
Respondents' Preferred Communication Methods for Receiving Food Related Information by Individual Critical Thinking Style

	n	Seekers (f)	Engagers (f)	x^2	p
Printed fact sheets, bulletins, or brochures	302	155	147	4.46	.04*
Demonstration or display	82	47	35	3.81	.05*
Website	383	172	211	3.99	.05*
Attend a short course or workshop	55	22	33	1.37	.24
Fair or festival	37	15	22	0.76	.38
Seminar or conference	58	30	28	0.48	.49
Newspaper article or series	217	100	117	0.28	.59
Video	166	76	90	0.28	.60

TV coverage	267	129	138	0.17	.68
Other	12	5	7	0.17	.69
Get trained for a regular volunteer position	29	13	16	0.09	.77
One-time volunteer activity	45	22	23	0.04	.84

Note. * p < .05

Determine whether a relationship exists between Florida consumers' critical thinking style and food safety behaviors. To determine whether a relationship existed between respondents' critical thinking style and food safety behaviors, a summated scale was created for the five food safety behaviors (*M* = 4.31, *SD* = .67). Using respondents' overall critical thinking style and the food safety behaviors summated scale, a two-tailed Pearson correlation was conducted to identify whether a relationship existed between the variables. In accordance with Davis' (1971) convention, the relationship observed was negligible (*r* = -.04), where *r* = 0 signifies the absence of any linear relationship.

DISCUSSION

The researchers recognize respondents' self-reported food safety behaviors may not completely represent actual food safety behavior engagement (Abbot et al., 2012; Clayton et al., 2002; Mayer & Harrison, 2012) and serves as a limitation. Recognizing this, several interesting findings provided insight into consumers' self-reported food safety behaviors, preferred communication styles, and critical thinking styles, even though no substantial relationship between Florida residents' critical thinking style and food safety behaviors was found.

In the course of determining consumers' food safety behaviors, the majority of respondents often or always reported making sure fresh fruits and vegetables were washed before eating and washed their hands before preparing food. This finding was similar to Cody and Hogue's (2003) study where a high percentage of consumers reported washing their hands before food preparation. In contrast, just under one half of respondents reported always disinfecting counters before preparing food. Although the potential exposure to foodborne illnesses was reduced by washing their hands, respondents appeared to increase the chances of contracting foodborne illnesses by failing to disinfect their counters as often. Unwashed counter tops still serve as a vector for foodborne illnesses.

Respondents in this study also reported reading food labels for safety information on an infrequent basis. Food labels serve as the most practical method for consumers to receive product and country safety information (Wang et al., 2013). Respondents in this study reported even lower observation of food safety information on labels than what Wang et al. (2013) reported. These results illustrate unsafe behaviors from consumers and possible exposure to several unknown food safety risks (Wang et al., 2013). Consumers appeared to not be taking advantage of all resources to receive the correct information concerning their food, even though Loureiro and Umberger (2007) found that consumers would be more likely to pay for food products with food safety labels on them.

In addition to food safety behaviors, respondents' critical thinking styles were identified in this study. Approximately one half of the respondents were found to be seekers and one half engagers of information. The results show a balanced representation of each critical thinking style, which was consistent with Gorham et al. (2014). Respondents' individual seeking and engaging scores were also compared to preferred communication methods when receiving information concerning food related issues. A significant preference for printed fact sheets, bulletins or brochures, and demonstration or displays was reported among seekers. These results support Lamm and Irani's (2011) findings in which these individuals seek out information and welcome others viewpoints. The effect size for these preferences was found to be negligible, but the findings were still interesting for this exploratory research.
A significant preference for websites when receiving food related information was reported among engagers. Large-

ly, both seekers and engagers used this medium. However, how they use websites may differ. This finding is similar to Mayer and Harrison's (2012) study in which respondents preferred mediums, regarding food safety, that were more web-based (i.e., YouTube, Facebook, videos, and internet). Although it was outside the scope of this study to determine how respondents of each critical thinking style used websites, how individuals' in each critical thinking style prefer to retrieve information has been documented in the literature. Focusing on the needs of engagers to communicate with others and their desire to utilize reasoning skills through interactions with others, engagers may favor websites as a word of mouth method (i.e., public discussion boards/forums, blogs, vlogs, social networking sites, personal websites, etc.) (Blackshaw & Nazzaro, 2006; Lamm & Irani, 2011).

This finding with engagers supports the vicarious learner in the social cognitive theory, where individuals obtain new knowledge and behaviors from others by being embedded into social systems (Bandura, 2001; Schunk, 2012; Stajkovic & Luthans, 1998). The diversity of these mediums allows them to be personalized and more relevant for engagers, which can aid in promoting the processing and storage of information for future behavioral use (Abbot et al., 2012; Petty et al., 2009). Seekers desire new information while considering multiple viewpoints on topics and acknowledging their own biases with an objective perspective. Therefore, seekers are more likely to search for information that observes the same principles. These characteristics resemble enactive learners, which use past experiences as a gauge to evaluate themselves when critically thinking. The desire to seek out the truth could likely result in retrieving information from trustworthy and researched-based sources, which could be provided through access to the internet. The difference in how seekers and engagers both use this medium would be based on the interpretation of the information they receive and the sources they use. Seekers' objectivity and decision-making skills would allow them to process the information differently to reach a solution (Lamm & Irani, 2011). The ability to identify where people fall within the critical thinking inventory and social cognitive theory could allow communicators to better understand how and why they process new information while also understanding some of the logic behind their behaviors. The advantage to using the critical style inventory in conjunction with the social cognitive theory is that it allows researchers to quantify the method in which people learn new information, strengthening what communicators know about their audiences.

Even though only three communication methods were found to be significantly preferred by engagers and seekers of information, there was no significant preference with any other mediums in this study. This finding implies the need for more than one communication medium to be used when delivering information concerning food related issues to reach individuals with seeking and engaging critical thinking styles.

The last objective for this study was to determine if a relationship existed between respondents' overall critical thinking style and food safety behaviors. The relationship observed was negligible and not large enough to indicate a substantial relationship between respondents' food safety behaviors and critical thinking styles. But reflecting back on previous literature, researchers have found that certain motivators, informational sources, and demographic characteristics served to influence consumers' food safety behaviors (Abbot et al., 2012; Medeiros et al., 2001; Schafer et al., 1993; Schunk, 2012). This may suggest that some moderating variable(s) could help to better explain the strength and/or direction of the relationship between consumers' critical thinking styles and food safety behaviors (Baron & Kenny, 1986). It is also important to remember that these are self-reported food safety behaviors, and with the limitations of non-probability sampling and weighting in mind, the correlation between food safety behaviors and critical thinking styles might be stronger or weaker in a different or larger population.

RECOMMENDATIONS

In coordination with the results from this study and previous literature, communicators should focus message development and medium selection based on the two critical thinking styles addressed in this study: engagers and seekers of information. Critical thinking style considerations should guide communicators and be purposively executed, using the preferred mediums established in this study. Overall, both engagers and seekers preferred websites, printed fact sheets, bulletins, brochures, TV coverage, and newspaper articles or series when receiving food related information. Although both critical thinking styles preferred similar mediums, the way they use these mediums may differ. Communicators need to identify their target audiences' critical thinking style, using the social cognitive theory concept of interacting personal factors, behaviors factors, and environmental events, to personalize their efforts and content to their audience. Establishing these criteria would eliminate unnecessary efforts and create a more meaningful and personalized experience for consumers, resulting in consumers participating in more thoughtful, informative, and safe food behaviors (Abbot et al., 2012; Petty et al., 2009).

Food safety message development should highlight the benefits of proper food safety behaviors while emphasizing the threats associated with unsafe food behaviors. Messages should address risks associated with certain food safety behaviors and reinforce the control consumers possess to reduce these risks (Medeiros et al., 2001b; Schafer et al., 1993). Various mediums can be used to disperse these food safety messages, but communication campaigns should focus on stressing the importance of reading food safety labels. Food labels are the most convenient and factual tool in educating and reducing food safety risks for consumers and communicators need to take advantage of this opportunity. Messages should reiterate the risks associated with not reading food labels. Additionally, consumers may require training to decipher the material on food labels and provided guidance on where they can locate food safety information on the labels. Food safety messages should also emphasize the risks associated with unclean countertops and the impact disinfecting them can have on foodborne diseases/illnesses. Communicators and food safety experts should place a similar amount of importance on disinfecting countertops as they have on washing hands. Consumers need to understand that countertops are regularly used to prepare food and serve as a vector for foodborne illnesses/diseases. Efforts should include when and how countertops are to be properly disinfected to have the maximum impact on consumer safety. The use of scenarios, personal relevance, and reflective thinking and practice may be additional methods to encourage consumers to critically think about food safety (Reicks et al., 1994).

Future research should continue to explore critical thinking styles to better understand how to implement the findings of this study and others in various fields. While the UFCTI instrument defines each construct well, researchers have the opportunity, through further study, to contribute to the attributes, preferences, and behaviors associated with each critical thinking style. Using the social cognitive theory in conjunction with critical thinking styles may provide the human behavior element, which could further explain learners' behaviors. Considering consumers' internal dispositions may also serve to better understand their behavioral change. A national and international study might also explain how different factors (i.e., culture, geography, etc.) affect critical thinking styles. A broader approach could also build to the current critical thinking literature, by providing a better understanding of each critical thinking style, and clarifying the accuracy of methods used in this study to represent a larger population. Even though a negligible relationship was found between critical thinking styles and food safety behaviors, further research should examine whether certain motivators or influential factors impact the relationship between critical thinking styles and food safety behaviors. Consumers could be presented with food safety issues in scenario-based simulations that are designed to encourage critical thinking and researchers could assess participants' critical thinking style with food safety behaviors. Future research could also benefit from establishing how each critical thinking style uses the mediums where no significant difference was found. Researchers should also explore a wider variety of food safety behaviors. In doing this, certain unknown risks may surface that could be communicated to consumers, ultimately reducing the prevalence of foodborne illnesses.

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RESEARCH

An Examination of Student Development Theory in the Context of Writing Instruction

Holli R. Leggette, Holly Jarvis Whitaker, and Matt Miranda

ABSTRACT

The National Council of Teachers in English (2009) called for a reform of writing instruction models and theories. Addressing NCTE's challenges to develop, design, and create models that inform curricula begins with examining writing instruction in the context of student development theory. Therefore, the purpose of this study was to modify a conceptual model, grounded in Chickering and Reisser's (1993) theory of education and identity, to address NCTE's challenge of developing evidence-based, empirically sound models for writing instruction. To accomplish this purpose, we conducted a philosophical examination of Chickering and Reissers' theory in light of writing instruction. Since the 1970s, writing instruction has experienced three phases that situate the focus of instruction on specific functions of the writer and not on the holistic writer: (a) instruction for the hand (mechanics), (b) instruction for the mind (cognitive), and (c) instruction for the writer in context (social cognitive). Thus, through this examination, a fourth phase emerges—instruction of the person as a writer (holistic). Holistic developmental approaches to writing instruction focus on students' perspectives of assignments, their navigation of the writing process throughout class experiences, their feedback on course content and assignments, and their development as people, professionals, and writers. Therefore, one way to address NCTE's challenges and enhance learning outcomes is revising Leggette and Jarvis' (2015) wagon wheel model because it shifts writing instruction away from teaching individual skills, abilities, and attributes of the writer and focuses more on teaching the holistic development of the writer.

KEY WORDS

Curriculum, Student Development Theory, Writing Instruction

INTRODUCTION

In 2009, the National Council of Teachers in English called for an improvement of students' writing abilities and more rigorous research informing writing instruction. University faculty have constantly struggled with teaching writing for retention and transferability even though Strachan (2008) identified it as an essential component of college curriculum. To improve writing instruction, Hayes (2001) suggested modifying current instructional models or developing new specific models, which should be implemented into course curricula (NCTE, 2009). Planning the future of writing instruction requires reviewing key eras of writing curriculum and instructional development in addition to considering changes for adoption of effective writing course curricula. Hence, educational institutions have three challenges: "developing *new models of writing*; designing a *new curriculum* supporting those models; and creating *models for teaching* that curriculum" (NCTE, 2009, p. 1).

Writing instruction and research transitioned from grammar and mechanics in the pre-1970s era (Foster, 1983; Nystrand, 2006; Rose, 1985) to cognitive ability in the 1960s and 1970s and then to social concepts in the late 1980s and 1990s (Leggette, Rutherford, Dunsford, & Costello, 2015b; Nystrand). Early research agendas shifted the lines of inquiry from understanding writing to writing issues, evidence, audience, conclusion, principles, and discourse (Nystrand). For many years, general writing instruction lacked specificity and did not require students "to produce a wide range of texts, for a variety of purposes, across a broad class of social contexts" (Deane et al., 2008, p. 1). Yet, little research across contexts and industries has focused on writing instruction related to cognitive development and the holistic individual. Thus, addressing NCTE's (2009) challenges to develop, design, and create new models and curricula begins with reviewing writing instruction in the context of student psychosocial development.

Psychosocial development (e.g., Chickering & Reisser, 1969, 1993 Erikson, 1968) focuses on the holistic development of the individual and not specifically on the development of certain skills, abilities, or cognitive attributes. Yet, much of the college writing instruction and research of the 21st century focuses solely on the independent instruction of writing, separating it from the context of individual, community, and development. Considering this, little evidence to date has been found associating psychosocial development with writing instruction even though writing instruction and research has changed since the early inception of the Hayes and Flower (1980) model.

College students often wander the halls of higher education institutions questioning life's purpose and their identity (Branand, Mashek, Wray-Lake, & Coffey, 2015). Identity formation is the core of college students' psychosocial development (e.g., Chickering & Reisser, 1969, 1993; Erikson, 1968), defined as the "the issues, tasks, and events that occur throughout the life span, the given pattern or resolution of these issues and tasks, and the adaptation to these events" (Brown, 2004, p. 143). Chickering and Reisser (1993), in their theory of education and identity, suggested psychosocial development occurs in vectors, not in sequential steps, and guides education. Their non-linear vectors—developing competence, managing emotions, moving through autonomy toward interdependence, developing mature interpersonal relationships, establishing identity, developing purpose, and developing integrity—support fluid growth during a critical time of students' psychosocial development (Evans, Forney, Guido, Patton, & Renn, 2010).

First, the three pitchfork like tines of *developing competence*—intellectual, physical/manual, and interpersonal—develop co-incidentally as students progress through college (Chickering & Reisser, 1993) and are critical to students' purpose (Green, 1981). Competence depends on feedback (Green) and focuses on skill mastery. Second, *managing emotions* encompasses thinking about feelings and acting on emotions in a healthy, sustainable way (Chickering & Reisser, 1993; Evans et al., 2010). Becoming aware of feelings, learning flexibility in managing emotions, and finding ways to balance positive and negative emotional experiences facilitate students' fluid movement through the vector (Chickering & Reisser, 1993; Coombs, 2013). Third, students who have experienced *movement through autonomy toward interdependence* (Chickering & Reisser, 1993; Foubert, Nixon, Sission, & Barnes, 2005) are (a) emotionally independent and lack the need for continual approval from others; (b) instrumentally independent as self-directed problem solvers; and (c) interdependent as they understand their place in society, which is the last stage of the journey to developing interdependence (Evans et al.). The campus community serves as a catalyst for students to move through autonomy and gain interdependence as students "struggle to define their best selves, rather than succumbing to passivity or alienation" (Chickering & Reisser, 1993, p. 144).

Fourth, *developing mature interpersonal relationships* depends on tolerance and appreciation of differences between individuals (Chickering & Reisser, 1993; Muuss, 1996). College serves as a testing ground for managing emotions, making impressions, sharing deeply, resolving differences, and making meaningful commitments (Blimling, 2013; Chickering & Reisser, 1993; King & Baxter Magolda, 2005). Fifth, students build on vectors one through four to *establish identity*. Students establishing a solid identity will experience a "secure sense of self in light of feedback" (Evans et al., 2010, p. 68) and a sense of self-acceptance, self-esteem, and personal stability about gender roles, ethnic background, sexual orientation, physical appearance, cultural context, and lifestyle choices (Chickering & Reisser, 1993; Torres, Jones, & Renn, 2009).

Sixth, *developing purpose* is learning to be intentional, assessing the options presented, making and clarifying personal goals, and overcoming barriers to achieving goals (Chickering & Reisser, 1993; Coombs, 2013). Students cultivate purpose by developing clear vocational goals, making meaningful commitments, and establishing strong, interpersonal commitments within those goal areas (Evans et al., 2010). Seventh, students' values provide a foundation for interpreting experience, guiding behavior, and maintaining self-respect. *Integrity* develops in three "overlapping stages"—humanizing values, personalizing values, and developing congruence—that students use to move from testing values of their inner circle to aligning values with those of society (Chickering & Reisser, 1993, p. 237).

Furthermore, in 2015, Leggette and Jarvis applied Chickering and Reisser's (1993) theory of education and identity to writing identity development and developed the wagon wheel model to guide their qualitative data analysis of students' development of writing identity (Figure 1). Through their research, they found students experienced Chickering and Reisser's (1993) seven vectors as a result of a writing-intensive course.
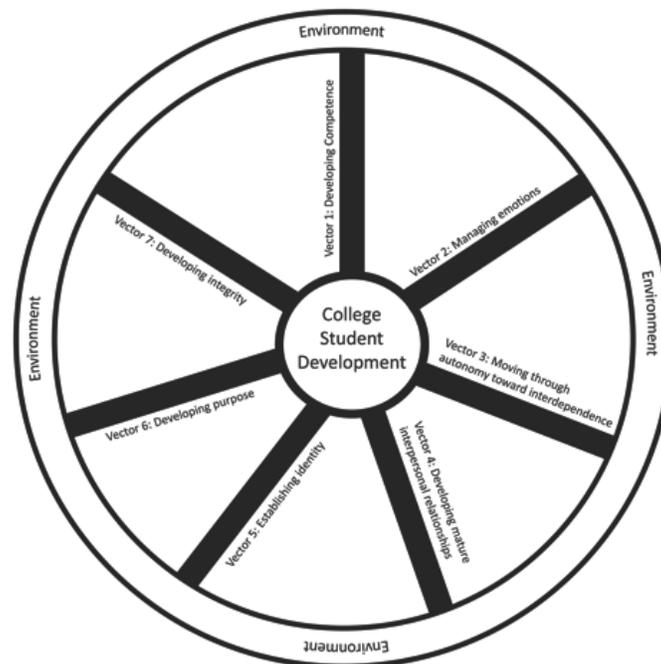
Figure 1. Leggette and Jarvis' (2015) wagon wheel model of Chickering and Reisser's (1993) seven vectors of education and identity development

THE PROBLEM

Theories lack empirical evidence to guide writing instruction, and writing instructors and researchers lack the understanding of how to effectively teach writing although the writing process movement initiated the development of multiple writing theories (Wallace, Jackson, & Wallace, 2000). Thus, instead of developing new models to inform writing instruction, we propose modifying current developmental models and theories to empirically investigate their application to writing instruction as recommended by Hayes (2001) and NCTE (2009). Therefore, the purpose of this study was to modify a conceptual model, grounded in Chickering and Reisser's (1993) theory of education and identity, to address NCTE's challenge of developing evidence-based, empirically sound models for teaching writing. The following questions guided the study:

1. What instructional techniques enhance holistic development of undergraduate student writers?
2. How do these findings augment Leggette and Jarvis' (2015) model?
3. Are these findings consistent across multiple content fields?

METHOD AND PROCEDURE

We used a philosophical approach to examine Chickering and Reissers' (1993) theory of education and identity in light of writing instruction. In doing so, we designed the study using the method and structure of a philosophical examination, which is different from a traditional research study and applies atypical headings and organization (Roberts, 2006). Philosophical studies serve a discipline by presenting data in light of evidence and by proposing a shift in thinking based on the current and relevant literature in the field (Burbles & Warnick, 2006). Such philosophical examinations are without traditional research design and serve as an established foundation for enhancing understanding of practices within a profession.

Burbles and Warnick (2006) argued well-designed philosophical examinations include a thoroughgoing focus, a rigorous literature review, and a synthesis of varying perspectives. For example, Roberts (2006) conducted a philosophical examination of experiential learning theory to "synthesize and summarize" theory in an effort to "guide practice and inquiry" (p. 18) and to develop a contextual model for agricultural education. To achieve the philosophical research methods set forth by Burbles and Warnick, we focused our examination on Chickering and Reisser's (1993) theory of education and identity in light of writing instruction, we conducted a rigorous literature review to search for relevant literature that cited the use of Chickering and Reisser in varying science-based contexts and situations, and we synthesized writing instruction research from various fields demonstrating personal growth and development, skill achievement, and professional identity.

Thus, to begin reviewing and synthesizing the literature that would serve as our philosophical discussion, we searched Google Scholar, Texas A&M University library, WorldCat.org, Education Resource Information Center (ERIC), and Journal Storage (JSTOR). We focused our search on literature related to Chickering and Reisser's (1993) vectors and writing instruction. Literature citing the use of Chickering and Reisser in writing instruction was minimal, so we searched Google Scholar using the name of each vector combined with writing instruction and following the same process for each vector. For example, we searched "developing purpose in writing instruction." It is important to note not all articles linked Chickering and Reisser to writing instruction, but all articles discussed writing instruction and/or components of each of Chickering and Reisser's seven vectors. Therefore, to be included in the study, an article had to discuss writing instruction and include components of one of the seven vectors even if writing instruction was not directly linked to Chickering and Reisser.

Philosophical examinations can be approached using various qualitative lenses. We examined Chickering and Reisser (1993) in light of writing instruction through Lincoln and Guba's (2005) constructivist epistemological lens, which is "sensitive to the special qualities of people and their social institutions" (Bryman, 2012, p. 6). Such inquiry recognizes knowledge is "produced through social interaction" of human beings and is "in a constant state of revision" (p. 33). Thus, knowledge cannot be separated from experience or reality. Similar to Kitchel and Ball's (2014) study that "creat[ed] a narrative to expand the professional discourse" (p. 188) related to the use of theoretical and conceptual frameworks in agricultural education, we sought to expand writing instruction discourse with the goal of addressing NCTE's challenges.

Vector 1: Developing Competence

Proper development of Chickering and Reisser's (1993) first vector necessitates writing experiences need to be designed and developed with the three-part model of intellectual, physical and interpersonal competencies in mind. Writing, including content comprehension, reflection, collaboration, interviewing, and team participation, is an important intellectual and interpersonal competency to master (Evans et al., 2010). As beginning writers develop content mastery, they may mimic perceived rules of writing while masking true opinions and content comprehension (Lea & Street, 1998). More advanced writers, however, should be guided to develop a deeper interpretation of professional writing within their fields rather than limiting their learning to superficial functional writing skills (Lea & Street). Leggette, Jarvis, and Walther (2015a) identified particular teaching techniques that support increased student learning of writing skills and their development of deep interpretation: assorted writing assignments, lecture, style quizzes, editing, and peer and instructor feedback. Intellectual and interpersonal competencies are cultivated through critical thinking and the application of

writing skills, but physical and manual competence is achieved using the body or hands for self-expression and creativity during the physical act of communicating (Evans et al., 2010).

Critical thinking skills, developed through feedback (Grise-Owens & Crum, 2012), are key to students developing original thinking and authorship (Moffet, 1979). Riddell (2015) noted "increasing the frequency of writing opportunities and feedback [led] to higher learning outcomes" (p. 79). Instructor feedback is a crucial part of how writing courses need to be redesigned to properly maximize this vector. One-on-one feedback sessions with an instructor facilitated students' development of writing skill and interpersonal communication skill in a Leggette et al. (2015a) study as instructor and peer feedback helped students see their mistakes from another point of view leading to improved writing skill (Lea & Street, 1998). Rather than outlining specific communication skills, as others (e.g., Irlbeck & Akers, 2009; Morgan, 2010) have done, the broader points of skills education are a means for students to "learn to view their writing as someone else's reading" (Zamel, 1982, p. ab) and to develop authorial identity by learning to use language to communicate effectively (Hyland, 2002).

Vector 2: Managing Emotions

As developing writers, students need to develop the ability to manage emotions and overcome frustrations and satisfactions by recognizing their feelings toward writing and while learning to recognize and implement components of the writing process. When emotions get in the way of work performance, or student learning, perception of trustworthiness and reliability can be confounded. In writing courses, students often struggle with self-confidence and managing emotions related to feedback and constructive criticism. Evans et al. (2010) noted students need to learn to act responsibly on their feelings, not allowing emotional baggage from past writing experiences derail current progress. Building a narrative can help students express and understand their progress as they implement components of the writing process (Grise-Owens & Crum, 2012, Lengelle & Meijers, 2014).

The first step in this process is identifying the emotional stigma they carry related to the writing process (Leggette et al., 2015a), which is easily accomplished through periodic reflective writing exercises. Students in counseling (Murdock, Stipanovick, & Lucas, 2013) nursing (Levett-Jones, 2006), social work (Grise-Owens & Crum, 2012), business (Boyd, 2013), biology (Otfinkowski & Silva-Opps, 2015), chemistry (Klein & Carney, 2014), and physics (Larkin, 2015) demonstrated increased awareness of their role as communicators and increased connection to professional community after the incorporation of such exercises. Reflective writing helps students develop a sense of voice (progressing in their writing skill from compliance-type writing to non-formulaic, creative well-thought-out prose; Ryan, 2014), become aware of their emotions, and put themselves in their readers' shoes.

Practicing reflective writing allows students to see how far they have come and potentially commit more energy to increasing their learning and development as they move forward in their program (Primeau et al., 2013). For example, Lengelle and Meijers (2014) found students who participated in reflective writing were more engaged and self-directed because self-assessment increased one's ability to learn from mistakes (Levett-Jones, 2006). Furthermore, Larkin (2015) found students who self-assessed could identify what was wrong with their thinking and why their thinking was flawed.

Vector 3: Moving Through Autonomy toward Interdependence

Students experience a movement away from parents, parental values, and the influence of accepted authorities (Garrett & Moltzen, 2011), allowing themselves to work toward their ultimate goal of investing in themselves as professionals (Addams & Allred, 2015). Improving writing competence and skill is a visible part of university-level assessment. In the sciences, Klein and Carney (2014), Larkin (2015), and Otfinowski and Silva-Opps (2015) identified writing as a major program outcome and noted improving skills through curriculum writing exercises. In the social/service professions, social workers (Grise-Owens & Crum, 2012), nurses (Levette-Jones, 2006), counselors (Blimling, 2013), and educators (Hutchinson & Tracey, 2015) developed similar skill development, especially through the reflective writing process. When students seek to create something original (Moffett, 1979), they develop their authorial voice (Hyland, 2002). "Original writing" requires a constant "revision of inner speech," which is indicative of original thinking (Moffett). To promote original writing, curriculum should include a balance between student-directed and teacher-directed assignments (Garrett & Moltzen, 2011).

This need for professional writers who are "awar[e] of their connectedness with others" (Evans et al., 2010, p. 68), extends into the need of fostering writers who can self-assess, are self-directed, can work in teams, and can perform specific writing tasks (e.g., interviews, peer review). Leggette et al. (2015a) noted students relied on student-faculty relationships to facilitate movement from autonomy to interdependence. Movement toward interdependence was not an enjoyable experience for some students (Leggette & Jarvis, 2015), but the writing process taught the students to be interdependent and write without continuous instruction and guidance (Leggette et al., 2015a). Creative writing opportunities helped students establish their "writing style and voice and moved them to become story tellers and not just writers" (p. 76), reinforcing the movement from autonomous writers to interdependent story tellers.

Vector 4: Mature Interpersonal Relationships

Watson and Robertson (2011) indicated first-year communication students sought to learn interpersonal skills as many of them saw resolving conflicts and managing barriers as important components of undergraduate curriculum. Teachers and peers can cultivate students' development of interpersonal relationships through the writing and feedback process (Larkin, 2015). Interpersonal relationships mediated by writing can assist with professional identity development (Murdock et al., 2013) because they promote a connection among students, their cohort, and their profession (Boyd, 2013). Characteristics of effective employees, such as trustworthiness and reliability (Irlbeck & Akers, 2009), can be enhanced through interactions with instructors, writing staff/mentors, and peers even though the relationship between students and teachers/peers can, at times, be detrimental to fostering strong interpersonal relationships that are often authoritative (Lea & Street, 1998).

Conflicts, hesitation, and fear can arise during the feedback process because of emotions involved in giving and receiving constructive criticism and the uncertainty of the process. Therefore, it is important for students to learn how to give and receive critique during peer reviews as doing so creates opportunities for students to broaden their interpersonal communication and writing skills while allowing for effective communication and clarity of thought. One-on-one experiences, such as peer review sessions, allow the reviewer a glimpse into the writers' thoughts, feelings, and personality (Leggette et al., 2015a). Implementing the feedback and revision process at multiple points during a semester creates opportunities for students to master the skill set through practice and usage (Leggette et al.).

Vector 5: Establishing Identity

Academic writers experience three components of writing identity: autobiographical, discoursal, and authoritative (Bird, 2013). Autobiographical writers interweave themselves into the academic community by contributing their ideas despite discrepancies. For example, "first person pronouns are a powerful way of projecting a strong writer identity" (Hyland, 2002, p. 354). Furthermore, a discoursal writer transforms knowledge by "connecting evidence and quotes to claims" (Bird, 2013, p. 86-87) and providing a new way of understanding old knowledge. Forming facts into a readable story allows students a degree of creativity in their writing and makes the writing process more enjoyable as creativity has the "potential to confirm and develop identity" (Leggette et al., 2015a, p. 76). As described by Bird, authoritative writers understand the characteristics of autobiographical and discoursal writers, work to build on those characteristics, and "perform their own intellectual work by adding depth and development of ideas" (p. 87).

Central to establishing identity and boundaries is feedback (Leggette & Jarvis, 2015), encouragement (Garrett & Moltzen, 2011; Murdock et al., 2013), and working through emotional and relational reflective writing prompts (Primeau et al., 2013). Leggette and Jarvis found feedback was connected to developing writing identity and "developing a clear sense of purpose" (p. 47). For example, peer-to-peer feedback and thinking through the feedback process increased student buy-in (Grise-Ownes & Crum, 2012) while students in a sports management program indicated feedback and self-assessment were essential to choosing career options (Lumpkin, 2015). Thus "writing teachers should intervene throughout the process" (Zamel, 1982, p. 195) because receiving feedback at the end of an assignment does not help students (Lea & Street, 1998) develop writing identity.

Vector 6: Developing Purpose

Honing in on career aspirations through coursework, internships, externships, and other real-world experiences is central to students' ability to develop purpose (Addams & Allred, 2015) as "effective curriculums are achieved when a balance is found between the student interest, faculty vision[,] and industry need" (Watson & Robertson, 2011, p. 16). Within the last two decades, discipline-specific, writing-intensive courses have forced students to grapple with the complexities of learning to apply writing to their disciplines. Through such requirements, some students have gained an intrinsic motivation to write and interpret the world around them while others realize their career aspirations differ (Leggette & Jarvis, 2015). But, one must question if assessment threatens students' intrinsic motivation to write causing students to become discouraged in developing purpose (Garrett & Moltzen, 2011). In their work, Murdock et al. (2013) suggested developing a co-mentor training program to enhance "students['] self-awareness and growth in an experiential and meaningful manner, as well as provid[e] additional opportunities for students to develop their professional identity" (p. 487). Learning about career options, experiencing real-world activities, and exploring intrinsic motivation impacts students' ability and desire to develop career aspirations and purpose (Lumpkin, 2015).

Investigating purpose through students' lenses, Leggette et al. (2015a) indicated students appreciated learning how to become effective writers even if they did not decide to pursue a writing career. Students "identif[ied] their goals and move[d] toward them …, recognizing they were not fully there yet when it came to being a professional writer" (Leggette & Jarvis, 2015, p. 49). Feedback, fostered through instruction and writing prompts, enhanced students' growth as professionals, and students interested in their topics had more creative writing experiences. Although some students would not become writers, they became more aware of their purpose and their ability to communicate effectively (Leggette & Jarvis).

Writing includes goals—from genre-specific to writing process to daily writing. To be effective writers, students must set, work toward, and achieve their writing goals. Sanders-Reio, Alexander, Reio Jr., and Newman (2014) noted knowledge transformers continuously work to balance "goals for their papers and their mental representations of the content" (p. 3). If students can create and attain writing goals in their personal and professional lives, they will be more capable of generating publishable content. Thus, students who choose topics that interest them may be more likely to give their full energy and motivation to the process.

Vector 7: Developing Integrity

Students approach writing with a set of values but often those values are tested against the values of the assignment or content. Freshmen students in a Watson and Robertson (2011) study placed an intrinsic and extrinsic value on writing and ranked it fifth in level of importance. Yet, "write with proper grammar and punctuation" was the only writing component mentioned in the study, contrary to NCTE's (2009) note that writing is more than mechanics. Additionally, Leggette et al. (2015a) claimed students moved past humanizing values and began personalizing writing values in an advanced media writing course, which helped students see the value of writing and the ability to "paint beautiful pictures" with sensory language (p. 73). Through the process of personalizing values, students continuously ask themselves if they have the ability to be a writer. For example, an important point of student growth was developing the ability to receive criticism without being offended (Leggette et al.).

A noted component of academic integrity related to writing is understanding plagiarism and its consequences. Park (2003) summarized students' reasons for plagiarizing: personal values, lack of understanding, time management, enhanced course performance, efficiency, and defiance of authority. First-year science and engineering students' "understandings of action that constitute plagiarism were varied" (p. 212) and they "did not favour [sic] penalties for plagiarism" (Yeo, 2007, p. 213). This could be explained by Chickering and Reisser (1993) when they identified congruency as the last step to developing integrity because freshmen would not have moved along the continuum of developing integrity.

DISCUSSION AND RECOMMENDATIONS

Writing instruction has experienced three phases since the 1970s: (a) instruction for the hand (mechanics), (b) instruction for the mind (cognitive), and (c) instruction for the writer in context (social cognitive). Yet, all three phases situate the focus of instruction on specific functions of the writer and not on the holistic writer. Thus, based on a thorough review of writing instruction in the light of psychosocial development, we propose a fourth phase of writing instruction—instruction of the person as a writer (holistic). Holistic developmental approaches to writing instruction focus on students' perspectives of assignments, their navigation of the writing process throughout class experiences, their feedback on course content and assignments, and their development as people, professionals, and writers.

Reviewing psychosocial development in light of writing instruction, we found (a) *developing competence* focuses on students' development of intellectual and interpersonal skill competencies related to writing (e.g., interviewing, style, voice, and critical thinking) as well as the physical act of writing; (b) *managing emotions* emphasizes the emotional side of writing as it relates to overcoming frustrations while learning to appreciate feedback; (c) *moving through autonomy toward interdependence* fosters students' development of authorial voice and enhances their ability to become knowledge transformers; (d) *establishing mature interpersonal relationships* assists students with becoming trustworthy, reliable team members; (e) *establishing identity* moves students from knowledge tellers to authoritative knowledge transformers who understand themselves and their role in society; (f) *developing purpose* encourages students to consider their career goals and desires related to writing and act on those goals as they seek to become professional writers; and (g) *developing integrity* forces students to grapple with the complexities of writing and the values associated with the writing process. Furthermore, instruction for the hand and instruction for the mind are included in vector one, and instruction for the writer in context is included in vectors five, six, and seven. Therefore, any holistic approaches based on Chickering and Reisser's (1993) framework would subsume previous theories with a sole focus on instruction for the hand and mind while superseding them, and social cognitive theories would also subsume any holistic model based on this framework.

Therefore, we propose a revision of Leggette and Jarvis' (2015; Figure 2) model as one way to address NCTE's (2009) challenges and enhance learning outcomes because it shifts writing instruction away from teaching individual skills, abilities, and attributes of the writer and focuses more on teaching the holistic development of the writer. When we applied Chickering and Reisser's (1993) theory of education and identity to writing instruction, specific writing strategies, components, practices, and techniques that fostered holistic development emerged within each of the seven vectors.

Figure 2. Revision of Leggette and Jarvis' (2015) wagon wheel depiction of Chickering and Reisser's (1993) seven vectors of education and identity development that includes specific writing strategies, components, practices, and techniques that foster holistic development.

We argue the revised model serves as a starting point for designing new curriculum and conducting empirical research related to the holistic development of college-level writers (NCTE, 2009). Because communicators and journalists are the catalysts for driving conversation, new writing curriculum should center on helping students develop their holistic selves, confidence in their writing, critical thinking skills, skills for giving and receiving feedback, and an understanding of their writing values along the way. Structured writing prompts and reflective writing assignments help students develop confidence in their writing skills, create personal meaning, develop a sense of self-assessment, become independent problem solvers, learn from mistakes, develop an authorial voice, and produce original work.

Additionally, students can use periodic and structured peer, mentor, and instructor feedback to increase their understanding of writing and to develop as individuals. Incorporating individual, face-to-face instructor/student feedback sessions into the curriculum facilitates discussion between the student and the instructor and makes feedback a two-way process of communication. Writers subjected to constant feedback develop self-confidence and a strong sense of self as students who are comfortable with their personal and writing identity can also comfortably express their voice in their writing and bring their integrated selves to the writing process. The sense of self and identity developed during the writing process will help students attain their ultimate goals as a writer and as an individual.

Another instrumental component of writing curriculum is integrity because students grapple with personalizing values in different contexts. Some students may intrinsically value writing components but may not extrinsically value the same components. Therefore, to holistically develop as a writer, they must begin to congruently develop those values. For example, freshmen may begin humanizing values related to plagiarism but those values should become congruent with societal values as they become upperclassmen. Helping students understand the integrity as it relates to writing will

facilitate their personal growth and understanding of such components. To help students understand integrity and its relationship to writing, instructors should incorporate a discussion about integrity into each major writing assignment.

As for conducting empirical research related to the holistic development of college-level writers, we suggest beginning with testing the effectiveness of the writing strategies, components, practices, and techniques linked to each of Chickering and Reisser's (1993) vectors. For example, do the strategies, components, practices, and techniques indeed enhance students' development in each of vectors and move students toward becoming holistic writers? Testing the combination of strategies, components, practices, and techniques as well as the necessity of each one and how it fits into the paradigm of psychosocial development will enhance the curriculum and its role in writing instruction. Such tests will help writing instructors and researchers refine writing curriculum and design course lectures, labs, and major assignments that develop writers who are prepared to meet the needs of the 21st century global workforce.

Additionally, as writing instructors, we must ask ourselves if our expectations of young writers are beyond their cognitive, physical, emotional, professional, social, and educational development. We expect them to enter communication and journalism programs with an understanding of critical thinking and knowledge transformation, but perhaps, they have not been taught how to think critically, how to transform knowledge, or how to transfer knowledge from one course to the next. Furthermore, instructors may not have a balanced understanding of how six components—cognitive, physical, emotional, professional, social, and educational—of development work to transform a student with an interest in writing into a professional writer. Empirically investigating this transformation will help instructors design curriculum that moves students from knowledge tellers to knowledge transformers, from surface-level writers to deep writers, and basic thinkers to critical thinkers.

Last, we must question how writing identity is situated within vector five, establishing identity. For example, does vector five make a valid framework for conceptualizing writing identity, or should an eighth vector be added that specifically addresses the development of a professional writing voice in a variety of contexts? As noted, writing identity and education emerges within each vector, but perhaps, it should have its own vector describing writing identity and education because of its importance in the 21st century and its relevance across contexts.

Writing has emerged as an essential, but missing, piece of an undergraduate education across contexts. In fact, it seems we are moving farther away from understanding effective writing instruction instead of moving toward an understanding of developing effective writers. We could argue technology and the need for instantaneous communication has caused this divide. Yet, as writing instructors and students of writing instruction ourselves, we believe it is the lack of focusing on the psychosocial development of the inner writer. For too long, writing instruction has focused on teaching the skill and the attributes of writing instead of on teaching the holistic writer. Thus, to address NCTE's (2009) challenges, we must shift focus to instructing the person as a writer (holistic)—the fourth phase of writing instruction.

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RESEARCH

Communicating about Undocumented Immigration Issues: Is Your Target Audience Bilingual?

Shuyang Qu, Alexa J. Lamm, and Joy N. Rumble

ABSTRACT

Due to the large number of undocumented immigrants working in the agricultural and natural resources industry, and recent discussions regarding immigration reform in the United States, agricultural communicators need to understand public opinion of undocumented immigrants and the factors that influence public opinion surrounding immigration issues in order to provide effective information to target audiences. Immigration has often been associated with linguistic diversity since the majority of immigrants speak a language other than English. To understand how linguistic differences impact public opinion, and how to communicate with audiences expressing diverse linguistic preferences, this study used an online survey design to examine the differences in attitudes toward immigration issues and information channel preferences between individuals who are bilingual and those who are not bilingual. Results from 503 Florida residents, representative of the population, indicated that non-bilingual respondents had a significantly more negative attitude toward immigration issues than bilingual respondents. In addition, bilingual respondents preferred to receive information through a website significantly more than non-bilingual respondents. The results imply agricultural communicators should recognize their target audiences' language ability and create messages about immigration specifically for bilingual and non-bilingual audiences. Bilingual websites should be created to disseminate immigration messages to engage bilingual audiences.

KEY WORDS

Bilingual, Construal Level Theory, Information Channels, Public Opinion Undocumented Immigration

INTRODUCTION

The United States (U.S.) is one of the largest immigrant-receiving countries in the world (Qu, Lamm, & Odera, 2014; Suro, 2009). In recent years, issues associated with immigration, especially undocumented/unauthorized/illegal immigrants, have been a priority of the federal government (Suro, 2009). The number of immigrants living in the U.S. has grown at an exponential rate. According to Pew Research Hispanic Trends Project, 11.1 million undocumented immigrants lived in the U.S. in 2014, compared to 3.5 million in 1990 (Passel & Cohn, 2016). Florida is the third-largest immigrant serving state with approximately 850,000 undocumented immigrants, sharing 5% of the national labor force (Passel & Cohn, 2016).

In spite of ever-increasing levels of mechanization, many important agricultural production facilities in the U.S. are dependent on hired farm labor, over half of which is made up of unauthorized immigrant workers (Knutson & Fisher, 2011). Agriculture is a significant component of the Florida economy requiring a "continuous, economically feasible, and authorized

workforce to sustain the state's economic growth" (Bowden, Lamm, Carter, Irani & Galindo, 2012, p. 1). Because of the intense physical work required in farm labor, the Florida agricultural industry heavily depends upon immigrant workers to perform important roles in crop production and harvest (Florida Farm Bureau, 2014) and does not have a replacement workforce should this group of workers disappear. Because many jobs associated with agricultural production are not preferred by domestic labor, policies have been put in place to allow immigrants to enter the U.S. so they can legally work in seasonal or temporary positions (Knutson & Fisher, 2011). However, public opinion toward undocumented immigrants was "overwhelmingly negative" (Muste, 2013, p. 408). Parker and Lamm (2014) used the Attitudes towards Illegal Aliens Scale (Ommundsen & Larsen, 1997; 1999) to examine public opinion toward undocumented immigrants and found that people generally perceived undocumented immigrants as costing the U.S. millions of dollars each year, infringing on the country's resources, and not deserving the same rights as American citizens.

Agricultural communicators need to understand the public's opinion of undocumented immigrants and immigration issues because public opinion strongly influences public policy (Burstein, 2003). According to Johnson and Hill (2011), the public considers the current immigration policies and regulations enacted by state or local governments as the primary source of failure. Therefore, state and local governments are becoming more active in addressing immigration issues by discouraging undocumented immigrants and establishing sanctuary cities, even though most immigration policies are federal (Johnson & Hill, 2011).

Over time, states that have a more liberal public have passed more liberal policies, while states with a more conservative public have passed more conservative policies (Erikson, Wright, & McIver, 1993; 2006). Public opinion of undocumented immigration issues will become increasingly important as immigration policy formation and implementation is enacted. Additionally, Rivera (2014) argued that public opinion matters because the issue of undocumented immigration is salient to the public. The public is able to compare what is happening around them with state legislation and make conclusions about whether or not the legislation aligns with public opinion.

One of the distinct characteristics the U.S. is known for is its linguistic diversity (Ortman & Shin, 2011). Data from the U.S Census Bureau shows that approximately 20% of the U.S. population speaks a language other than English (Ortman & Shin, 2011). An American Community Survey further supported this finding, reporting that 20.8% of Americans speak another language at home (Ryan, 2013). The number of people who can speak a language other than English has increased in the U.S. over time. The Pew Research Center (2013) found the number of Spanish speakers in the U.S. had increased 233% since 1980, and Vietnamese speakers 599% over the same period. The growing number of people in the U.S. who speak a second language suggests a greater diversity within American society due to a larger number of immigrants and their impact on native English speakers. Florida ranks seventh nationally in the percent of the population speaking another language at home (Ryan, 2013). Nearly five million Florida residents (27.6%) speak another language at home (Ryan 2013).

Due to the importance of immigration to the Florida agricultural and natural resource industry, the significance of public opinion on immigration policy, and the ample number of people who are bilingual in the state, we sought to determine how attitudes toward undocumented immigration issues and preferences for receiving information about undocumented immigration issues differed between those who were bilingual and those who only spoke English.

LITERATURE REVIEW

Ways to become a bilingual vary (Michael & Gollan, 2005). The linguistic classifications of bilingualism are early and late bilinguals. Early bilinguals are those who attained proficiency in a second language during early childhood, and late bilinguals are those who are exposed to a second language later than childhood (Fiszer, 2008; Lai, Rodriguez, & Narasimhan, 2014). People who speak another language often have some type of association with immigrants. According to Birner (n.d.) from the Linguistic Society of America, individuals who can speak another language in the U.S. are often the children of immigrants (documented or undocumented). These children who speak their parents' native language at

home during their childhood while speaking English at school become early bilinguals. Early bilinguals can also be those whose parents speak more than one language to them or those who are exposed to another language by interacting with other significant persons in their lives (such as a grandparent or caretaker) (Birner, n.d.).

On the other hand, many bilinguals are not necessarily closely related to immigrants (Birner, n.d.). Individuals may have acquired a second language sometime after acquiring their first language, perhaps in a classroom, classifying them as a late bilingual (Birner, n.d.). In the U.S. these bilinguals are likely to be Americans who are interested in learning another culture's language, and who are likely to have experience outside of the U.S. in places where they themselves are not considered native.

Bilingualism is a valuable element when examining public attitude toward immigration as language ability is a "cornerstone cross-cultural skill" (Newman, 2012, p. 144). The ability to speak more than one language shortens "cultural distance" (Newman, Hartman, & Taber, 2014, p. 167). Cultural distance is a concept used to describe the degree to which people differ in respect to "values, beliefs, norms, customs, and language between distinct cultural entities" (Newman et al., 2014, p. 3).

Language, as one of the important aspects of cultural distance, creates barriers for individuals to communicate and interact with others from a different culture and can even create feelings of threat (Newman, 2012). Being able to speak another language may increase the understanding and receptivity to the beliefs, values, and norms of a different culture (Newman et al., 2014). Therefore, bilingualism becomes a valuable indicator to measure people's attitude toward undocumented immigrants and immigration issues (Newman, 2012).

The theoretical framework for this study was guided by construal level theory and uses and gratification theory. Construal level theory argues that psychological distance influences an individual's choice, attitude, and actions to the related event (Trope, Libermen, & Wakslak, 2007). Psychological distance is explained from the temporal, space, social, and hypothetical aspects. An event that is perceived to be further into the future, at a more remote location, less socially familiar, or less likely to happen to an individual is processed as a higher-level construal (Trope & Libermen, 2010). Higher-level construals tend to employ general and abstract mental schemata to represent an event. The representation of the event often lacks contextual details. On the other hand, lower-level construals are able to create concrete, vivid, and specific mental schemata when processing an event. This event usually includes rich contextual details (Kardes, Cronley, & Kim, 2006).

Previous research has shown that lower-level construals can impact an individual's attitudes. When compared to experiences that are indirect and abstract, direct concrete experiences are likely to form strong attitudes that enable the creation of distinct memories (Fazio, Powell, & Williams, 1989; Fazio & Zanna, 1981; Smith & Swinyard, 1983). Troup and Libermen (2007) suggested experiences lacking direct contact (e.g., distant places, times) trigger a more abstract high-level construal that is expressed through more general responses. Bilinguals often have direct experience with immigrants (Birner, n.d). They are more likely to engage in immediate rich contextual details with information about immigration issues and create low-level construals than those who only speak English. For example, Jia and Smith (2013) found that when immigration issues were made temporally near, self-protective motives (concrete low-construal level) played a bigger role in their study participants' attitude toward immigration than high-construal level motives. Analogous to the effect of temporal distance, this study proposed that bilingual and non-bilingual individuals held dissimilar attitudes toward undocumented immigration issues because bilinguals are likely to use lower-construal mental presentation than non-bilinguals who may have further psychological distance from undocumented immigration issues.

According to the uses and gratification theory, when media users are actively involved in a topic, such as agricultural and natural resources issues, they select a communication channel based on their shared motives and interests. This theory argues that participants' information needs drive their selection of a media channel (Katz, Blumler, & Gurevitch, 1974; Kippax & Murray, 1980; Rosengren, 1974). This media selection behavior is "goal-directed, purposive, and motivated" (Rubin, 2009, p. 167).

Throughout history, researchers have identified needs associated with specific media channels. Berelson (1949) found that people read newspapers to acquire "serious" information, to appear informed and be perceived as prestigious in social gatherings (p. 114). People used television and radio to "escape the boredom of everyday life, to have something to talk about with others, to compare the people and events in the programs with their own experiences, and to keep in touch with the main events in the world" (Kippax & Murray, 1980, p. 336). McQuail, Blumler, and Brown (1972) said television provided gratification of tension or emotional release, social integration, companionship, education, and surveillance. The use of new technology, such as social media and websites, has served users similarly to television (Papacharissi & Rubin, 2000). In addition, interactive new media emphasizes a strong casual, interpersonal sensation that greatly gratifies its new media users' needs for social presence such as sharing problems, sociability, and social information (Cowles, 1989; Dicken-Garcia, 1998; Quan-Haase & Young, 2010).

Meyers, Gracey, Irlbeck, and Akers (2015) examined the uses and gratifications of agricultural blog readers. Findings suggested the motives for reading agricultural blogs were to learn about others' opinions of agricultural issues and to discover information not available in other news sources. Lamm, Rumble, Carter, and Lamm (2016) utilized uses and gratification theory to examine opinion leaders' media preferences to communicate about agricultural and natural resources issues. Communication channels examined by Lamm et al. (2016) not only included mass media channels, but also interpersonal channels such as conference calls. Findings of Lamm et al. (2006) suggested a preference for communication channels that foster interpersonal interaction.

PURPOSE AND OBJECTIVES

The purpose of this study was to explore the differences in attitudes toward undocumented immigration and information channel preferences when learning about undocumented immigration issues between Florida residents who are bilingual and those who are not bilingual. The objectives of this study were to:
1. Describe respondents' attitudes toward undocumented immigrants.
2. Describe respondents' preferred information channel when learning about undocumented immigration issues.
3. Compare attitudes toward undocumented immigrants between individuals who are bilingual and those who can speak only English.
4. Compare the preferred information channel when learning about undocumented immigration issues between individuals who are bilingual and those who can speak only English.

METHODS

An online survey was conducted to fulfill the objectives of this study. Undocumented immigration was defined in the survey as "foreign nationals residing in the U.S. without legal immigration status, resulting from someone entering the country without permission or remaining in the U.S. after a legal visa expires" (Odera & Lamm, 2013, p. 9). To measure attitude toward undocumented immigrants, respondents were asked to indicate their level of agreement with 19 statements. The list of statements was slightly altered from the Attitudes towards Illegal Aliens Scale developed by Ommundsen and Larsen (1997; 1999). Examples of the statements included "Undocumented immigrants should not benefit from my tax dollars" and "All undocumented immigrants deserve the same rights as U.S. citizens." Each of the statements were rated on a five-point Likert scale ranging from 1= *Strongly Disagree*, 2 = *Disagree*, 3 = *Undecided*, 4 = *Agree*, to 5 = *Strongly Agree*. In term of the real limits, 1.00 – 1.49 was considered strongly disagree, 1.50 – 2.49 was disagree, 2.50 – 3.49 was undecided, 3.50 – 4.49 was agree, and 4.50 – 5.00 was strongly disagree. Prior to the data collection, a pilot study was conducted with 50 Florida residents to test the internal reliability of the survey instrument. The results were deemed to be reliable (α = .87). Eight out of 19 statements were reverse coded and then all 19 statements were summed and averaged to create an overall index score. Respondents were also asked what their preferred information channels were to receive information about undocumented immigration and whether they could speak a language other than

English. Preferred communication channels for receiving information about undocumented immigration were measured by asking respondents to check all their preferred information channels from a list of items including visiting a website, watching TV coverage, attending a seminar or conference, etc. This study was part of a larger project related to Florida residents' opinions of undocumented immigration.

The population of interest for this study was Florida residents age 18 or older. Qualtrics, a survey software company, was hired to distribute the online survey to the population of interest. Non-probability sampling was used when collecting data. Public opinion research commonly utilizes non-probability sampling techniques to make population estimates (Baker et al., 2013). In this study, 503 out of 527 respondents in Florida gave full responses to the survey, generating a response rate of 95.4%. Post-stratification methods were used to weight the data to compensate for potential selection, exclusion, and non-participation biases (Baker et al., 2013). The respondent demographics were weighted to ensure representation according to the 2010 U.S. Census using geographic location in the state, age, gender, and race/ethnicity (Kalton & Flores-Cervantes, 2003). The use of weighting procedures can yield results comparable, or in some cases better than standard probability-based samples (Abate, 1998; Twyman, 2008; Vavreck & Rivers, 2008). Demographic characteristics of the sample and 2015 Florida census can be seen in Table 1.

Table 1

Florida Demographics Represented in Survey Respondents and Florida Census

Demographic Category	Respondent %	Census %
Gender		
Female	51.1	51.1
Male	48.9	48.9
Ethnicity		
Hispanic	22.5	24.5
Non-Hispanic	77.5	75.5
Race		
White	77.1	77.7
African American	17.0	16.8
Asian	3.0	2.8
Native American	0.2	0.1
Age		
19 and younger	1.3	21.4
20-29 years	12.8	13.1
30-39 years	12.2	12.2
40-49 years	14.2	12.6
50-59 years	13.5	13.9
60-69 years	11.1	12.2
70-79 years	7.4	8.3
80 and older	4.9	5.2
Language ability		
Bilingual	19.3	N/A

Non-bilingual	80.7	N/A

Note. Data were analyzed using descriptive statistics, t-test and Chi-square in statistical software IBM SPSS Statistics version 22.

RESULTS

Objective 1: Describe Respondents' Attitudes Toward Undocumented Immigrants.

Respondents were asked to respond to 19 statements associated with their attitude toward undocumented immigrants on a five-point Likert scale. Table 2 displays the respondents' mean and standard deviation for each statement. To calculate an index score, eight of 19 items were reverse coded and the responses were averaged. Reliability was calculated *ex post facto* resulting in a Cronbach's alpha of .87. The mean score was 2.29 (*SD* = .78) indicating average overall disagreement with the statements and a negative attitude toward undocumented immigrants.

Table 2

*Attitude Toward Undocumented Immigrants (*N *= 503)*

Statement	M	SD
Undocumented immigrants have rights, too.	3.12	1.22
Undocumented immigrants should not be discriminated against.	3.07	1.24
Undocumented immigrants are a nuisance to society.*	3.03	1.17
There is enough room in this country for everyone.	3.01	1.24
Undocumented immigrants provide the U.S. with a valuable human resource.	2.75	1.15
Undocumented immigrants should be forced to go back to their own countries.*	2.63	1.27
Undocumented immigrants who give birth to children in the U.S. should be made citizens.	2.47	1.23
Undocumented immigrants are not infringing on our country's resources.	2.17	1.21
Access to this country is too easy.*	2.14	1.17
Undocumented immigrants should not have the same rights as U.S. citizens.*	2.09	1.22
Taking care of people from other nations is not the responsibility of the U.S.*	2.05	1.09
Undocumented immigrants should be excluded from social welfare.*	1.97	1.13
Our taxes should be used to help those residing without documentation in the U.S.	1.96	1.19
All undocumented immigrants deserve the same rights as U.S. citizens.	1.95	1.10
There should be open international borders.	1.90	1.07

Undocumented immigrants cost the U.S. millions of dollars each year.*	1.87	1.02
The government should pay for care and education of undocumented immigrants.	1.82	1.03
Undocumented immigrants should not benefit from my tax dollars.*	1.80	1.01
Undocumented immigrants should be eligible for welfare.	1.73	1.02
Overall	2.29	.78

* indicates reverse coded items.

Note. 1= Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, to 5 = Strongly Agree. Real limits: 1.00 – 1.49 was considered strongly disagree, 1.50 – 2.49 was disagree, 2.50 – 3.49 was undecided, 3.50 – 4.49 was agree, and 4.50 – 5.00 was strongly disagree

Objective 2: Describe Respondents' Preferred Information Channel When Learning About Undocumented Immigration Issues.

Respondents were then asked to identify which information channel they would prefer to use to receive information about undocumented immigration issues (Table 3). The majority of respondents indicated their preference was visiting a website (62.4%), followed by watching TV coverage (41.0%), and reading printed factsheet, bulletins or brochures (31.4%).

Table 3
Information Channel Preference (N = 503)

Information channel	*f*	%
Visit a website	314	62.4
Watch TV coverage	206	41.0
Printed factsheet, bulletins or brochures	158	31.4
Read a newspaper article or series	143	28.4
Watch a video	89	17.7
Take part in a one-time voluntary activity	46	9.1
Attend a seminar or conference	46	9.1
Attend a fair or festival	45	8.9
Attend a short course or workshop	43	8.5
Get trained for a regular volunteer position	35	7.0
Other	32	6.4
Look at demonstration or display	28	5.6

Objective 3: Compare attitudes toward undocumented immigrants between individuals who are bilingual and those who can speak only English.

An independent *t*-test was conducted to determine the effect of being bilingual on attitude toward undocumented immigrants. Bilingual respondents had a mean score of 2.62 (*SD* = .82). According to the real limits described in methods

section, a mean score of 2.62 categorized bilingual respondents' attitude toward undocumented immigrants as undecided. Non-bilingual respondents had a mean score of 2.21 (SD = .75), which indicated that they disagreed with the statements. The mean difference between respondents' overall attitudes toward undocumented immigrants and respondents' language ability was significant (t = 4.77, p < .01).

Objective 4: Compare the preferred information channel when learning about undocumented immigration issues between individuals who are bilingual and those who can speak only English.

Table 4 shows that visiting a website was the most preferred communication channel followed by watching TV coverage for people who were bilingual and those who were not. Some respondents, bilingual and non-bilingual, preferred to receive information about undocumented immigration from printed materials, newspaper articles, or videos. By comparing the information channel preference between bilingual and non-bilingual respondents, few bilingual respondents or non-bilingual respondents preferred to learn about the issues through a demonstration or display, attending a short course or workshop, getting trained for a regular volunteer position, or attending a seminar or conference.

Chi-Square tests were conducted to compare the association between information channel preferences and respondents' language ability. Results revealed there was a statistically significant association with the preference to visit a website for information about undocumented immigration issues and the respondents' language ability (p = .05) with bilingual respondents reporting a higher interest in websites than non-bilingual respondents (see Table 4). No significant association was found between respondents' preferences toward other information channels and their language ability.

Table 4

Differences in Preferences to Use Specific Information Channels

Information Channels	Bilingual		Non-bilingual			
	n	%	n	%	X^2	p
Visit a website	69	71.1	245	60.3	3.89	.05*
Read a newspaper article or series	35	36.1	108	26.6	3.46	.06
Take part in a one-time voluntary activity	13	13.4	33	8.1	2.62	.11
Printed factsheet, bulletins or brochures	24	24.7	134	33.0	2.48	.12
Other	4	4.1	28	6.9	1.01	.32
Attend a short course or workshop	10	10.3	33	8.1	.48	.49
Get trained for a regular volunteer position	8	8.2	27	6.7	.31	.58
Attend a fair or festival	10	10.3	35	8.6	.27	.60
Look at demonstration or display	6	6.2	22	5.4	.09	.77
Watch TV coverage	39	40.2	167	41.1	.03	.87
Watch a video	17	17.5	72	17.7	.00	.96
Attend a seminar or conference	9	9.3	37	9.1	.00	.96

CONCLUSIONS AND IMPLICATIONS

We sought to determine Florida residents' attitude toward undocumented immigrants and preferences for information channels to learn about undocumented immigration issues and to explore how attitude toward undocumented immigration differed among those who were bilingual and not bilingual. Results revealed that Florida residents' attitudes toward undocumented immigrants tended to be negative. For example, Florida residents disagreed that all undocumented immigrants deserve the same rights as U.S. citizens, disagreed that undocumented immigrants should be eligible for welfare, and agreed that Undocumented immigrants should not benefit from my tax dollars. This result was consistent with the findings of Parker and Lamm (2014), who used the same attitude index and found that people generally perceived undocumented immigrants as costing the U.S. millions of dollars each year, infringing on the countries resources, and not deserving the same rights as American citizens.

The second objective's findings disclosed that bilingual individuals in Florida had a significantly different attitude toward undocumented immigrants than non-bilingual individuals. Bilingual respondents were significantly more inclined to feel undecided with the statements about undocumented immigrants. This finding is consistent with finding of Newman et al. (2014) that being able to speak another language increased the understanding of the beliefs, values, and norms of another culture, thus inducing a more positive attitude toward undocumented immigrants than those who do not speak another language. Based on construal level theory, the finding hinted that bilinguals were likely to adopt concrete low-level construals through rich, direct, detailed context when thinking about undocumented immigration issues, while non-bilinguals adopted high-level construals with general decontext mental presentations.

This study also examined Florida residents' preferences for information channels to receive information about undocumented immigration issues. Visiting a website was the most preferred information channel for the majority of both bilinguals (71.1%) and non-bilinguals (60.3%). However, visiting a website was significantly more preferred by bilinguals than by non-bilingual respondents. Besides visiting a website, watching TV coverage, reading a newspaper article or series, printed factsheet, bulletins or brochures, and watching a video were also perceived by many respondents to be the preferred channels of receiving information regarding issues about undocumented immigration.

This study included a few interpersonal communication channels as options for the respondents to learn about undocumented immigration issues. All these interpersonal communication channels are participatory channels that are common for agricultural extension activities, including attending voluntary activities, attending a fair or festival, attending a short course or workshop, attending a seminar or conference, getting trained for a regular volunteer position or looking at a demonstration or display. However, less than 15% of Florida residents chose participatory methods to acquire information about the issue. Based on uses and gratification theory, respondents' selection of a media channel bases on their needs and motivations (Katz et al., 1974; Kippax & Murray, 1980; Rosengren, 1974). Interpersonal communication channels such as attending a seminar and conference do not meet participant's needs and motivations to learn about undocumented immigration issues.

In terms of learning about undocumented immigration issues, mass communication channels such as a website, TV coverage, and videos are the more favorable channels than those that require physical participation in the communication. This finding suggested the potential role of television, websites, and videos to provide education about undocumented immigration issues (McQuail et al., 1972; Papacharissi & Rubin, 2000).

RECOMMENDATIONS

Considering the importance of immigrants to agriculture in the U.S., agricultural communicators will inevitably encounter immigration issues and will need to communicate clearly about these issues (Friedman, 2006). Agricultural communicators should approach these topics carefully by framing information differently when communicating about immigration with audiences with different language abilities. For example, focusing on undocumented immigrants' positive contributions, such as taking on hard labor positions, when communicating to non-bilingual audiences and discussing cultural values to build connections with bilingual audiences may be appropriate. By framing messages in this way, agricultural communicators will be able to connect to the schemata formed by cultural differences and create messages that directly resonate with the experiences and background of bilinguals and non-bilinguals alike, therefore enabling the messages to resonate with the intended audience.

Based on respondents' communication channel preference found in this study, agricultural communicators should consider creating user-friendly websites providing unbiased and targeted information about immigration issues or effective television coverage about the issues so as to efficiently reach out the public and inform the public about immigration. Participatory communication methods such as voluntary activities, workshops, or conferences should be carefully planned and publicized in order to ensure desirable results as they were not found to be of interest to the public in general. Because bilingual audiences prefer to use websites significantly more than non-bilingual audiences, agricultural communicators should also consider creating bilingual websites and incorporating messages that connect to their schemata in order to engage this audience with information about undocumented immigration.

For future research, we suggest analyzing the public's knowledge level on issues about undocumented immigration and determining whether or not a knowledge gap exists between people who are bilingual and those who are non-bilingual. Policy makers and communicators could learn about what knowledge the public lacks or misunderstands so as to provide corresponding educational materials. Experimental research should be conducted to control participants' low or high construals to find out whether psychological distance to immigrants has causal relationship with their attitude toward undocumented immigration issues. Further research focusing on how bilinguals obtain their information regarding issues on undocumented immigration will further reveal whether personal background and experience with immigrants significantly contributed to their knowledge level on related issues as this study presumed in conclusion. It is also valuable to explore the information source trustworthiness in term of issues related to undocumented immigration. Uses and gratifications theory emphasizes the relationship between media users' motives and their selection of certain media channel. Therefore, researchers should further investigate the public's motives for searching for and learning about undocumented immigration issues. With sufficient research about target audiences' preferences for information channels, trustworthiness of information sources, and motives behind learning about these issues, agricultural educators and communicators will be able to utilize the most trusted information sources and content to communicate effectively about undocumented immigration issues.

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RESEARCH

The Potential Return on Investment of the Recruitment Strategies for an Academic Unit Focused on Agricultural Sciences

J. Tanner Robertson, Taylor Hurst, Kevin Williams, and Lance Kieth

ABSTRACT

University recruitment strategies could be an important factor in attracting students and keeping enrollment numbers growing to a desired level. Research has shown that colleges of agriculture should investigate their traditional recruiting techniques and develop new plans to target desirable students. Students are viewed as revenue generators for the university, and with money and time being two important considerations, it is essential and helpful to know where both are best utilized in the recruitment process. The purpose of this study was to determine which recruiting methods and strategies are the most cost effective and work best for agriculturally focused departments. The researchers used a descriptive survey to collect data on participants' preferred and influential recruitment methods and strategies. First-year students in this study chose campus tours and visiting with a faculty member on campus to be the most influential over all other recruiting strategies/methods in their decision to enroll at the university. Additionally, these specific recruitment strategies are also least expensive to employ, therefore, giving the department/university over 15 times the return of its investment. Promotional materials such as caps, key chains, and pens can produce a very high return because of the low input cost per unit. Overall, the strategies the department employs to recruit prospective students show to be effective, however, there is always room for improvement. However, other factors such as scholarship availability, cost of tuition, admission requirements and proximity to home could also be what attract students to the university.

KEY WORDS

College Choice, Marketing, Recruitment Strategies, Return on Investment

INTRODUCTION

Competition for quality students among universities has intensified as the need to generate additional tuition revenue has increased. Nationally, state budget cuts for higher education have led universities to focus on generating its own revenues to decrease the financial requirements to provide quality education (Berman & Paradeise, 2016). According to the Grapevine Summary of State Higher Education Tax Appropriations (2016), state appropriations for higher education have trended downward in recent years and only seen marginal gains in budget reallocations during the last budget cycles. Universities' recruitment strategies could be an important factor in attracting students and keeping enrollment numbers growing to a desired level. In addition, faculty are often asked to assist in recruitment and retention strategies, thus adding to workload or refocusing faculty efforts from teaching and research to service.

According to Redlinger and Valcik (2008), students are viewed as revenue generators for the university, and with money and time being two important considerations, it is essential and helpful to know where both are best utilized in the recruitment process. Heldman (n.d.) found the average per student recruiting expenditure for a four-year university to be just under $714, making the cost to recruit 3,000 students each year over $2 million. However, as colleges and universities face shrinking budgets and fewer state appropriations, recruitment budgets could experience decreases, thus limiting or changing the strategies and techniques universities implement in the recruitment of quality students.

There is a push by some university administrators to increase headcount enrollment. With time and money under strain, recruiting strategies should focus on efficiency. Thus, recruitment techniques that do not provide universities an adequate return on investment (ROI) considering both time and financial expenditures should hold less value to those creating recruiting strategies and methods. Time and availability of faculty members during the recruiting process can play an important role in the success of a recruitment program (Cartmell, Herren, & Robertson, 2011). However, faculty members often have full teaching loads, research requirements, and service that limit time or availability in the recruitment process.

With consideration of faculty schedules as well as constant threats to university/ departmental budgets, it is important to analyze recruitment strategies not only for their success in recruiting quality students to the university but also to gain a better understanding of the potential return universities and/or departments are obtaining based on money and time allocated to the recruitment process.

Basic to any marketing strategy is the activity of informing potential students as to the strengths and/or "marketable" features of a particular university or college. Many universities work toward more sophisticated marketing strategies as well as methods that are more appealing to prospective students in order to maintain a competitive edge. As competition for quality students intensifies, college administrators are sticking to the belief they can influence a student's college choice by targeting its recruiting toward their institutional descriptors (Chapman, 1981). In a seminal study on the University of Idaho recruitment efforts (Riesenberg, 1987), it was recommended to pay special attention to certain factors that potential students rated as important in their decision to attend a university or college including specific majors available, employment opportunities after graduation, financial aid, faculty reputation, the variety of courses available, and housing opportunities.

Universities need to consider the overall costs of recruitment strategies, not only the cost of materials to recruit. As budgets dwindle and faculty workloads increase, it is imperative that entities consider the ROI of its efforts to ensure efficiency in marketing efforts exist both financially and with its human capital.

CONCEPTUAL FRAMEWORK

Recruitment Strategies

To recruit first-year students, a major promotional tactic for higher education marketers is the use of promotional materials to showcase a university's brand (Armstrong & Lumsden, 1999; Baker, Settle, Chiarelli, & Irani, 2013). The publication and distribution of these materials is one of the most prevalent marketing tactics used by colleges and have proven influential in deciding to enroll at a university (Armstong & Lumsden; Cartmell et al., 2011).

Promotional materials can be used as marketing tools by informing prospective students of the university's brand. Brand awareness refers to how aware customers and potential customers are of your business and its products (Chabot & Gustafson, 2007). Although promotional materials may not be the most influential strategy in a students' decision to attend a university, many promotional items do contribute to the overall branding of the university and could provide additional support when making a college choice (Cartmell et al., 2011; Rayfield, Murphrey, Skaggs, & Shafer, 2013). Baker et al. (2013) recommended recruitment materials should be targeted and designed strategically toward a diverse group of students and their specific interest area, suggesting recruitment strategies should be focused by discipline or college.

Recruitment materials could potentially improve by providing prospective students with better information about the diversity of career opportunities within agriculture (Baker et al., 2013; Boys & Espey, 2012). Recruitment efforts should focus on reaching an increasingly diverse and non-agricultural group of potential students while also continuing to improve recruitment materials and media that will resonate with parents/guardians (Baker et al., 2013; Rayfield et al., 2013). Promotional materials also need to be updated in order to keep up with changing trends in marketing and media use and to appeal to all groups involved in the decision-making process (Armstrong & Lumsden, 1999, Baker et al.). Studies on the decision-making process have found the most used and most influential individual in university selection was a parent or guardian (Chapman, 1981; Cartmell et al., 2011). However, more recent evidence suggests faculty advisors have considerable influence on choice of college or major (Baker et al.).

Rayfield et al. (2013) found successful recruitment and retention of students enrolling in agriculture related majors have varied over time and location. Their research determined the influence of five different factors on a student's selection of an agricultural major: 1) exposure to agriculture, 2) family and friends, 3) college of agriculture recruitment activities, 4) professionals and 5) job considerations. Results revealed that prior experience in agriculture was the most influential factor. Other influential factors included the atmosphere of specific departments within the college, however, recruitment materials such as informational brochures were reported less frequently to be influential in a student's decision in college choice (Rayfield et al.).

Washburn (2002) found campus visits to be the most useful source of information prospective students used to choose a college. More than half of graduates in a similar study used information gathered during a campus visit to make the decision to enroll at the university (Cartmell et al., 2011). Research also identified personal contacts with someone employed at the university or with current students to be an important recruiting strategy. Campus visits and personal conversation with a professor provided the most useful information of all recruitment materials used by students to make their decision to enroll (Cartmell et al.).

According to Hesel (2004), a campus visit is the single most influential source of information for students when choosing a college. Nearly all students of every academic ability and income level are visiting college campuses (Hesel). The findings from this research reveal the hospitable nature and friendliness of the people prospective students encountered during these visits had a significant positive impact on their interest in a university.

Return on Investment

Return on investment matrices are used to evaluate program success in all forms of organizations including the public sector and non-profit organizations (Phillips & Phillips, 2009). The resurgence in ROI methodology could be due to administrators' need for data that assists in measuring human performance. Lingane and Olsen (2004) contend more focus on social returns on investment may help create more financial value but also develop better social value of certain tasks and the time these tasks consume. A ROI measures the overall effectiveness in generating profits with available assets (Beierlein, Schneeberger, & Osburn, 2003; Van Horne & Wachowicz, 2008).

Research on ROI in education began in the late 1950s (Patrinos & Psacharopoulos, 2010). In the 40-plus year history of estimating ROI in education, empirical results often link the investment in education to the level of economic development (Patrinos et al., 2010).

Administrators at Eastern Michigan University sought to consider factors beyond yield when evaluating the effectiveness of recruitment strategies after ROI metrics were used to evaluate its recruitment methods. One instance included a reception for students that continued to be held because of enrollment data indicating it produced a high yield of students who ultimately enrolled (Hoover, 2010). Focusing on ROI discovered 90 percent of students who attended the receptions had already signed up to visit the university and register for classes (Hoover).

Redlinger and Valcik (2008) discussed using ROI models of programs and faculty in strategic planning. Their ROI model for different areas of the university created a more robust means for continued and future allocation of campus resources

and established the basis for performance evaluation (Redlinger & Valick). The overall model viewed students as revenue generators for the university, and the data generated by the ROI model allowed clarity in many questionable areas. These models proved that ROI could be used to guide colleges and universities as they seek to control costs, streamline operations, and improve the quality and effectiveness of the educational experiences of their students.

Purpose and Objectives

The purpose of this study was to determine which recruiting methods and strategies are the most cost effective and work best for agriculturally focused departments at a university. The objectives for this study were:

1. Determine which recruiting methods and strategies are most influential in determining first-year enrollment in an agriculturally focused department,
2. Determine the investment (i.e. time, financial, methods) of recruitment methods in an agriculturally focused department, and
3. Determine the potential return on investment of recruitment methods and strategies of an agriculturally focused department.

METHODS

The researchers used a researcher-designed, descriptive survey to collect data on participants' preferred and influential recruitment methods and strategies used by an agriculturally focused department for this study. This method was used to describe the influence of recruitment efforts on participants' decision to enroll. Participants' ranked the importance of specific recruitment methods and strategies and the influence each method or strategy had on their decision to enroll at the university. In turn, the data collected from the instrument was used to develop a better understanding of what strategies are most effective in influencing potential first-year students to enroll at the university.

Investment for each recruitment method and strategy was calculated in order to determine an approximate ROI. Investment for recruitment materials such as bags, pens, notepads, etc. was determined by calculating the cost per unit based on the overall cost of the vendor charge for already made orders. Recruitment events such as a departmental representative visiting a high school or attending an event was calculated by including the entire cost of the trip including: mileage, hotel costs, food, etc. Salaries were not calculated in the cost of trips because faculty that participated use these trips to satisfy their service requirement of their employment agreements, thus the researchers considered these trips to be normal duties and not to be considered additional to their workload.

In order to determine the investment of a student visit with a faculty member and campus tours, faculty visit records were analyzed to determine which individual faculty visited with potential students over a one-year period. Faculty are asked to meet with prospective students as part of an official campus tour but also if a prospective student visits the campus without scheduling an official visit. Faculty that met with prospective student visitors were then asked to use a time log for one semester to determine, on average, how much time they allocate to visiting with a potential student and/or the family per visit. Salaries from participating faculty were averaged, then divided by 2,080 (work hours per year based on a 40-hour work week), then by 60 minutes (per one hour) to determine pay per minute. Cost per minute was multiplied by 37 (in minutes), which is the average time faculty members spend meeting with one prospective student as indicated by faculty. The formula is as follows: ($87,520.87/2,080/60 = salary per minute) x 37 = cost per student visit with faculty member (= $25.95 per visit). The average salary is skewed toward the high end of salary ranges ($55,000 – $120,000) because full professors and/or the department head performed many of the visits. In addition, the variation in salaries includes animal science, plant science, agricultural education, agribusiness and agricultural communication faculty thus contributing to a vast salary range. This formula was developed by determining the average salary in the department and assuming pay is based on a 40-hour work week (D. Garcia, personal communication, February 4, 2015). Calculations were made using the formula function of Microsoft Excel spreadsheet.

In order to calculate the return on the departments' investment, a formula was used to determine the gross revenue a first-year student to the university generates. The estimated gross revenue of an agriculture student, who is a Texas resident, taking 15 hours per semester for one year is equal to $10,245.75 (D. Garcia, personal communication, February 4, 2015). This number is based on the state's 2014 – 2015 average tuition and fees and 2011 state formula funding tables. To calculate the return on each recruitment strategy, the cost of the recruitment strategy was subtracted from the student-generated revenue (Beierlein et al., 2003). Next, the total was multiplied by the frequency of how often the recruitment strategy was ranked as most influential by participants. An example of the formula is as follows: ($10,245.75 – cost of strategy) x frequency.

The target population of this study consisted of first-year students enrolled at a university and majoring in an agriculturally focused discipline. Participants were self-selected based on choice of major and enrollment into one of the four agriculture majors-only sections of a requirement freshman seminar course. As per university policy, all first-year students must be enrolled in a freshman seminar course, thus all students enrolled in an agriculturally focused discipline at the university after the 12th class day were asked to participate in the study. The instrument was distributed to students attending the seminar course sections the third week of the fall 2014 semester.

The survey instrument was created by the researchers as a tool to determine first-year students enrolled at a university and majoring in an agriculturally focused disciplines awareness and exposure of the university before choosing to attend. The instrument was also used to determine recruiting techniques participants were exposed to and how influential or important these methods or strategies were in choosing to enroll at the university. The first section of the instrument consisted of questions to determine participants' first exposure and experience with the agriculturally focused department. These experiences included campus tours, various livestock shows attended by a departmental representative, FFA events, and visits with faculty members from the department.

The second section comprised of questions regarding how influential recruiting methods and strategies were in the participants' decision to pursue an agricultural degree at the university. Section Three used the same questions from Section Two; however, in this section, students were asked to rank (1-11) and (1-17) how influential recruiting methods and strategies were in the participants' decision to enroll in the university.

Validity and Reliability

The instrument was designed for this study, thus it was reviewed and edited by three panel of experts for face and content validity. A pilot test was given to one section of a university freshman seminar class separate from the agricultural major sections to test face and content validity. Two sections of the survey were edited to improve instructional understanding to the questions and to increase response rate.

Reliability is important when variables developed from summated scales are used as predictor components in objective models (Reynaldo & Santos, 1999). Cronbach's alpha is a numerical coefficient of reliability that determines if the variables derived from the test instrument provided stable and reliable responses over a repeated administration of the test (Reynaldo & Santos). A Cronbach's Alpha was calculated (.912) on participants' responses post hoc and determined reliable for use in this study (Reynaldo & Santos).

Data Collection

The instrument was administered in class to four agriculture-major designated, sections of a freshman seminar course week 12 of a 16-week course after Institutional Review Board approval. Students enrolled in these sections were provided with instructions, the purpose of the study and statements stating the questionnaire was optional as well as confidential. It also stated that no compensation would be given for participation.

Once the questionnaires were collected, each one was reviewed for completion. Questionnaires left blank were not analyzed. A total of 83 questionnaires were completed and analyzed out of 170 for a response rate of 48%. As the questionnaire was administered later in the semester, it is possible some students were not available to take the questionnaire

as they had already determined to leave the university or were not in attendance during the day of administration. This should be considered as a limitation to the study.

Data Analysis

Data from the instrument was analyzed using the SPSS version 18 statistical package on a Macintosh platform. Descriptive statistics, frequencies, and percentages were used to summarize the data. The means and frequencies were used to rank the data in order of importance and influence according to student response. Along with the data summary, the costs of all recruitment materials were used to determine the ROI for the department. A ROI measures the overall effectiveness in generating profits with available assets (Van Horne & Wachowicz, 2008). Return on investment was calculated with the following formula: ROI = Net Profit/Total Assets.

RESULTS

Influential Recruitment Strategies

The first objective was to determine which recruiting methods and strategies are most influential in determining first-year enrollment. Campus tours were the most common first exposure or connection to the department (56.6%, $n = 47$), followed by "participation in a student activity held on campus" (25.3%, $n = 21$). Recruitment materials also serve as marketing to promote the department. These materials include caps, bags, pens, pencils, key chains, and notepads. Approximately 33% ($n = 28$) of the participants had received some form of paraphernalia from the department prior to applying to the university.

Participants indicated the level of influence their initial exposure/connection to the university or department was in their decision to enroll. Campus tours had the highest mean value ($M = 4.12$), followed by visiting with faculty on campus ($M = 3.86$). These two factors had the highest mean of scaled rankings (Table 1).

Table 1
Level of Influence of Recruiting Strategies and Methods of First-Year Students

Recruiting Strategy/Method	Influence (f)					M
	1	2	3	4	5	
Campus Tour	1	0	10	20	19	4.12
Visit with faculty member on campus	4	2	11	21	19	3.86
Visit with a dept. representative at FFA State Convention	3	0	3	8	5	3.63
Visit by dept. representative at your high school	2	3	7	10	6	3.54
Visit with a rep. from the dept. at the Fort Worth Stock Show	3	1	0	2	5	3.45
Visit with a rep. from the dept. at Area FFA Convention	3	0	1	3	4	3.45
Visit with a rep. from the dept. at the Houston Livestock Show	3	1	1	5	4	3.43
Receiving departmental information by mail	7	13	14	19	14	3.30
Visit with a rep. from the dept. at 4-H Roundup	2	0	1	4	1	3.25
Visit with a rep. from the dept. at a district FFA banquet/meeting	3	0	1	4	2	3.20
Visit with a dept. rep. at the San Antonio Livestock Show	3	0	0	1	3	3.14

Receiving a department key chain	8	6	9	2	4	2.59
Receiving a department bag	7	8	13	3	2	2.55
Receiving a department cap	7	7	6	4	1	2.40
Receiving a department pen/pencil	12	11	12	2	1	2.18
Visit with a WT rep. at the Star of Texas Livestock Show in Austin	3	1	1	0	1	2.17
Receiving a department notepad	10	8	8	1	1	2.11

Note. Scale: 5 = most influential; 4 = influential; 3 = neutral; 2 = not as influential; 1 = least influential
Dept. = agriculturally focused department

Participants ranked recruiting strategies and methods from most influential to least influential. Visiting with a faculty member on campus (*n* = 19) was also ranked as most influential in deciding to enroll by participants. Although it was never ranked as most influential (1), visiting with a department representative at the San Antonio Livestock Show shows to be influential as well (mode = 2). The least influential recruiting strategy shows to be visiting with a department representative at the Fort Worth Stock Show (mode = 16). The mode represents the most repeated ranking each strategy received (Table 2).

Table 2

Ranking of Recruiting Strategies Based on Influence

	Rank	Mode	*f*
Campus Tour	1	1	34
Visit with faculty member on campus	2	2	19
Receiving departmental information by mail	3	2	13
Visit by dept. representative at your high school	4	3	4
Visit with a dept. rep. at FFA State Convention	5	4	4
Visit with a rep. from the dept. at a district FFA banquet/meeting	6	5	1
Visit with a rep. from the dept. at Area FFA Convention	7	7	1
Receiving a department pen/pencil	8	7	1
Visit with a rep. from the dept. at 4-H Roundup	9	13	1
Visit with a rep. from the dept. at the Houston Livestock Show	10	15	1
Visit with a dept. rep. at the San Antonio Livestock Show	11	2	0
Receiving a department cap	12	3	0
Receiving a department key chain	13	4	0
Receiving a department notepad	14	5	0
Receiving a department bag	15	5	0
Visit with a dept. rep. at the Star of Texas Livestock Show in Austin	16	7	0
Visit with a rep. from the dept. at the Fort Worth Stock Show	17	16	0

Note. Rank; 1 = most influential; 17 = least influential
Dept. = agriculturally focused department

Investment of Recruitment Strategies

All recruiting methods and strategies that make up the recruiting budget for the department as well as faculty salaries, and time spent recruiting were collected. The cost of lodging, gas and meals were included in calculating recruiting trips. Materials used to recruit such as caps, notepads, key chains, bags, pens, and printed materials are included and are calculated on a per unit basis. The time faculty spent meeting with students and campus tours are calculated the same as faculty indicated they did not treat formal campus tours differently than impromptu visits by students (Table 3).

Table 3

Recruiting Investment by Method/Strategy

Recruitment Strategy/Method	Cost per unit
Bag (donated)	$-
Pen	$0.22
Notepad	$0.35
Key Chain	$1.50
Information by Mail/Letter from Department	$1.88
Cap	$5.00
Visit with Faculty Member on Campus	$25.95
Campus Tour	$25.95
FFA Banquets/Meetings	$330.11
High School Visit	$718.90
Area FFA Convention	$760.53
Fort Worth Stock Show	$865.40
4-H Roundup	$1,109.16
Houston Stock Show	$1,309.14
San Antonio Stock Show	$1,928.56
Austin Trip	$2,566.02
FFA State Convention	$5,320.16

Return on Investment of Recruiting Methods and Strategies

Objective Four was to determine the potential ROI of the recruitment strategies used by an agriculturally focused department. The frequency represents the number of participants that ranked a particular strategy as most influential. Bags, notepads, and key chains generated the least return. Campus tours generated the most return (ROI = $347,399.76) followed by visiting with a faculty member on campus (ROI = $194,135.16). Complete results are displayed in Table 4 below.

Table 4
Return on Investment of Strategies Ranked 1st Influential to Decision to Enroll by Frequency

Recruiting Strategy	Cost	Freq. Rank 1	ROI
Campus Tour	$25.95	34	$347,473.20
Visit with Faculty Member on Campus	$25.95	19	$194,176.20
Information by Mail/Letter from dept.	$1.88	13	$133,170.31
High School Visit	$718.90	4	$38,107.40
FFA State Convention	$5,320.16	4	$19,702.36
Pen	$0.22	1	$10,245.53
FFA Banquets/Meetings	$330.11	1	$9,915.64
Area FFA Convention	$760.53	1	$9,485.22
4-H Roundup	$1,109.16	1	$9,136.59
Houston Stock Show	$1,309.14	1	$8,936.61
Bag	$-	0	$-
Notepad	$0.35	0	$-
Key Chain	$1.50	0	$-
Cap	$5.00	0	$-
Fort Worth Stock Show	$865.40	0	$-
San Antonio Stock Show	$1,928.56	0	$-
Austin	$2,566.02	0	$-

Results for ROI totals are also displayed in Table 5 for which the frequencies in this table represent the number of participants who ranked that particular strategy as the second most influential strategy. Participants chose campus tours (*n* = 34), visiting with a faculty member (*n* = 19), and printed materials (*n* = 13) as influential (Table 5).

Table 5
Return on Investment of Strategies Ranked 2nd Influential to Decision to Enroll by Frequency

Recruiting Strategy	Cost	Freq. Rank 2	ROI
Visit with Faculty Member on Campus	$28.11	22	$224,788.08
Information by Mail/Letter from dept.	$1.88	15	$153,658.05
Campus Tour	$28.11	14	$143,046.96
High School Visit	$718.90	6	$57,161.10
San Antonio Stock Show	$1,928.56	6	$49,903.14
Area I FFA Convention	$760.53	2	$18,970.44
4-H Roundup	$1,109.16	2	$17,873.22
Houston Stock Show	$1,309.14	2	$10,245.75

Bag	$-	1	$9,380.35
Fort Worth Stock Show	$865.40	1	$4,925.59
FFA State Convention	$5,320.16	1	$-
Pen	$0.22	0	$-
Notepad	$0.35	0	$-
Key Chain	$1.50	0	$-
Cap	$5.00	0	$-
FFA Banquets/Meetings	$330.11	0	$-
Austin	$2,566.02	0	$-

Participants ranked the same three recruitment strategies (campus tours, meeting with a faculty member on campus and information by mail) as third most influential to their decision to enroll at the university as they did first and second. Visit to a prospective students' high school increased in frequency when participants were asked to list their third most influential strategy used to influence their decision to enroll (Table 6).

Table 6

Return on Investment of Strategies Ranked 3rd Influential to Decision to Enroll by Frequency

Recruiting Strategy	Cost	Freq. Rank 3	ROI
Information by Mail/Letter from dept.	$1.88	14	$143,414.18
Visit with Faculty Member on Campus	$28.11	10	$102,176.40
High School Visit	$718.90	8	$76,214.80
Cap	$5.00	6	$61,444.50
Campus Tour	$28.11	3	$30,652.92
FFA State Convention	$5,320.16	5	$24,627.95
Bag	$-	2	$20,491.50
Pen	$0.22	2	$20,491.06
FFA Banquets/Meetings	$330.11	2	$19,831.28
Area I FFA Convention	$760.53	2	$18,970.44
Houston Stock Show	$1,309.14	2	$17,873.22
Key Chain	$1.50	1	$10,244.25
Fort Worth Stock Show	$865.40	1	$9,380.35
San Antonio Stock Show	$1,928.56	1	$8,317.19
Notepad	$0.35	0	$-
4-H Roundup	$1,109.16	0	$-
Austin	$2,566.02	0	$-

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

Although a campus tour was the most common first experience, only 58% (*n* = 48) of participants actually visited campus prior to applying, and only 35% (*n* = 29) of participants participated in an official campus tour. When students sign up for an official campus tour, time is set aside for a meeting with a faculty member from the department. Faculty also try to meet with any students who might visit the university through informal means, but the possibility of someone being available to meet with someone is not always guaranteed. Of the participants that came to campus, 49% (*n* = 41) say they met with a representative from the department.

Traveling to recruit prospective students is also a method of the departments' recruitment strategy. Some of the places representatives traveled to include FFA events, livestock shows, and high school visits. Only 29% (*n* = 24) of participants indicated they had actually met with a representative from the department at an event or location off campus. Whether a potential recruit meets with a representative from the department on or off campus, it is always a goal to get information or promotional materials in prospective students' hands. Some of these items include caps, bags, key chains, notepads, pens, and other paraphernalia. Of the completed surveys, 33.7% (*n* = 28) of participants said they had received some sort of paraphernalia from the department.

Traveling of any kind is the most expensive part of the departments' recruitment strategies. The recruitment trip to Dallas for the 2013 State FFA Convention cost $5,320.16. This was the highest expense due in part to the amount of students and faculty that attend the event. Recruitment materials have the least investment per unit than other methods used in the recruiting process.

The majority of promotional materials did not generate a return. This could be a factor of how this study used influence to calculate ROI. None of the promotional materials were ranked as most influential by the participants. However, some of these materials were ranked high, meaning they might not have been most influential, but they had influence on the decision to enroll. In addition, some strategies and materials saw influence frequency increase as other strategies were already selected suggesting materials and strategies are used in concert to influence some prospective students' decision to enroll.

First-year students in this study chose campus tours and visiting with a faculty member on campus to be the most influential over all other recruiting strategies/methods in their decision to enroll at the university. Additionally, these specific recruitment strategies are also least expensive to employ, therefore, giving the department/university over 15 times the return of its investment. The results of this study are similar to those found by Cartmell et al. (2011).

More than half of participants indicated their initial exposure to the university was by being on campus for a campus tour or participating in an event held on campus (FFA event, feed yard camp, etc.). Getting prospective students on campus and then having them meet with faculty is what appears to be the best way to influence prospective students to enroll. Other recruitment strategies that participants valued as influential included receiving information about the department by mail. According to Baker et al. (2013), promotional materials are influential on a student's college choice and play an important role in the decision making process. This strategy is financially feasible and shows to produce a high return.

Promotional materials such as caps, key chains, and pens can produce a very high return because of the low input cost per unit. Some of these items could be removed from the recruiting budget, such as key chains and notepads, and that money could be invested into another strategy that is producing a higher return. Although these materials were not extremely influential in the participants' decisions to attend the university, they do serve as inexpensive marketing tools that could benefit the department or university branding strategies (Rayfield et al., 2013). Promotional items help make students as well as their parents more aware of the university's brand. According to Chabot and Gustafson (2007), the more aware consumers are of your product and brand, the more likely they are to invest in that product.

Other factors such as scholarship availability, cost of tuition, admission requirements and proximity could also be influencing the decision to enroll to the university (Chapman, 1981). Continued research should be done to determine what external factors outside the department's and/or university's control have on the decision to enroll. The majority of the department's recruiting strategies consist of faculty involvement and travelling off campus to recruit at major stock shows and conventions. Although the majority of these trips are producing a profitable return, they are each expensive and time consuming. A future study should address the value and returns generated by faculty's use of time. Although faculty are influential in the recruitment process and generate the largest ROI, perhaps their time is better used to generate grant dollars or student credit generated through courses they instruct rather than recruitment efforts.

Some faculty are allowed to use recruitment visits as part of their service requirement of their duties. However, more consideration of faculty costs should be studied. Opportunity costs should be studied to determine the best use of faculty time, not only as a resource, but as a financial entity.

It is recommended agriculturally focused departments continue to research and evaluate recruitment strategies. In particular, administrators should consider cost effective strategies that reduce faculty time spent off campus. In addition, strategies that many consider to reduce cost and time should be considered and assessed such as social media's role in the recruiting process (Baker et al., 2013; Rayfield et al., 2013). Lastly, as quality students become more sought after by multiple universities, strategies that employ relationship building techniques such as personal correspondence through peer-to-peer messaging, email or phone conversations should be assessed.

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RESEARCH

What's in a Name? The Influence of Persuasive Communication on Florida Consumers' Attitude toward Genetically Modified Food

Taylor K. Ruth and Joy N. Rumble

ABSTRACT

Consumer acceptance of new food technology, like genetically modified food, is essential for the product's success. Consumers have been skeptical toward the technology of genetically modified food due to lack of knowledge by the public, negative portrayal of the technology by the media, and a lack of communication about the technology from those who develop and use it. This research was guided by the Elaboration Likelihood Model to investigate the influence of persuasive communication on Florida consumers' attitude toward genetically modified food. Consumers typically use the peripheral route to assess food information, therefore a message source (peripheral cue) was manipulated to examine its effect on attitude. An experimental design administered through an online survey was used to collect data (n = 515). Respondents reported that they agreed they were knowledgeable about genetically modified food, but they were unsure about associated risks. Respondents neither agreed nor disagreed that the four sources were credible, and there were no differences in credibility. Additionally, there were no differences in their attitude toward genetically modified food associated with the source. The results showed that the source did not predict attitude, but source credibility, risk perception, and some demographic characteristics did. Prior knowledge was not a predictor of attitude, and the respondents likely used the peripheral route to assess the message. Agricultural communicators should target communication for specific audiences and deliver value-driven messages rather than trying to increase consumer knowledge alone. Future research should explore different peripheral cues and their effects on attitude formation.

KEY WORDS

Credibility, Elaboration Likelihood Model, Genetically Modified Food, Message Source, Risk Perception

INTRODUCTION

New technologies facilitate the majority of innovations in the food industry (Siegrist, 2008). While United States consumers view science favorably, there is little consensus between scientists and the public about the safety and ethical implications of certain research areas (Funk & Raine, 2015). Consumer skepticism has limited the success and acceptance of new technologies (MacFie, 2007), and policy makers now have to consider the public's moral values when making policy decisions about science (Burgess, 2014). However, research concerning the public's understanding of science has mostly focused on consumers' lack of knowledge rather than sociological issues (Gauchat, 2012).

Consumers typically have limited knowledge of new technologies, including genetically engineered food (Durant, Bauer, & Gaskell, 1998), which are also known as genetically modified organisms (GMO) or genetically modified food. The Food and Drug Administration (FDA; 2014) described genetically engineered plants as organisms that have had genes altered to produce a desirable trait. Researchers have proposed that not understanding genetic modification has made

it difficult for consumers to decide about possible risks associated with the technology (Mielby, Sandoe, & Lassen, 2012; Siegrist, 2008). However, studies have reported conflicting information on the importance of knowledge in attitude formation (Flipse & Ossewijer, 2012; Ishiyama et al., 2011; Mielby et al., 2012; McFadden & Lusk, 2015; Verdurme & Viaene, 2003).

Genetically modified foods have been deemed safe and beneficial (National Academy of Sciences, 2016; Nicolia, Manzo, Veronesi, & Rosellini, 2014), but consumers do not view the technology as safe (Funk & Kennedy, 2016) and have called for tighter regulations (Senauer, 2013). In August of 2016, President Obama signed a law that would mandate all food containing genetically modified ingredients be labelled (Popken, 2016). Due to a general lack of knowledge, consumers will have to trust information and sources to be credible to make informed purchasing decisions about genetically modified food (Earle & Cvetkivich, 1995). Attitudes toward genetically modified food are influenced by consumers' trust of the regulators and experts of the technology (Ishiyama et al., 2011; Marques, Critchley, & Walshe, 2015). Therefore, there is a great need to research effective communication practices regarding genetically modified food, mainly with a focus on the consumer (Telg & Irani, 2012), to understand the role of message source in communication. This research sought to explore the role of message source and persuasive communication on consumers' attitudes toward genetically modified food.

LITERATURE REVIEW

A number of researchers have explored consumers' attitudes toward genetically modified food. Bredahl (2001) conducted a study in the United Kingdom and concluded that consumers' perceived risks and benefits associated with genetically modified food were strongly embedded in their attitudes. The close relationship between perceived risks and attitudes makes it difficult to change consumers' attitudes toward food biotechnology, which can cause them to reject the technology all together (Bredahl, 2001). Dean and Shepherd (2007) found that consumers viewed genetically modified food as harmful, unethical, and unnatural.

The demographics of consumers have strongly influenced attitudes toward genetically modified food as well. Verdurme and Viaene (2003) developed a model that suggested demographic characteristics greatly influenced consumers' knowledge of genetically modified food as well as overall attitudes and risk perceptions of products. A study by Irani, Sinclair, and Malley (2001) described how various demographic characteristics influenced the perceptions of GMOs and GMO labels. Eighty-five percent of respondents agreed that GMO food should be properly labeled. The majority of white and Hispanic respondents said they would consider purchasing food labeled GMO, but only 33% of African-American respondents said yes to this question. Additionally, men were significantly more likely to consider purchasing the labeled food. Pounds (2014) identified significant differences in the purchasing intent of GMOs between men and women in the state of Florida. Men appeared unsure if they would purchase GMOs, while women agreed they were unlikely to engage in purchasing behaviors (Pounds, 2014). Other studies have determined that women held more negative perceptions of genetically modified food compared to men (Ishiyama et al., 2011; Lockie, Lawrence, Lyons, & Grice, 2005) and were less likely to accept GMOs (Hall & Moran, 2006). Research has also concluded that younger consumers have held more favorable attitudes toward genetically modified food (Antonopoulou, Papadas, & Targoutzidis, 2009) but are unsure about the benefits and risks associated with the products (Ruth, Gay, Rumble, & Rodriguez, 2015).

Elaboration Likelihood Model
The Elaboration Likelihood Model of persuasion guided this research. Originally, the model was developed to account for both active and passive processors of information (Petty, Brinol, & Priester, 2009). The ELM describes two routes in which attitude change can occur: the central processing route and the peripheral processing route. The central processing route is used when an individual possesses the motivation (e.g. personal relevance) and ability (e.g. knowledge) to process the information and uses careful consideration, along with past experiences, to develop opinions (Petty et al., 2009). The peripheral processing route uses a less extensive thought process; instead, the route relies on peripheral cues, like message source or number of arguments (Petty & Cacioppo, 1986).

Prior knowledge has been identified as a factor affecting an individual's ability to process information (Petty & Cacioppo, 1986). When people are well informed concerning an issue, they are much more likely to thoughtfully process a message. Because people who are knowledgeable about a topic process information with a higher amount of elaboration, they typically use the central processing route, while those who are less informed use the peripheral processing route (Wood, Rhodes, & Biek, 1995). The peripheral processing route relies on the use of peripheral cues, such as a message source (Petty et al., 2009). The way an individual perceives a source has been linked to the likelihood of elaboration and changes in attitude (Priester & Petty, 1995). McCroskey (1997) defined source credibility as "the attitude toward a source of communication held at a given time by a receiver" (p. 87). Perloff (2008) added to this definition by explaining that credibility also consisted of three main components: trust, goodwill, and expertise of a source.

Research in food science has determined that a low amount of elaboration is used by consumers when presented with information about agricultural products (Goodwin, 2013; Meyers, 2008; Morgan & Gramann, 1989; Verbeke & Vackier, 2004; Verbeke & Ward, 2006). Frewer, Howard, Hedderley, and Shepherd (1997) concluded consumers determine the majority of food-related decisions using the peripheral processing route. Krause, Meyers, Irlbeck, and Chambers (2015) used the ELM to guide a content analysis of YouTube videos for and against Proposition 37 in California (bill proposed to label genetically engineered food). The bill did not pass, and the study found that the videos opposing the proposition used scientists as sources. Krause et al. (2015) concluded scientists offered high credibility and worked effectively as a peripheral cue. The researchers also concluded that language in the food industry should shift from using fact-based messages to more emotional appeals to target non-agricultural consumers based on the prevalent frames used in the videos (Krause et al., 2015).

Risk communication research related to food products has also used the ELM to determine how different variables affect consumer attitudes (Frewer et al., 1997). Risk perception often drives consumer acceptance of products, as opposed to actual risk estimates made by professionals (Frewer, Howard, & Aaron, 1998). A study conducted by Frewer, Howard, and Shepherd (1998) used the ELM to examine how initial attitudes toward GMOs affect communication about food production. A survey captured respondents' risk perceptions associated with GMOs before and after exposure to a message. The researchers concluded that prior risk perception was an important indicator for attitudes after exposure to a message.

Source credibility is a key component of peripheral processing route of ELM. Researchers have found that source credibility related to risk communication may differ across cultures. Therefore, it is important to consider the characteristics of the people viewing messages or labels to develop effective communication (Regan et al., 2014). A study by Stijbos et al. (2016) determined that education, age, and gender influenced consumers' trust in information about the health benefits of food.

Frewer et al. (1997) looked specifically at how source credibility affects attitudes within the ELM. A distrusted source (government), trusted source (consumer organization), and collaboration of both types of sources were tested using an experimental design. The research concluded that source credibility did not influence final attitudes toward genetically modified food if initial attitudes were positive. The researchers also found that the hypothesized distrusted government source lead to greater acceptance of the information presented. Other studies support these findings. Irani et al. (2001) concluded that the FDA was the most trusted source used to communicate information about genetically modified food to consumers when compared the United States Department of Agriculture (USDA) and industry organizations. However, compared to non-government organizations and university scientists, Dean and Shepherd (2007) determined government and industry sources were the least trusted sources for communicating information about genetically modified food. Frewer, Howard, Hedderley, and Shepherd (1999) conducted a similar study examining source credibility and determined that "trust in the information source is an important contextual clue in determining public reactions to information about genetic engineering" (p. 45).

PURPOSE & OBJECTIVES

The purpose of this research was to examine the influence of persuasive communication on Florida consumers' attitudes toward genetically modified food. The following objectives guided this study:

1. Describe Florida consumers' prior knowledge of genetically modified food science and technology.
2. Describe Florida consumers' risk perceptions of genetically modified food.
3. Describe Florida consumers' perception of source credibility for FDA, USDA, Ag Business 1, and Ag Business 2 after receiving an informational message about genetically modified food.
4. Describe Florida consumers' attitude toward genetically modified food after receiving an informational message.
5. Determine how the message source, source credibility, consumers' demographics, prior knowledge of genetically modified food science and technology, and risk perception of genetically modified food predict Florida consumers' attitude toward genetically modified food after reading a message about genetically modified food.

METHODS

This research used survey methodology with an experimental design to answer the research objectives. The population for this study was Florida consumers 18 and older. The state's large agricultural production (National Agricultural Statistic Service [NASS], 2011), combined with an increase in proposals for regulation of genetically modified food (Florida House of Representatives, 2015), has made it important to study Florida consumers' attitudes toward genetically modified food. Non-probability sampling and an opt-in panel was used to collect the sample for this study. The survey company, Qualtrics, distributed the questionnaire online to 770 respondents, and 514 of the responses were complete and usable (68% participation rate).

Literature has shown that consumers use the peripheral route when processing information about agriculture (Frewer et al., 1997), therefor the peripheral cue (message source) for a message that described genetically modified food was manipulated to test its effect on attitude. The experiment used four different sources, and each source presented the same message about genetically modified food. The selected sources were FDA, USDA, Ag Business 1, and Ag Business 2 based on conflicting literature and lack of research for the credibility associated with these organizations/companies (Barnett, Cooper, & Senior, 2007; Dean & Shepherd, 2007; Frewer et al., 1997; Irani et al., 2001; Poortinga & Pidgeon, 2005; Siegrist, 2000). Ag Business 1 and Ag Business 2 are pseudonyms used for the purpose of this paper, and respondents saw the actual company names in the questionnaire. Ag Business 1 and Ag Business 2 represent two of the largest producers of genetically engineered seeds in the United States (Fernandez-Cornejo, Wechsler, Livingston, & Mitchell, 2014). The control group for the experiment was the FDA, because previous literature had found the organization to be trusted (Irani et al., 2001). Respondents were randomly assigned to one of the four treatment groups to ensure statistical equivalence of the groups before the treatment was introduced (Ary, Jacobs, & Sorensen, 2010).The following message was adopted from GMO answers (2014) and shown to respondents:

> Before [genetically modified foods] reach the market, crops from [genetically modified seeds] are studied extensively to make sure they are safe for people, animals and the environment. Today's genetically modified products are the most researched and tested agricultural products in history. (para. 16)

Even though genetic engineering is the technically correct term (FDA, 2014), the questionnaire designed for this study used the descriptor genetically modified because consumers have been more familiar with the term (Miller, Annou, & Wailes, 2003). Additionally, genetic engineering has less positive associations than genetic modifications (Miller et al., 2003) and could have biased the respondents.

The questions analyzed in this study were a part of a larger questionnaire (62 questions) that asked respondents about their perceptions of food safety, genetically modified food, and food policy. Respondents' prior knowledge of genetically modified food science and technology was measured through a seven-item, five-point Likert-type scale adapted from an instrument used in previous research that relied on self-reported knowledge (Hallman & Metcalf, 1994). Knowledge statements asked about basic science, basic technology, food science, food technology, and genetically modified food. The scale was labelled *strongly disagree* = 1, *disagree* = 2, *neither agree nor disagree* = 3, *agree* = 4, *and strongly agree* = 5. With a Cronbach's alpha greater than 0.7, the scale was considered reliable ($\alpha = .88$; Field, 2013). The construct for prior knowledge was created by summating the average for each item in the scale and dividing by seven. Real limits were created to provide consistent interpretation of the results (Sheskin, 2004) and were as follows for the respondents' agreement with their knowledge of genetically modified food and science: 1.00 – 1.49 = *strongly disagree*, 1.50 – 2.49 = *disagree*, 2.50 – 3.49 = *neither agree nor disagree*, 3.50 – 4.49 = *agree*, 4.50 – 5.00 = *strongly agree*.

Risk perceptions of genetically modified food were measured with a six-item, five-point Likert-type scale, which was adapted from prior studies (Frewer, Howard, & Shepherd, 1998; Roe & Teisl, 2007; Rumble & Leal, 2013). Statements from this scale included "I believe that development of genetically modified food tampers with nature," "I believe genetically modified food carries little risk to the person consuming them," and "I believe that the growing of genetically modified food threatens the environment." The Likert-type scale for risk perception used the same labels and real limits as the prior knowledge scale. Questions were recoded so a score of five indicated agreement that genetically modified food posed no risk. The scale was reliable ($\alpha = .89$), and an index was created by summating and averaging the items in the construct.

A six-item, five-point Likert-type scale shown after the message about genetically modified food measured source credibility. Items in the scale were adapted from an instrument used by Frewer et al. (1997) that accounted for trust, goodwill, and expertise (Perloff, 2008). These statements would say "I believe [source]…" and included statements such as "is likely to withhold information," "provides expertise about genetically modified food," and "has a vested interest in promoting a particular view about genetically modified food labels." Real limits used to measure and interpret source credibility were the same as prior knowledge and risk perception. A higher score indicated agreement that the source was credible. The reliability for the source credibility scale in each of the treatment groups ranged between $\alpha = .76$ and $\alpha = .85$. An index was created by summating the average for each item measuring credibility and dividing by six.

The final variable, attitude toward genetically modified food, was measured using a six-item, five-point semantic differential scale. The scale was adapted from definitions of attitudes described by Osgood, Suci, and Tannenbaum (1971) and an instrument developed by Frewer, Howard, and Shepherd (1998). *Positive* adjectives were assigned a five and *negative* adjectives were assigned a one. Examples of the adjective pairs included "natural/artificial," "beneficial/not beneficial," and "necessary/not necessary." Real limits used to interpret the results were as follows: 1.00 – 1.49 = negative, 1.50 – 2.49 = slightly negative, 2.50 – 3.49 = neutral, 3.50 – 4.49 = slightly positive, 4.50 – 5.00 = positive. The attitude toward genetically modified food was calculated by adding the average of the six items measuring attitude and dividing by six. The reliability for attitude in each treatment group ranged from $\alpha = .94$ to $\alpha = .95$.

Post-stratification weighting of the respondents' demographics lessened the limitations associated with non-probability sampling, like selection, exclusion, and non-participation bias (Baker et al., 2013). Researchers weighted the sample based on the 2010 Florida census for sex, race, ethnicity, age, and rural/urban continuum. One error associated with post-stratification weighting is rounding error. When researchers weight respondents on more than one category, under-represented cases will be weighted higher and over-represented cases will be weighted lower (Maletta, 2007). Rounding errors can cause the sample total to change, such as the sample in this study reported as 515 cases rather than 514. After data was collected, the ages of the respondents were grouped into Zickuhr's (2010) generational categories for analysis: Millennials and younger (1977-1996), Generation X (1965-1976), Young Baby Boomers (1955-1964), Old Baby Boomers (1946-1954), and the Silent Generation and older (1945 and earlier). Additionally, due to the small percentage of respondents who identified as Pacific Islander and Native Alaskan, those two racial categories were combined with the option for other.

The majority of respondents were white (77.6%, *n* = 400) and female (51.7%, *n* = 266). The Millennial Generation or younger (31.5%, *n* = 162) represented the largest generation in the sample, and more than half of the respondents earned an annual income between $25,000 and $74,999 (64.5%, *n* = 333). The questionnaire also asked respondents whom they purchased food for regularly. The question used a check all that apply option with the following categories: self, spouse, children, roommates, relatives, and other. The variable was recoded into a dichotomous variable. Respondents who only selected purchasing food for himself or herself was coded as a *1*. If the respondents reported purchasing food for anyone but only themselves, they were coded as a *0*. The majority purchased for themselves and others (73.5%, *n* = 378). Table 1 shows a full description of respondents, which includes the actual demographics and the weighted demographics. This study used the weighted demographics.

Table 1
Description of Respondents

Demographic	*n*	%	*Weighted n*	*Weighted %*
Generation				
Millennials or younger	136	26.5	162	31.5
Generation X	102	19.8	111	21.6
Young Baby Boomers	120	23.3	88	17.2
Old Baby Boomers	93	18.1	67	13.1
Silent Generation or older	63	12.3	85	16.6
Sex				
Male	188	36.6	249	48.3
Female	326	63.4	266	51.7
Hispanic	52	10.1	109	21.1
Race				
White	463	90.1	400	77.6
African American	25	4.9	74	14.4
Other	26	5.1	41	8.0
Annual Income				
$24, 999 or less	95	18.5	84	16.4
$25,000-$49,999	188	36.6	190	36.8
$50,000-$74,999	130	25.3	143	27.7
$75,000 or more	101	19.6	99	19.1
Purchase Groceries for…				
Self only	131	25.5	137	26.5
Self and/or others	383	74.5	378	73.5
Total	514	100	515	100

Data were analyzed with SPSS ® version 21.0. Objectives one and two used descriptive statistics. Objective three also used descriptive statistics along with a one-way ANOVA to identify any differences in source credibility between the message sources. Descriptive statistics and an ANOVA was used to describe differences in attitude between sources for objective four. Objective five used a multiple-linear regression model to determine if the predictor variables, message

source, message credibility, demographics, risk perception, and prior knowledge, could predict attitude toward geneti-cally modified food. Message source and demographics were dummy coded when entered into the model. The control for the study was the FDA because literature has indicated it was the most trusted (Irani et al., 2001). The demographic category with the highest percentage was treated as the control for the remaining categorical variables (sex: females; generation: Millennial Generation or younger; race: white; ethnicity: non-Hispanic; income: $25,000 to $49,999; pur-chasing food for: self and/or others; Field, 2013).

RESULTS

Prior Knowledge of Genetically Modified Food Science and Technology

Respondents agreed that they understood basic science (M = 4.10, SD = .75) and basic technology (M = 4.10, SD = .73). They also agreed that they understood food science (M = 3.62, SD = .84) and food technology (M = 3.5, SD = .89), and that they had heard (M = 3.96, SD = .97) and read (M = 3.50, SD = 1.16) about genetically modified food. However, respondents neither agreed nor disagreed that they understood the science of genetically modified food (M = 3.17, SD = 1.08). The overall average for prior knowledge was 3.70 (SD = .71), which indicated respondents agreed they were knowledgeable about genetically modified food science and technology.

Risk Perceptions of Genetically Modified Food

Respondents neither agreed nor disagreed about risks associated with genetically modified food (M = 2.82, SD = .89).

Source Credibility for FDA, USDA, Ag Business 1, and Ag Business 2

The USDA (M = 2.93, SD = .75), Ag Business 2 (M = 2.93, SD = .70), and FDA (M = 2.91, SD = .76) received the highest, and nearly identical, credibility scores. Ag Business 1 had the lowest source credibility (M = 2.86, SD = .80). The overall credibility score for the sample was 2.91 (SD = .75), and respondents neither agreed nor disagreed about the credibility of the sources. An ANOVA was run to determine if there were any statistical differences between the source credibility of the four sources. The ANOVA was not significant (F(3, 511) = .23, p = .88), and there were no statistical differences between the groups.

Attitude toward Genetically Modified Food After Reading an Informational Message

The attitude associated with the FDA was the lowest (M = 2.53, SD = 1.01), and the USDA was associated with the most positive attitude (M = 2.74, SD = 1.10). Ag Business 2 (M = 2.57, SD = 1.12) and Ag Business 1 (M = 2.58, SD = 1.20) appeared to produce similar attitudes to one another; however, the attitude after reading the message from all four sources was neutral. The overall attitude index was 2.60 (SD = 1.11), which indicated the respondents had an average neutral response after reading the informational message. There was no statistical difference in attitude between the sources (F(3,511) = .23, p = .89).

Predictors of Attitude toward Genetically Modified Food

Objective five was measured using a multiple linear regression model to determine how well the predictor variables could predict attitude toward genetically modified food (Table 3). The regression model was significant (F(19, 513) = 78.29, p < .01). The R2 value for the model was .740, which indicated the model could account for 74.0% of the variance in attitude toward genetically modified food. The sources used to present the message were not significant predictors of attitude, but source credibility, risk perception, and some demographic categories were significant predic-tors. Out of the demographic categories controlled for in the regression model, men and some of the generations were statistically significant predictors of attitude. Compared to women, men were predicted to have a more positive attitude toward genetically modified food (b = .14, p = .011). Generation X (b = .17, p = .02), Young Baby Boomers (b = .23, p = .01), and Old Baby Boomers (b = .21, p = .02) were predicted to have more positive attitudes compared to the Millen-nial Generation. Source credibility was another significant predictor (p < .01), and for every one-unit increase in source

credibility, there was a .40 increase in a positive attitude (b = .40). Risk perception was the final significant predictor and had the greatest effect on final attitude (p < .01). As risk perception became more positive (less perceptions of risk) per one unit, positive attitude increased by .78 (b = .78). The remaining predictors, race, income, ethnicity, and for whom respondents purchased food, were not statistically significant predictors of final attitude toward genetically modified food (p > .05).

Table 2
Regression Model for Attitude toward Genetically Modified Food

Variable	B	p
Constant	-.75	.00*
Source		
Ag Business 1	.01	.85
Ag Business 2	-.05	.47
USDA	.07	.37
Generation		
Generation X	.17	.02*
Young Baby Boomers	.23	.01*
Old Baby Boomers	.21	.02*
Silent Generation or older	-.02	.81
Men	.14	.01*
Hispanic	-.10	.12
Race		
African American	.10	.18
Other	-.02	.88
Annual Income		
$24, 999 or less	.10	.19
$50,000-$74,999	.03	.69
$75,000-or more	.09	.26
Purchase Groceries for…		
Self only	-.03	.62
Prior Risk Perception	.78	.00*
Prior Knowledge	-.06	.14
Source Credibility	.40	.00*

Note. * indicates significance at α = .05. R^2 = .740

DISCUSSION AND IMPLICATIONS

Consumer acceptance of new technologies predicts the success or failure of a product (MacFie, 2007). Therefore, research exploring the influence of persuasive communication on Florida consumers' attitude toward genetically modified food was important to develop effective promotional messages. Respondents reported agreement that they understood science and technology in general and about food. They also agreed they had heard and read about genetically

modified food; however, they neither agreed nor disagreed that they understood the science of genetically modified food. This finding was consistent with prior literature that indicated consumers had limited understanding of the science behind genetically modified food (Durant et al., 1998; Siegrist, 2008). The data from this research also indicated that respondents were unsure about the risks associated with genetically modified food, which could explain the skepticism surrounding genetically modified food (Bredahl, 2001).

Prior research had concluded government sources were more trusted when communicating about genetically modified food (Frewer et al., 1997), but this study found no differences in source credibility between two government and industry organizations. Prior research had compared perceptions of trust between sources (Dean & Shepherd, 2007; Frewer et al., 1997; Irani et al., 2001); however, credibility is composed of trust, goodwill, and expertise (Perloff, 2008). The different operationalization for credibility in this current study compared to past ones may explain the differences in results. After exposure to the persuasive communication about genetically modified food, respondents had neutral attitudes toward genetically modified food. This finding is likely reflective of their neutral risk perceptions and supports prior literature (Bredahl, 2001). However, these findings were counter to research by Dean and Shepherd (2007) and may signal a change in opinion over the nine years since that study was conducted or differences in opinions between geographic regions. There were no differences between attitudes associated with the message source, which is likely due to similar perceptions of source credibility. Factors aside from the message source were likely affecting respondents' attitude toward genetically modified food.

The regression model used for objective five demonstrated how different ELM variables interacted with respondents' demographic characteristics to predict their attitude toward genetically modified food. This model was able to account for a high amount of variance in attitude toward genetically modified food. The findings from this research supported that consumers used the peripheral pathway of the ELM when forming attitudes toward genetically modified food, similar to other agricultural studies (Frewer et al., 1997; Goodwin, 2013; Meyers, 2008). Lower perceived risk perception (scores closer to five) and positive perception of source credibility were both significant predictors of positive attitudes toward genetically modified food, which aligned with prior research (Frewer, Howard, & Shepherd, 1998; Frewer et al., 1999). Risk perception may have represented motivation to process information in the ELM due to personal relevance (Petty et al., 2009). Consistent with prior literature (Bredahl, 2001), respondents who perceived less risk were predicted to have more positive attitudes toward genetically modified food. Respondents who had positive risk perceptions may not have viewed the message as personally relevant because they were likely less worried about associated risks with the food. In the absence of personal relevance, individuals move through the peripheral route and do not carefully consider the message. Therefore, respondents who had fewer risk perceptions may have been influenced by the peripheral cue, or source credibility (Petty et al., 2009).

Source credibility was a significant predictor of attitude, and as source credibility increased, so did attitude toward genetically modified food. However, prior knowledge, or ability to process information, was not a predictor of attitude. Respondents were likely using the peripheral pathway because they did not have the ability to process the information (Frewer et al., 1997; Goodwin, 2013; Meyers, 2008; Petty et al., 2009) and relied on a peripheral cue (Petty et al., 2009). Additionally, knowledge was not a predictor of attitude toward genetically modified food (Flipse & Ossewijer, 2012; Ishiyama et al., 2011; McFadden & Lusk, 2015; Verdurme & Viaene, 2003). Attitudes toward genetically modified food were likely influenced by factors aside from knowledge alone.

Demographic characteristics were predictors of attitude toward genetically modified food as well. Older generations, excluding the Silent Generation or older, were significant predictors of more positive attitudes compared to the Millennial Generation or younger, which conflicted with previous literature (Antonopoulou et al., 2009). Consistent with prior literature, men had more positive attitudes toward genetically modified food compared to women (Irani et al., 2001; Ishiyama et al., 2011; Lockie et al., 2005; Pounds, 2014). The differences in attitudes between demographic categories may be the result of differences in values amongst those groups (Regan et al., 2014) or differences in trust of message sources (Stijbos et al., 2016).

RECOMMENDATIONS

When agricultural communicators develop persuasive communication about genetically modified food, they should consider the findings from this study. Communicators should purposively select sources for their target audiences when developing communication to ensure the source will be perceived as credible. For example, an agricultural biotechnology company may be viewed highly credible by producers but not by consumers.

Because risk perception was so highly predictive of attitude, communicators should focus on alleviating consumers' perceptions of risk. Consumers neither agreed nor disagreed about risks associated with genetically modified food, which provides communicators with an opportunity to shape neutral attitudes rather than change negative ones. This study and others (Flipse & Ossewijer, 2012; Ishiyama et al., 2011; McFadden & Lusk, 2015; Verdurme & Viaene, 2003) found increasing knowledge will not necessarily change perceptions. Communicators should instead focus on framing messages around the values of the consumers in an attempt to change risk perceptions or attitudes (Krause et al., 2015).

Communication campaigns regarding genetically modified food should target specific audiences. Communicators and Extension can work together to develop appropriate communication campaigns for older and younger consumers. Because most of the generations were significant predictors of more positive attitudes compared to Millennials, extension and educators should develop outreach for college students to educate them on the use of genetically modified food. Men were also significant predictors of more positive attitudes toward genetically modified food than women. Stories about genetically modified science in women's magazines or websites to increase awareness of the technology would allow female consumers to make educated decisions about the product and possibly lower their risk perceptions.

To gain a better understanding of the pathway used when presented with a message about genetically modified food, researchers should utilize thought-listing procedures to explore how consumers process these messages. This study measured prior knowledge, but relevance/ motivation to process was not collected. Gathering information on these variables will give a more holistic understanding for how consumers move through the ELM when assessing information regarding genetically modified food (Petty et al., 2009). In addition, adding a brief description of the organization, the brand logo, or organizational values may yield different results and provide greater understanding for how peripheral cues operate. Researchers should also explore other sources. A popular blogger, politician, or restaurant chain may provide different results from this study and give a greater understanding of the influence of message sources. Collecting source credibility data prior to message exposure may give a more realistic understanding of its credibility because the message itself may have influenced perceived source credibility. Because prior knowledge was not identified as a predictor of attitude, future research should focus on value-driven communication for consumers. Testing a value-driven message could provide needed insight into attitude formation, and have a stronger influence on attitude formation than the current message (Krause et al., 2015).

This study does present some limitations. The non-probability sampling procedures can cause non-response and selection bias, which may provide a sample that is not representative of the population. However, the results from an experimental design cannot be generalized to the population, and additional research on messaging using a simple random sample of the population is necessary. Qualitative research using focus groups and in-depth interviews are necessary for research to gain a deeper understanding of the perceptions described in this study. Additionally, knowledge of genetically modified food science and technology was self-reported, which could decrease the validity of the finding. Collecting data on respondents' actual understanding of genetically modified food could elicit different results from this study and a more representative understanding of knowledge. Additionally, the research is limited to only one state and one topic. This research should be replicated in other areas of the United States and with other morally contentious issues in science and agriculture to better understand how to communicate with the public about these topics.

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RESEARCH

Public Knowledge and Trust of Agricultural and Natural Resources Organizations

Quisto Settle, Joy N. Rumble, Keelee McCarty, and Taylor K. Ruth

ABSTRACT

The public lacks knowledge and connectedness to agriculture and natural resources in the United States, leading to a need for effective communications from agricultural and natural resources organizations. Trust is an integral component of communications, but it is not well understood how the public trusts the various organizations communicating agricultural and natural resources issues. The study evaluated non-profit, for-profit, and governmental organizations. A survey was conducted of a representative sample of the U.S. population to assess the public's awareness, knowledge, and trust of organizations and their communications. The highest number of respondents was aware and knowledgeable of governmental organizations, except for Extension. Communications from non-profit organizations tended to be trusted the most compared to for-profit organizations and governmental organizations, except for Extension. Respondents' trust of the non-profit organizations was typically higher than for-profit organizations and governmental organizations, except for Extension. The relationship between trust of an organization and trust of its communications were statistically significant for all organizations, while relationships between trust of an organization and knowledge of an organization were typically negligible and not statistically significant. For-profit organizations and governmental organizations should work to improve the public's trust. Extension should seek to improve the public's awareness and knowledge given the level of trust the knowledgeable respondents had for the organization. Future research should address what factors are influencing the public's trust in organizations and organizations' communications.

KEY WORDS

Agriculture, Communications, Natural Resources, Organizations, Trust

INTRODUCTION AND LITERATURE REVIEW

A commonly accepted problem facing agriculture in the United States is the lack of knowledge and awareness members of the public have for agricultural and natural resources issues, making it difficult for individuals to make informed decisions (Frick, Birkenholz, & Machtmes, 1995; Kovar & Ball, 2013; Meischen & Trexler, 2003). This problem is exacerbated by the low percentage of the population directly involved in agriculture (Kovar & Ball, 2013), which is caused by innovations in agricultural production (Enns, Martin, & Spielmaker, 2016; Hogberg et al., 2005). There are an estimated 3.2 million farmers operating 2.1 million farms in the U.S. (USDA, 2012) out of a total population of 308 million (U.S. Census Bureau, 2011). With so few people directly involved in agriculture, Powell and Agnew (2011) asserted that it is not feasible to expect the public to make informed decisions about agricultural issues.

A logical solution to solving the problem of low public knowledge of agricultural issues is increased media coverage, but this solution is problematic because the news coverage that occurs is often negative and reactive to adverse events

(Graves, 2005; Specht, McKim, & Rutherford, 2014; Specht & Rutherford, 2013). This leads to negative and inaccurate public perceptions of agriculture (Duncan & Broyles, 2006; Goodwin, Chiarelli, & Irani, 2011; Specht & Rutherford, 2013). Kovar and Ball (2013) said increased agricultural literacy would make the public less susceptible to emotional pleas and make better-informed decisions. To help consumers understand production and change in the agricultural industry, agricultural communicators must collect data on how to better inform the public.

While important, knowledge is not a perfect predictor of beliefs and opinions. Research that assessed scientific literacy and perceptions of climate change risk found that individuals with increased scientific literacy were more likely to have polarized opinions (Kahan et al., 2012). In other words, more knowledge led to stronger beliefs, but more knowledge did not affect what the individuals believed. Kahan (2012) contended that "People acquire their scientific knowledge by consulting others who share their values and whom they therefore trust and understand" (p. 255).

Trusting others to provide knowledge extends to organizations. Even if an individual is uninformed or misinformed, they may still pass judgment and make decisions, relying on trusted organizations to shape their opinions on science-based issues (Brossard & Nisbet, 2007). If members of the public trust an organization, they are more likely to trust the organization's communications (Brossard & Nisbet, 2007; Martin, Hill, Van Sandt, & Thilmany, 2016; West & Turner, 2014).

This study consisted of a survey to address awareness, knowledge, and trust that members of the public have for organizations communicating about agricultural and natural resources issues. The issue topics included in this study were agriculture, the environment, animal welfare, food safety, and nutrition. The organizations represented included governmental, non-profit, and for-profit organizations. The organizations also represented a variety of perspectives. The specific emphasis of this study was trust of the organizations.

Trust

Trust is integral to communicate effectively. Trust has been a topic of research for multiple areas of study, including but not limited to management, psychology, philosophy, economics, marketing, and industry (Paliszkiewicz & Koohang, 2013; Schoorman, Mayer, & Davis, 2007). Trust is not an easy construct to define, which has been an ongoing issue (Rawlins, 2008; Schoorman et al., 2007). A variety of terms have been used related to trust, including dependability, faithfulness, honesty, integrity, honor, responsibility, competence, vulnerability, goodwill, openness, and loyalty (Costigan, Itler, & Berman, 1998; Rawlins, 2008; Rosanas & Velilla, 2003; Schoorman et al., 2007).

This study used Rawlins's (2008) operational definition of trust, which is the willingness for a person to be vulnerable based on the confidence that the other party will display competence, goodwill, and integrity, which act as subconstructs of trust. These subconstructs were chosen because Rawlins' definition was specifically made for evaluating trust of organization and uses the same basic subconstructs other researchers use to define trust, including Schoorman et al. (2007) and Grimmelikhuijsen, Porumbescu, Hong, and Im (2013), and was the definition used in Auger's (2011) similar study evaluating trust of organizations.

Why Trust is Important

Agriculture and natural resources have been highly impacted by innovation over the past century (Enns et al., 2016) and for innovation-based growth to continue, agricultural and natural resources organizations depend on the public's trust to maintain legitimacy (Lang, 2013). Lubell (2007) stated trust was "the foundation for effective social, economic, and political life" (p. 237). An organization must be predictable and reliable in their actions to reduce uncertainty, which helps enable trust (Tschannen-Moran & Hoy, 2000).

The importance of the audience's trust of the communicator has been recognized for millennia, dating back to Aristotle's Rhetoric, which used logos, pathos, and ethos as the supporting structure for effective persuasion (West & Turner, 2014). Logos is the logic of the argument. Pathos is the emotional aspect of the argument. Ethos is the perceived intelligence, character, and goodwill of the communicator, which are similar to the terms Rawlins (2008) uses to describe trust. The basic idea of ethos is that the audience is more likely to believe a message from a trusted communicator (West & Turner, 2014). For an organization to communicate effectively with the public, trust is a necessary component.

How trust develops is important. Research has shown that trust can occur without any history of interaction, but that type of trust is fragile (Kim, Dirks, & Cooper, 2009). A better option for organizations is trust that is based on a history of positive experiences. Members of the public scrutinize organizations' communications, including public relations efforts, to determine trustworthiness (Schnackenberg & Tomlinson, 2014). This history of positive experiences can act as a shield that can help an organization survive a crisis that could otherwise damage public perception (Grunig, Grunig, & Dozier, 2002). A prominent example of this was the Tylenol incident of the 1980s that led to seven deaths. Tylenol was able to maintain positive public perception in the long run because of the history of positive experiences the public had with the organization (de Chernatony, 2001), in addition to the organization's response to the crisis (Lundgren & McMakin, 2004). Past experience also has the ability to prevent negative reaction in agriculture and natural resources issues. Specht et al. (2014) found that respondents with less agricultural knowledge and experience reacted more negatively to media por-trayals of production agriculture than respondents with more knowledge and experience.

Building trust is an integral component for organizations as they try to build relationships with members of the public (Kang & Hustved, 2014). In the individual-organization relationship, it is generally believed the individual expects the organization to keep its promises and act in favor of individual's best interest (Kang & Hustved, 2014). Acceptance and openness will result from the initial development of trust (Rempel, Holmes, & Zanna, 1985). A loss of trust or lack of trust development in a relationship will affect how the members of public perceive an organization.

Of note in this study are the different types of organizations will be addressed: non-profit, for-profit, and governmental. Previous research has addressed comparisons between these types of organizations, though scope has varied by repre-sentativeness of samples, topics addressed, and types of organizations included. Auger (2011) studied the differences in trust on communication about a hypothetical water quality issue between non-profit and for-profit organizations and found non-profit organizations are given a higher level of trust compared to for-profit organizations when both are ex-hibiting transparency, but non-profit organizations received a lower level of trust than for-profit organizations when both lack transparency. In other words, non-profit organizations are held to a higher standard than for-profit organizations. The representativeness of the sample is not clear in the study. Irani, Sinclair, and O'Malley (2001) found that governmental organizations were trusted by participants more to communicate about biotechnology than for-profit organizations. Irani et al. (2001) assessed college students at the University of Florida, Florida International University, and Kansas State University. Contrary to the Irani et al. (2001) findings, Ruth (2015) found no statistically significant differences in source credibility between governmental and for-profit organizations for communicating about genetically modified food, with both groups being evaluated neutrally by the study's participants, which were Florida residents. Ruth posited that participants' views of genetically modified foods may have been strong enough that all sources were perceived the same for communicating the message. Regarding evaluation of environmental information, Brewer and Ley (2013) found that participants in the Milwaukee area trusted the EPA and environmental non-profits (e.g., Sierra Club) at a similar level. Lang (2013) found that environmental non-profits were trusted by the U.S. public more than governmental and for-profit organizations, which had similar levels of public trust. Mase, Babin, Prokopy, and Genskow (2015) assessed Midwest-erners' trust for information about soil and water quality, finding Extension was trusted the most, followed by govern-ment agencies, non-profit organizations, and for-profit organizations. Martin et al. (2016) assessed Coloradoans trust of agricultural and food information from various types of sources and found universities were trusted the most, followed by governmental agencies. Farm and ranch organizations were trusted more than environmental organizations in the Martin et al. (2016) study, and the food industry was trusted the least among organizations assessed in the study. While this variety of studies exists, they were all limited in scope in various aspects. Only the Lang (2013) study was nationally repre-sentative, but its data comes from 2004 and only related to food. Martin et al. (2016) is the only study to address multiple topics but was only in Colorado.

In general, it is worth noting the public is increasingly distrustful of organizations that are expected to provide objective knowledge. Over the past 35 years, the public has become increasingly distrustful of government organizations (Birkland, 2011). This dwindling trust in the government could potentially extend to organizations that regulate in the realm of ag-riculture and natural resources, though past research results vary regarding perceptions of trust of government agencies

(Brewer & Ley, 2013; Irani et al., 2001; Lang, 2013; Martin et al., 2016; Mase et al., 2015; Ruth, 2015). If members of the public lack knowledge and rely on trusted organizations to shape their decisions (Brossard & Nisbet, 2007), understanding the public's trust of organizations that communicate about agricultural and natural resources issues is imperative.

PURPOSE AND OBJECTIVES

Kallendorf and Kallendorf (1985) stated, "a rhetorician need not actually be a good person, but must only be perceived as one" (p. 42). The organizations trusted the most by members of the public are more likely to be successful in communicating agricultural and natural resources information to the public (Brewer & Ley, 2013; Kahan, 2012), even if the organizations are not actually trustworthy. Similarly, trustworthy organizations are unlikely to be successful in their communications if members of the public do not believe the organizations are trustworthy and therefore do not trust the information being communicated by the organizations. Agricultural communicators need to understand which organizations members of the public trust to understand which organizations will be the most successful when communicating about agricultural and natural resources issues. While previous studies have assessed and compared trust of organizations related to agricultural and natural resources issues (Auger, 2011; Brewer & Ley, 2013; Irani et al., 2001; Lang, 2013; Mase et al., 2015; Martin et al., 2016; Ruth, 2015), none of those studies assessed multiple issues with a nationally representative sample.

The purpose of this study was to seek a more comprehensive understanding of the public's knowledge and trust of organizations that communicate about agriculture and natural resources topics. The following objectives guided the study:

1. Describe the public's awareness and knowledge of organizations that communicate about agriculture and natural resources,
2. Describe the public's trust of organizations' communications about agricultural and natural resources topics,
3. Describe the public's trust of agricultural and natural resources organizations, and
4. Describe the relationship between the public's trust of these organizations and trust of the organizations' communications, as well as between the public's trust of the organizations and the public's knowledge of the organizations.

METHODS

To achieve the objectives of this study, a nationally representative quantitative survey was conducted online through Qualtrics. Qualtrics was also used as a third-party surveying organization to access an online panel of respondents. Nonprobability quota sampling was used to ensure respondents were representative of the national population based on sex, race, and Hispanic/Latino status results from the 2010 U.S. Census. Research increasingly uses nonprobability sampling because probability samples that depend on phone and internet samples lack complete coverage and receive poor response rates (Dillman, Smyth, & Christian, 2014). One thousand and ninety-three people started the survey, and there were 524 respondents after filtering out ineligible respondents (i.e., under 18 or not U.S. residents) and incomplete responses.

An expert panel consisting of faculty members in colleges of agriculture from three universities reviewed the instrument to help ensure its validity. Their expertise included agricultural communications and evaluation. Cognitive interviews were also conducted with two graduate students to allow individuals not involved in the study to complete the questionnaire, which provided feedback on usability of the questionnaire and ability to appropriately respond to the questions.

Respondents reported their awareness, knowledge, and trust of 16 organizations. These organizations were selected to represent different types of organizations (i.e., governmental, non-profit, and for-profit), including organizations that would have contrasting perspectives on agricultural and natural resources issues. The expert panel reviewed the list to ensure key organizations were represented (i.e., organizations likely to impact public opinion), and two organizations were

added to the list based on their recommendations. The governmental organizations were the U.S. Department of Agriculture (USDA), U.S. Food and Drug Administration (FDA), U.S. Environmental Protection Agency (EPA), and Cooperative Extension Service. The non-profit organizations were U.S. Farmers and Ranchers Alliance, American Farm Bureau Federation (AFB), People for the Ethical Treatment of Animals (PETA), Humane Society of the United States (HSUS), Center for Food Integrity (CFI), Sierra Club, Greenpeace, Environmental Working Group (EWG), and World Wildlife Fund (WWF). The for-profit organizations were Monsanto, DuPont, and Syngenta.

The questionnaire addressed respondents' awareness of the organizations, knowledge of the organizations, trust of the organizations, and trust of communications from the organizations. For awareness, respondents either reported they had heard of an organization or they had not heard of an organization. For the remainder of the questionnaire, respondents only answered questions for organizations in which they were aware. For the next section, respondents indicated their level of knowledge of the organizations they were aware of on a 5-point scale, ranging from *not at all knowledgeable to extremely knowledgeable*. If a respondent had no knowledge of an organization, they no longer saw questions about that organization. These question filters were put in place to minimize the cognitive load on respondents and were based on feedback from the cognitive interviews. The number of respondents who answered questions about each organization is listed in the tables in the results section.

In the next section of the questionnaire, respondents indicated how much they trusted or distrusted communications from the organizations they were aware and knowledgeable of regarding five topics: agriculture, the environment, animal welfare, food safety, and nutrition. This section used a 5-point scale ranging from *distrust to trust*, with an option for respondents to report they were not familiar with communications about the topic from the organization. The final component addressed respondents' overall trust of each organization. This was addressed through the average of 15 semantic differential items based on the Rawlins's (2008) definition of trust and its three subconstructs: competence, goodwill, and integrity. Each subconstruct had five items. For competence, the bipolar items were unreliable/reliable, incompetent/competent, not dependable/dependable, not confident/confident, and incapable/capable. For goodwill, the items were not beneficial/beneficial, not compassionate/compassionate, selfish/unselfish, not charitable/charitable, and disrespectful/respectful. The items for integrity were dishonest/honest, unfair/fair, unethical/ethical, immoral/moral, and closed off/open. Reverse coding was used for beneficial, competent, open, compassionate, and unselfish items to mitigate directional biases in responses. When participants were evaluating each organization, items were randomized within the scales to avoid any biases based on order effects (Dillman et al., 2014).

Post-hoc reliability was addressed using Cronbach's alpha. For the five-item scales addressing respondents' trust of communications from the organizations, reliability was above .85 for each organization. For the 15-item scales assessing respondents' trust of the organizations, reliability was above .88 for each organization. Reliability scores of at least .80 are considered ideal (Norcini, 1999).

For objective 1, frequencies were used to report results. For objectives 2 and 3, means were reported. For objective 4, a Pearson's product-moment correlation was used to describe the relationship between trust of an organization and trust of an organization's communications. Kendall's tau was used to describe the relationship between trust of an organization and knowledge of the organization. Kendall's tau was used because the knowledge question was ordinal and the distribution of responses was non-normal (Field, 2013).

RESULTS

Objective 1: Describe the Public's Awareness and Knowledge of Organizations That Communicate About Agriculture and Natural Resources

Table 1 shows the public's awareness and knowledge of the organizations in the study. Respondents had the highest levels of awareness for governmental organizations, with the exception of Cooperative Extension, which only 26.0% (*n* = 136) of respondents were aware of. Syngenta had the lowest level of awareness (14.1%; *n* = 74) for all types of

organizations. World Wildlife Fund (WWF; 81.1%; *n* = 425) and People for the Ethical Treatment of Animals (PETA; 79.8%; *n* = 418) were the non-profit organizations respondents were most aware of, while Environmental Working Group (EWG; 22.7%; *n* = 119) and the Center for Food Integrity (CFI; 17.6%; *n* = 92) had the lowest levels of awareness. FDA (40.6%; *n* = 213), USDA (34.0%; *n* = 178), and EPA (30.7%; *n* = 161) had the most respondents who were either moderately or extremely knowledgeable of the organization, while Extension (8.6%; *n* = 45), CFI (7.9%; *n* = 51), and Syngenta (6.3%; *n* = 33) had the least.

Objective 2: Describe the Public's Trust of Organizations' Communications About Agricultural and Natural Resources Topics

Table 2 shows respondents' level of trust for each organization's communications about agriculture, the environment, animal welfare, food safety, and nutrition. No organizations were completely distrusted, though DuPont (*M* = 3.20) and Monsanto (*M* = 2.70) had neutral evaluations of trust for their communications overall. Extension (*M* = 4.15), CFI (*M* = 4.14), and EWG (*M* = 4.13) had the highest levels of trust in their communications. For the individual topics, Extension (*M* = 4.27) was trusted the most to communicate about agriculture, EWG (*M* = 4.26) was trusted the most to communicate about the environment, WWF (*M* = 4.32) was trusted the most to communicate about animal welfare, EWG (*M* = 4.19) was trusted the most to communicate about food safety, and CFI (*M* = 4.11) was trusted the most to communicate about nutrition.

Objective 3: Describe the Public's Trust of Agricultural and Natural Resources Organizations

Table 3 shows respondents' level of trust for each organization. The Humane Society of the United States (HSUS; *M* = 4.01), WWF (*M* = 3.98), and EWG (*M* = 3.77) had the highest levels of overall trust, while DuPont (*M* = 3.28), Syngenta (*M* = 3.18), and Monsanto (*M* = 2.89) had the lowest levels of trust, though these were still neutral on the 5-point scale used in the study. In the scope of all of the organizations addressed in the study, respondents trusted the non-profit organizations more than for-profit and governmental organizations, with the exception of Extension (*M* = 3.72). In general, respondents rated competence the highest of the trust subconstructs, while goodwill tended to be rated the lowest.

Table 1

Respondents' Awareness and Knowledge of the Agricultural and Natural Resources Organizations by Percentage (N = 524)

Organization	Respondents Aware of Organization	Not at all Knowledgeable	Slightly knowledgeable	Somewhat knowledgeable	Moderately knowledgeable	Extremely knowledgeable
FDA	94.3% (494)	5.9%(31)	23.3% (122)	24.4% (128)	26.5% (139)	14.1% (74)
USDA	91.4% (479)	7.8%(41)	25.4% (133)	24.2% (127)	23.7% (124)	10.3% (54)
EPA	87.3% (458)	9.7% (51)	23.1% (121)	23.9% (125)	18.9% (99)	11.8% (62)
WWF	81.1% (425)	11.6% (61)	23.5% (123)	19.5% (102)	18.3% (96)	8.2% (43)
PETA	79.8% (418)	9.9% (52)	19.3% (101)	20.8% (109)	20.8% (109)	9.0% (47)
DuPont	76.9% (403)	17.4% (91)	22.9% (120)	15.8% (83)	13.5% (71)	7.3% (38)
Greenpeace	76.9% (403)	11.8% (62)	22.1% (116)	18.7% (98)	14.3% (75)	8.8% (46)
HSUS	73.3% (384)	7.8% (41)	15.8% (83)	20.8% (109)	18.5% (97)	10.3% (54)
Sierra Club	64.1% (336)	14.5% (76)	16.8% (88)	15.6% (82)	10.5% (55)	6.7% (35)
Monsanto	51.7% (271)	9.5% (50)	13.7% (72)	11.8% (62)	10.9% (57)	5.7% (30)

AFB	43.7% (229)	9.9% (52)	12.2% (64)	8.6% (45)	8.4% (44)	4.6% (24)
Farmers & Ranchers	30.0% (157)	5.5% (29)	6.7% (35)	7.3% (38)	6.3% (33)	4.2% (22)
Extension	26.0% (136)	4.8% (25)	6.9% (36)	5.7% (30)	4.6% (24)	4.0% (21)
EWG	22.7% (119)	3.4% (18)	5.3% (28)	4.0% (21)	6.7% (35)	3.2% (17)
CFI	17.6% (92)	3.1% (16)	3.4% (18)	3.2% (17)	5.0% (36)	2.9% (15)
Syngenta	14.1% (74)	2.5% (13)	3.1% (13)	2.3% (12)	3.4% (18)	2.9% (15)

Note. Percentages are calculated from the total number of respondents. Respondents who were not aware of an organization did not respond to the knowledge question, therefore percentages for the knowledge of each organization do not total to 100%.

Table 2

Respondents' Mean Levels of Trust of the Organizations' Communications by Topic

	Agriculture (SD)	Environment (SD)	Animal Welfare (SD)	Food Safety (SD)	Nutrition (SD)	Overall Communication[a] (SD)
Extension (n = 111)	4.27 (0.89)	4.15 (0.89)	4.10 (0.93)	4.10 (0.95)	4.05 (0.94)	4.15 (0.72)
CFI (n = 76)	4.11 (0.98)	4.08 (0.97)	4.04 (0.91)	4.16 (0.90)	4.11 (0.96)	4.14 (0.70)
EWG (n = 101)	4.15 (0.97)	4.26 (0.85)	4.11 (0.88)	4.19 (0.90)	4.02 (0.95)	4.13 (0.74)
EWG (n = 101)	4.07 (1.02)	3.99 (1.00)	4.08 (1.04)	3.99 (1.13)	3.96 (1.02)	4.02 (0.83)
HSUS (n = 343)	4.18 (1.00)	3.99 (1.03)	4.30 (0.94)	3.77 (1.06)	3.67 (1.08)	3.95 (0.89)
AFB (n = 177)	4.11 (0.96)	4.01 (0.98)	3.88 (0.98)	3.88 (1.00)	3.95 (1.00)	3.95 (0.82)
WWF (n = 364)	4.12 (0.96)	4.10 (1.00)	4.32 (0.93)	3.71 (1.03)	3.65 (1.03)	3.94 (0.86)
USDA (n = 438)	3.94 (1.11)	3.79 (1.13)	3.60 (1.18)	3.85 (1.15)	3.84 (1.19)	3.79 (1.01)
Sierra Club (n = 260)	3.87 (1.08)	3.94 (1.11)	4.01 (1.06)	3.62 (1.03)	3.55 (1.10)	3.78 (0.93)
EPA (n = 408)	3.89 (1.14)	3.91 (1.15)	3.71 (1.11)	3.74 (1.08)	3.52 (1.17)	3.75 (0.99)
Syngenta (n = 61)	3.76 (1.33)	3.63 (1.35)	3.73 (1.38)	3.64 (1.32)	3.70 (1.37)	3.74 (1.21)
Greenpeace (n = 335)	3.78 (1.17)	3.92 (1.16)	3.85 (1.07)	3.63 (1.09)	3.56 (1.09)	3.74 (0.98)
FDA (n = 463)	3.78 (1.21)	3.64 (1.20)	3.56 (1.18)	3.88 (1.23)	3.84 (1.20)	3.73 (1.06)
PETA (n = 366)	3.64 (1.31)	3.62 (1.27)	3.85 (1.29)	3.46 (1.20)	3.38 (1.24)	3.58 (1.13)
DuPont (n = 312)	3.34 (1.29)	3.19 (1.34)	3.14 (1.26)	3.14 (1.28)	3.14 (1.31)	3.20 (1.22)
Monsanto (n = 221)	2.82 (1.56)	2.77 (1.55)	2.79 (1.49)	2.72 (1.50)	2.67 (1.50)	2.70 (1.46)

Note. Scale was 1 = *Distrust*, 2 = *Slightly distrust*, 3 = *Neither trust nor distrust*, 4 = *Slightly trust*, 5 = *Trust*.
[a]Calculated by averaging the means of each communication topic.

Table 3

Respondents' Mean Levels of Trust for the Organizations

	Integrity (SD)	Competence (SD)	Goodwill (SD)	Overall Trust (SD)
HSUS (n = 343)	4.03 (0.86)	4.03 (0.84)	3.98 (0.88)	4.01 (0.83)
WWF (n = 364)	4.00 (0.80)	3.98 (0.79)	3.97 (0.82)	3.98 (0.76)
EWG (n = 101)	3.86 (0.80)	3.86 (0.74)	3.60 (0.75)	3.77 (0.71)
Extension (n = 111)	3.75 (0.80)	3.79 (0.79)	3.61 (0.82)	3.72 (0.75)
AFB (n = 177)	3.73 (0.85)	3.74 (0.89)	3.58 (0.84)	3.69 (0.82)
Sierra Club (n = 260)	3.71 (0.96)	3.71 (0.96)	3.63 (0.94)	3.68 (0.92)
Greenpeace (n = 335)	3.67 (0.94)	3.67 (0.90)	3.61 (0.91)	3.64 (0.88)
Farmers & Ranchers (n = 128)	3.67 (0.84)	3.71 (0.81)	3.50 (0.78)	3.63 (0.76)
CFI (n = 76)	3.73 (0.71)	3.72 (0.70)	3.42 (0.68)	3.62 (0.63)
EPA (n = 407)	3.57 (0.97)	3.61 (0.94)	3.39 (0.91)	3.52 (0.90)
USDA (n = 438)	3.53 (0.97)	3.60 (0.98)	3.38 (0.87)	3.50 (0.90)
PETA (n = 366)	3.40 (1.18)	3.53 (1.09)	3.42 (1.12)	3.45 (1.10)
FDA (n = 463)	3.42 (1.04)	3.52 (1.01)	3.28 (0.91)	3.41 (0.94)
DuPont (n = 312)	3.17 (1.06)	3.50 (0.96)	3.17 (0.95)	3.28 (0.93)
Syngenta (n = 61)	3.23 (1.08)	3.27 (0.97)	3.03 (0.98)	3.18 (0.94)
Monsanto (n = 221)	2.72 (1.32)	3.22 (1.13)	2.73 (1.16)	2.89 (1.14)

Note. Semantic differential items ranged from 1 = *Dishonest, Unfair, Immoral*, etc., to 5 = *Honest, Fair, Moral*, etc.

Objective 4: Describe the Relationship Between the Public's Trust of These Organizations and Trust of the Organizations' Communications, as well as Between the Public's Trust of the Organizations and the Public's Knowledge of the Organizations.

The relationships between trust of an organization and trust of its communications were statistically significant for every organization in the study (Table 4). Using Davis's (1971; as cited in Miller, 1998) descriptors for relationship strength, six of the relationships were very high, with the relationships being strongest for Monsanto (r = .86), PETA (r = .77), and EPA (r = .74). The three weakest relationships were moderate in strength, which were for Extension (r = .48), CFI (r = .45), and EWG (r = .37). The remaining seven relationships were substantial. The relationships between trust of the organization and knowledge of the organization were not as strong. Only six of the correlations were statistically significant, with those relationships being low in strength. The organizations with statistically significant relationships between trust and knowledge of the organization were for Syngenta (r_τ = .25), Sierra Club (r_τ = .17), PETA (r_τ = .13), Greenpeace (r_τ = .15), WWF (r_τ = .12), and HSUS (r_τ = .12). The relationships for the remaining organizations were negligible in strength.

Table 4

The Correlation between Trust of an Organization and Trust of an Organization's Communications, and the Correlation between Trust of an Organization and Knowledge of the Organization

Trust of Organization[a]	Trust of Organization's Communications[b]	Knowledge of Organization[c]
Monsanto (n = 221)	.86*	.04
PETA (n = 366)	.77*	.13*
EPA (n = 407)	.74*	.02
Greenpeace (n = 335)	.74*	.15*
DuPont (n = 312)	.72*	.08
USDA (n = 438)	.70*	.06
Sierra (n = 260)	.69*	.17*
FDA (n = 463)	.69*	.05
Syngenta (n = 61)	.67*	.25*
WWF (n = 364)	.63*	.12*
HSUS (n = 343)	.59*	.12*
Farmers & Ranchers (n = 128)	.55*	.04
AFB (n = 177)	.55*	-.02
Extension (n = 111)	.48*	.03
Extension (n = 111)	.45*	.10
EWG (n = 101)	.37*	-.03

[a]Aggregation of semantic differential scale ranged from 1 = *Distrust to* 5 = *Trust*
[b]Scale was 1 = *Distrust*, 2 = *Slightly distrust*, 3 = *Neither trust nor distrust*, 4 = *Slightly trust*, 5 = *Trust*
[c]Scale was 1 = *Not at all knowledgeable*, 2 = *Slightly knowledgeable*, 3 = *Somewhat knowledgeable*, 4 = *Moderately knowledgeable*, 5 = *Extremely knowledgeable*

CONCLUSIONS

Lack of knowledge is often cited as problem that limits the public's ability to make informed decisions about agricultural and natural resources issues (Frick et al., 1995; Kovar & Ball, 2013; Meischen & Trexler, 2003; Powell & Agnew, 2011). Despite lacking knowledge, the members of the public still make decisions related to agricultural and natural resources issues (Brossard & Nisbet, 2007). Members of the public are likely to rely on organizations they trust to provide information about agricultural and natural resources issues (Brossard & Nisbet, 2007; Kahan, 2012). Therefore, it is important to understand how well organizations are known and trusted by the public, which were the aims of this study.

The results showed that respondents were most aware and knowledgeable of governmental organizations, particularly the FDA, USDA, and EPA. However, trust in the communication of these organizations was neutral to slightly positive, and overall trust was also neutral for the governmental organizations. The neutral evaluation aligned with the neutral evaluation of government source credibility in the Ruth (2015) study results. This may indicate that the history of interactions the respondents have had with these government entities had not always been favorable as possible, which potentially decreased the trust in the organizations (Kim et al., 2009). Extension, while also a government organization, did not have high awareness among the respondents. Those who were aware and knowledgeable about Extension rated

Extension's communications among of the most trustworthy, especially when communicating about agriculture. Trust of Extension and universities was also found by Mase et al. (2015) and Martin et al. (2016). The respondents possibly had more positive interactions with Extension.

Aside from Extension, communication from non-profit organizations was the most trusted, which is similar to the Auger (2011) results indicating a halo effect for non-profit organizations when no negative information is available about the organizations. When looking at specific communication topics, the Environmental Working Group's communication was the most trusted on topics of the environment and food safety; communication from the World Wildlife Federation was most trusted on the topic of animal welfare; lastly, when thinking about nutrition, respondents trusted communication from the Center for Food Integrity the most. Additionally, those organizations with overall communication trust scores representing slightly trust or higher were all non-profit organizations, with the exception the governmental organization of Extension. Aside from PETA, all non-profit organizations ranked higher in overall trust than the for-profit organizations and governmental organizations, except Extension. The higher levels of trust among non-profit organizations may be reflective of organizational structure of non-profit organizations. Non-profit organizations operate either on charitable support or through the support of their members or communities. The ultimate success of a non-profit organization relies on its ability to keep promises and act in favor of its supporters' best interests (Kang & Hustved, 2014). The lower levels of trust in for-profit organizations compared to government organizations and non-profit organizations is consistent with some study results (Auger, 2011; Irani et al., 2001; Martin et al., 2016; Mase et al., 2015), but not with the results of Ruth (2015), which indicated comparable levels of source credibility between government and for-profit organizations when communicating about genetically modified food.

Trust of an organization was linked to trust of the organization's communications in this study, verifying past assertions (Brossard & Nisbet, 2007; Kahan, 2012; Martin et al., 2016; West & Turner, 2014), which is important when uninformed members of the public are likely to rely on trusted sources of information to make their decisions that relate to agricultural and natural resources issues (Brossard & Nisbet, 2007). The relationships between trust of the communication and overall trust of the organization were found to be substantial-to-high for the majority of organizations. Interestingly, the three organizations whose communications were trusted the most (Extension, CFI, EWF) were found to have the weakest relationships between trust of the communication and overall trust.

The results of this study indicate that knowledge about an organization is not enough to affect trust of an organization. Even though agricultural knowledge is assumed as necessary to make informed decisions (Frick et al., 1995; Kovar & Ball, 2013; Meischen & Trexler, 2003; Powell & Agnew, 2011; Specht et al., 2014), knowledge does not appear to have a strong link to trust of the organizations that are communicating about agricultural and natural resources issues based on the results of this study. Ideally, members of the public would be knowledgeable about all agricultural and natural resources issues affecting their lives, but pragmatically individuals will continue to depend on sources of information they trust to help shape their opinions and decisions (Brossard & Nisbet, 2007; Kahan, 2012), even when the individuals are not knowledgeable about the organizations. This study took a step toward understanding which organizations members of the public are likely to believe regarding agricultural and natural resources issues.

RECOMMENDATIONS

Efforts should specifically be made to improve the public's awareness and knowledge of Extension. Extension was found to be highly trusted among those who were aware and knowledgeable of the organization. While reported knowledge of an organization was not a good indicator of trust, a complete lack of knowledge and awareness would prevent trust in an organization because members of the public will not even know the organization exists. With high levels of trust, Extension is well positioned to communicate with the public about agricultural and natural resource topics and issues from a research perspective. State Extension services should work to identify how they can best reach the public audiences in their states who are currently being missed.

For-profit organizations and government organizations, aside from Extension, tended to have lower levels of trust than non-profit organizations. Government organizations should work to improve trust among the public through consistent and reliable actions. Government organizations are well positioned to reach a lot of people with information about agricultural and natural resource topics because of high levels of public awareness, but to do so successfully trust must improve. For-profit organizations should also consider their role in educating the public about agriculture and natural resource topics. Some for-profit organizations, such as Monsanto, DuPont, and Syngenta, may not have historically considered the general public to be part of their target audience. However, members of the public have the ability to influence the organizations through personal purchasing decisions and policy-related behaviors, such as voting.

As the agricultural industry continues to struggle with the public's lack of knowledge and awareness members for agricultural and natural resources issues, it is important that the awareness, knowledge, and trust of organizations communicating about agricultural and natural resource issues continue to be assessed (Brewer & Ley, 2013; Frick et al., 1995; Kovar & Ball, 2013; Mase et al., 2015; Meischen & Trexler, 2003). By understanding levels of awareness, knowledge, and trust of organizations that communicate about agricultural and natural resources issues, the industry can better understand how to improve communications and consumer understanding in the future.

The scope of this study limited the number of organizations that could be included. Future research should address additional organizations involved in communicating about agricultural and natural resources issues, including media entities, such as talk shows that discuss nutrition. Additionally, a qualitative study may be beneficial to gather a greater understanding of what is influencing respondents' perceptions of trust in relation to agricultural and natural resource organizations. This is important when research projects related to different types of issues have shown incongruent results for how the public views categories of organizations (Auger, 2011; Irani et al., 2001; Ruth, 2015). There is also a need for research documenting how communication media impact public opinion of these organizations due to the increasingly fragmented media environment compared to previous decades. From an organizational perspective, completing a case study of an organization undergoing a concerted effort to increase trust among the public is also recommended. As it relates to awareness, a similar case study would be warranted for an organization making a concerted effort to increase awareness and knowledge. This study also acts a snapshot in time, so research to document trends will be necessary as organizations and public opinion continue to change.

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