

# Opening the Doors to Agriculture: The Effect of Transparent Communication on Attitude

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## Abstract

*As consumers have become further disconnected from the agricultural industry, their concerns about agriculture have increased. Effective communication with consumers about agriculture has been identified as a potential solution to minimizing this disconnect. Transparent communication has been offered as a strategy to increase the effectiveness of industry communication. Therefore, this study sought to assess the effects of transparent communication and personal relevance, in a livestock production context, on the attitudes of college students. Elaboration Likelihood Model (ELM) and transparency served as the theoretical framework for this study. To fulfill the purpose of the research, an experimental design was used. The experimental treatments were tested with 688 college students through an online survey format. The results of the study found that both transparent communication and perceived transparency had a significant impact on attitude toward the communication, while personal relevance was not found to be significant. Further research examining transparent communication in ELM was recommended. In addition, it was recommended that practitioners implement transparent communication when communicating about the industry with those in the Millennial generation.*

## Key Words

Attitude, Elaboration Likelihood Model, Personal Relevance, Transparent Communication

## Literature Review

As the industrialization of agriculture has advanced and consumers have become further removed from the farm, farmers and consumers have become disconnected with each other (Duncan & Broyles, 2006; Zimbelman, Wilson, Bennett, & Curtis, 1995). Scholars have suggested this disconnect and the resulting decrease in agricultural literacy among consumers threatens the future success of US agriculture (Igo & Frick, 1999). The agricultural industry has tried to address this disconnect by shifting from communicating with those in the industry to those not involved in the industry (Telg & Irani, 2012). However, communicating effectively with consumers has proven to be difficult. The limited agricultural experience and knowledge of today's consumer coupled with their concerns regarding industrialized agricultural practices (Weatherell, Tregear, & Allinson, 2003; Zimbelman, et al., 1995) has complicated the conversation between producers and consumers. When discussing the disconnect between farmers and consumers, Higgins (1991) explained that farmers and consumers come from "different cultural information systems" that influence how their "behaviors are constructed, coordinated, and interpreted" (p. 217). As a

*The authors would like to acknowledge Glenn Israel, Alexa Lamm, Ricky Telg, and Debbie Treise for their assistance and support during this research. This manuscript is based on data from a doctoral dissertation and was presented at the Southern Association of Agricultural Scientists Conference in February of 2014.*

result, there continues to be a need to communicate effectively with consumers about agriculture, and specifically livestock production (Graves, 2005). A suggested solution to improving the effectiveness of communication about livestock production has been to increase the transparency of the industry (Garner, 2009; Roybal, 2012). However, not everyone within the industry has felt that increased exposure and transparency is a good idea (Potter, 2011).

On one side of the transparency debate, within the livestock industry, there are slaughterhouses implementing video surveillance systems (Raines, 2009) and farms opening their doors for consumers to visit (Fair Oaks Farms, 2012; Hastings, 2012). However, others within the livestock industry oppose increased transparency (Potter, 2011). Much of the opposition to transparency has resulted from the damaging effects producers and the industry have experienced as a result of undercover videos capturing alleged abuse on livestock farms (Lancaster & Boyd, 2015). In response, several states have proposed and a handful of states have passed legislation popularly known as “Ag Gag” laws that ban photography and videography on farms (Flynn, 2012; Mitchell, 2011; Potter, 2011). “Ag Gag” legislation has been discussed as a “major step in the wrong direction for transparency in the food system” (Mitchell, 2011, para. 11). A need exists to understand how transparency, or a lack of transparency, may impact the communication gap between producers and consumers, and ultimately the livestock industry as a whole.

Social media has become vehicle for transparency and has increased the spread of information (Qualman, 2009). Social media provide opportunities for livestock producers to communicate with the public, but also make producers more vulnerable because the social media culture creates an environment where information is shared quickly and it impossible to keep information and events secret (Qualman, 2009; Veil, Sellnow, & Petrun, 2012). A growing consumer group, the Millennial Generation, is known to demand transparency and have become high frequency users of social media (Red McGregor, 2012; Shore, 2011). Facebook has become a popular social media platform among Millennials, with 72% reporting that they use Facebook (Nielsen, 2014). Within this generation, college students are particularly known to have unsolidified attitudes (Sears, 1986; Taylor & Ketter, 2010).

Communicating effectively about livestock production is essential to the future of the industry. Current communication practices within the industry have not been proven to inform and resonate with consumers in a manner that provides long-lasting impacts (Goodwin, 2012; Graves, 2005; Whitaker & Dyer, 2000; Zimbelman et al., 1995). Additionally, the effect of transparent communication within the livestock industry has not been assessed. Higgins (1991) called for researchers to study and practice applied methods to close the communication gap between producers and consumers. Targeting the Millennial generation with communication is important as they are estimated to make up around 27 percent of the US population and have 11 percent more buying power than generations that have come before them (Hais & Winograd, 2011). Further assessment of effective communication methods and transparency in the livestock industry has the potential to impact many. The industry, agricultural communicators, educators, extension agents, consumers, and politicians would find value in this type of assessment because it will ultimately lead to a better understanding of how to create an informed citizenry, ensuring the future sustainability of food and the industry needed to support human life (Doerfert, 2011).

The purpose of this study was to assess the effects of transparent communication and personal relevance, in a livestock production context, on the attitudes of college students, who are an important segment of the Millennial Generation.

### **Elaboration Likelihood Model**

Social psychologists have studied communication messages and the effects messages have had on attitudes and behavior since the discipline began (Allport, 1935; Petty & Cacioppo, 1986; Ross, 1908). To examine attitude change as a result of persuasion and cognitive processing, Petty and Cacioppo developed the Elaboration Likelihood Model (ELM) (McQuail, 2010; Petty & Cacioppo, 1986; Petty & Cacioppo, 1996).

ELM explains the process individuals go through when exposed to persuasive communication (Petty & Cacioppo, 1986). The model explains this process through two cognitive routes, the central and peripheral route. An individual's motivation, ability to process, processing nature, and cognitive structure determine the resulting processing route (Petty, Brinol, & Priester, 2009). Both motivation and ability must be present for elaboration to occur (Petty & Cacioppo, 1996). The central route includes a detailed thought process and careful consideration of the information presented. The peripheral route does not include careful thought and consideration; rather it includes the attraction to and influence of simple cues (Petty & Cacioppo, 1986).

Personal relevance has been described as the most influential motivational factor in determining if an individual will have the motivation to process a message (Petty & Cacioppo, 1986). Personal relevance refers to the importance and meaning a message has to an individual. As personal relevance increases, motivation to process increases. However, high personal relevance can be confounded with other factors such as prior knowledge, making personal relevance a difficult factor to interpret (Petty & Cacioppo, 1986). Several experimental studies have manipulated personal relevance to test it within ELM (Petty & Cacioppo, 1979; Petty, Cacioppo, & Goldman, 1981; Petty, Cacioppo, & Schumann, 1983). In these studies, researchers have assigned participants to either high or low personal relevance groups.

In 2005, Verbeke conducted a literature review to look at how information about agriculture and food is communicated in the Information Age and the challenges associated with communicating about food. Food was identified as a low-involvement good (Beharrell & Denison, 1995). An examination of previous research found that because of consumer uncertainty regarding food, information and decisions about food have been commonly based on simple cues and processed through the peripheral route (Frewer, Howard, Hedderley, & Shepherd, 1997; Verbeke, 2005). The prevalence of peripheral processing suggests that individuals may not have the motivation and ability to process information about food topics and agriculture.

### Transparency

The concept of transparency can be traced back to the 1890s with the work of Henry Carter Adams, a public finance academic who discussed the role of publicity in the case of corporate abuses (Bigelow, Sharfman, & Wenley, 1922; Stoker & Rawlins, 2004). Despite the discussions of transparency over time, very little academic research has tested the effects of transparency, due to the challenges involved with defining and measuring the construct (Rawlins, 2008b). A review of the literature revealed several qualitative assessments of transparency (Barling, Sharpe, & Lang, 2009; Fairbanks, Plowman, & Rawlins 2007; Jahansoozi, 2006; Meijer, 2009). A quantitative measure of communicative transparency was developed in 2008 (Rawlins, 2008a) and tested in two subsequent studies (Auger, 2011; Rawlins, 2008b).

Rawlins (2008a) offered a comprehensive definition of transparency, which was used for this research.

Transparency is the deliberate attempt to make available all legally releasable information – whether positive or negative in nature – in a manner that is accurate, timely, balanced, and unequivocal, for the purpose of enhancing the reasoning ability of publics and holding organizations accountable for their actions, policies, and practices. (p. 75).

The body of literature surrounding transparency includes focus on communicative transparency and indicates that stakeholders must perceive information to be transparent (Gower, 2006). Communicative transparency includes the variables of substantial information, participation, and accountability (Rawlins, 2008a).

Substantial information has been discussed as the amount and type of information needed by individuals. The relevance, clarity, completeness, accuracy, reliability, timeliness, and comparability of information impact whether or not the information is substantial (Rawlins, 2008b). Without adequate knowledge of the information wanted and needed by the stakeholders, organizations cannot guarantee they are achieving transparency through substantial information (Rawlins, 2008b).

Participation includes the interaction and feedback between organizations and stakeholders (Auger, 2011). This trait of communicative transparency includes involvement, feedback, detailed information, the ease of finding information, and the initiative by the organization to understand and ask for stakeholder opinions (Rawlins, 2008b). Additionally, organizations must invite stakeholders to participate in a conversation, and organizations must provide responses when stakeholders participate. The participation variable of communicative transparency highlights the “active participation in acquiring, distributing and creating knowledge” (p. 419), a requirement of transparency identified by Cotterrell (1999).

Accountability in communicative transparency includes “information that covers more than one side of controversial issues, might be damaging to the organization, admitting mistakes, and that can be compared to industry standards” (Rawlins, 2008b, p. 431). Additionally, accountability includes an organization being open to criticism and being forthcoming (Rawlins, 2008a). Those organizations that are transparent have been identified as being accountable for their words, actions, and decisions (Rawlins, 2008b).

Several studies of agricultural transparency have addressed transparency through discussion of tracing, tracking, and labeling of food products (Barling et al., 2009; Beulens, Broens, Folstar, & Hofstede 2005; Opara & Mazaud, 2001; van Dorp, 2003; Wognum, Bremmers, Trienekens, van der Vorst, & Bloemhof, 2011); however, a need exists to examine transparency in agricultural production. Opara and Mazaud (2001) suggested “consumers and other stakeholders in agroindustry now demand transparency in the way food is grown and handled throughout the supply chain, resulting in the emergence of ‘traceability’ as an important policy issue in food quality and safety” (p. 239). Barriers to transparency in the agricultural industry have been identified as gaining buy-in from the whole industry and cost (Barling et al., 2009). Additionally, Buelens et al. (2005) identified that organizational and psychological threats could inhibit the implementation of transparency in the agricultural industry. Some of these threats included unauthorized use of information, the cost to implement transparency, and the unknown profit driven benefits (Buelens et al., 2005). In addition to the barriers, there are also benefits to transparency. The information and knowledge that transparency provides individuals enables them to increase their reasoning ability and make informed decisions (Fagotto & Graham, 2007; Rawlins, 2008a). Additionally, transparency has been discussed as promoting accountability, commitment, collaboration, and cooperation among organizations (Jahansoozi, 2006). In a study by Hoogland, do Boer, and Boersema (2005) increased transparency encouraged more sustainable food choices among the participants.

The review of literature revealed the majority of studies surrounding the topic of agriculture and transparency were conducted in European countries. Additionally, many of the studies approached transparency from a qualitative perspective. Many of the studies examining agricultural transparency discussed transparency as the tracing, tracking, and labeling of food products, rather than a communication tactic as suggested by Rawlins (2008a).



### **Purpose and Hypotheses**

The purpose of this study was to assess the effects of transparent communication and personal relevance, in a livestock production context, on the attitudes of college students. The findings of this research will help guide the future of effective communication within the livestock industry, ultimately leading to a citizenry informed on agricultural topics and issues (Doerfert, 2011).

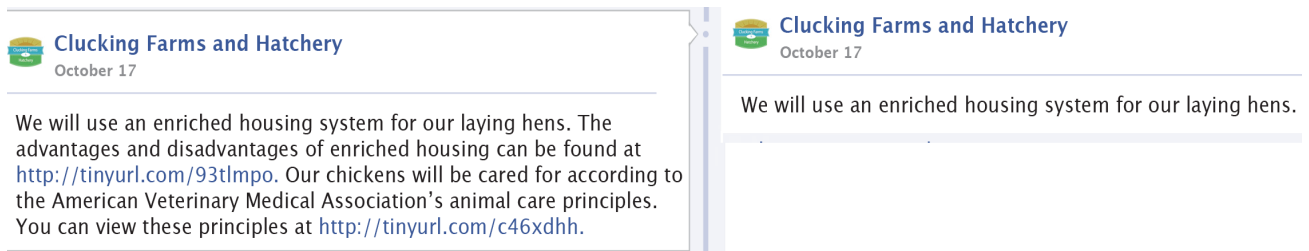
H1: Subjects exposed to high transparent communication and high personal relevance will have more positive attitudes toward the communication than those exposed to low transparent communication and low personal relevance.

H2: When controlling for transparent communication and personal relevance, perceived transparency will have a positive effect on attitude toward the communication.

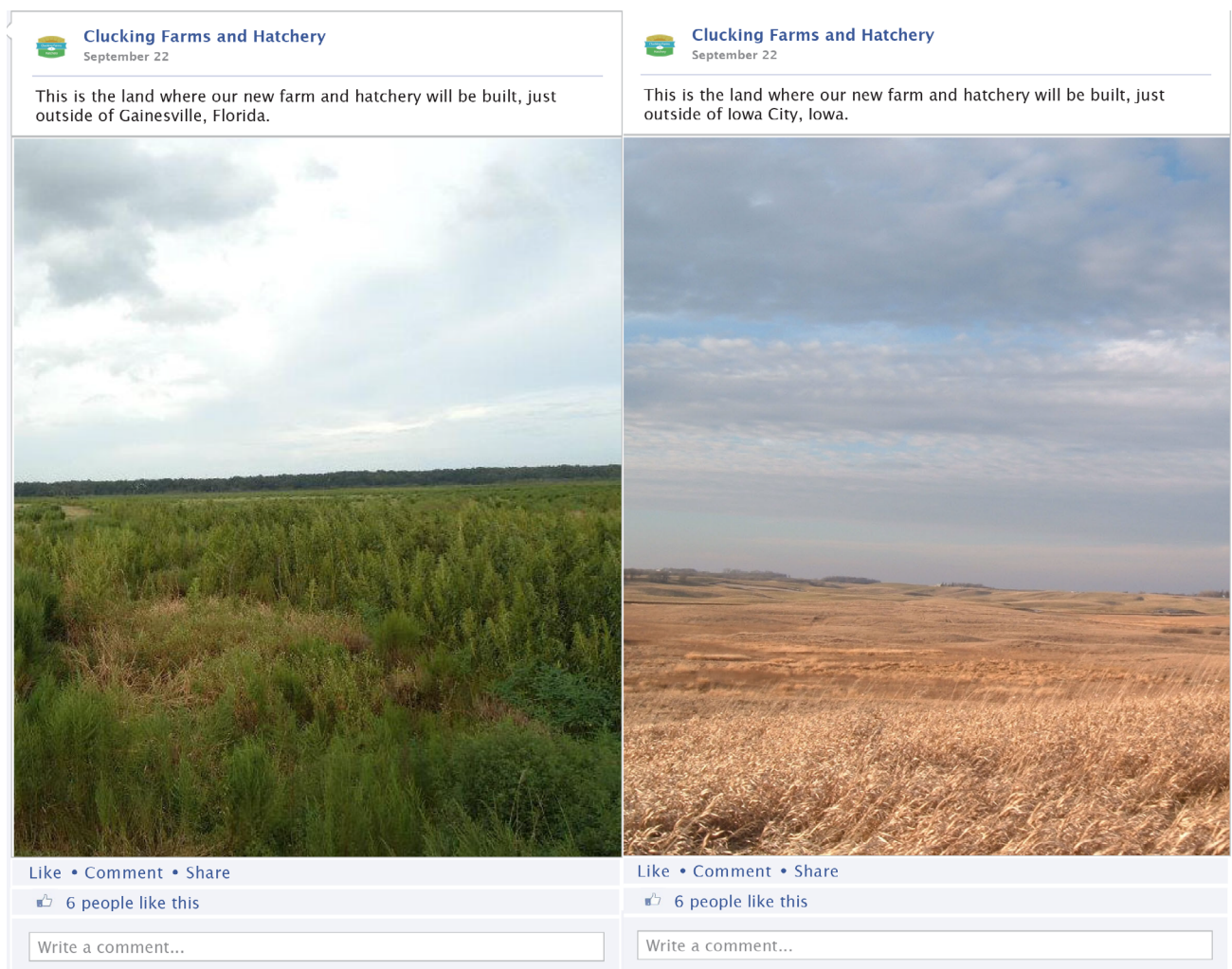
### **Methods**

This study included a 2 (personal relevance: high and low) x 2 (transparent communication: high and low) between-subjects factorial experimental design. In a between-subjects design each subject is exposed to only one treatment condition (Keppel & Wickens, 2004). For this study, subjects were randomly assigned to receive both a high or low transparent communication and high or low personal relevance treatment through an online survey. The low transparent communication, low personal relevance treatment served as the control group.

The transparent communication manipulations were presented in a Facebook page for a fictitious poultry farm called Clucking Farms and Hatchery. These manipulations were based on the elements of communicative transparency identified by Rawlins (2008a) and included manipulations of substantial information, accountability, and participation. An example of one of the manipulations can be seen in Figure 1. A poultry farm was chosen for the focus of the Facebook page because the transparency debate in the agriculture industry has commonly been focused on animal agriculture segments of the industry. The personal relevance manipulations were presented in a description of the farm and on the farm's Facebook page (Figure 2). Personal relevance was manipulated by changing the location (both in words and image) where the farm was going to be built, just outside of Gainesville, Florida versus Iowa City, Iowa. The personal relevance manipulations used in this study were modeled off of personal relevance manipulations used in previous research (Petty & Cacioppo, 1979; Petty et al., 1981; Petty et al., 1983). The treatment manipulations were pre-tested with college students, not part of the final study, on three occasions. The first two pretests showed insufficiencies in the manipulations; therefore, adjustments were made after the first two pretests to further enhance the manipulations. The third pretest resulted in a satisfactory manipulation check and the manipulations were verified through cognitive interviews with three college students who participated in the third pretest. Changes were made to the instrument as a result of the pretest and cognitive interviews.



*Figure 1.* Transparent communication manipulation example. The high transparent communication manipulation example is seen on the left, and the low transparent communication manipulation example is seen on the right.



*Figure 2.* Personal relevance manipulation example. The high personal relevance manipulation example is seen on the left, and the low personal relevance manipulation example is seen on the right.

Although this research was part of a larger study, two sections of the survey instrument were relevant to these research findings: attitudes toward the communication on the Facebook page and perceived transparency of the communication. The instrument was presented in an online format and respondents were first presented with a description of the fictitious farm, followed

by a link to the Facebook page with randomly assigned experimental treatments embedded, and a question to verify that they were able to view the Facebook page. After the presentation of the Facebook page, respondents were asked to list their thoughts about what they saw, followed by questions about the variables of interest (attitude, trust, perceived transparency), demographics, and manipulations checks. To measure attitude an 18-item semantic differential scale was used. The scale was adapted from the bipolar adjectives suggested by Osgood, Suci, and Tannenbaum (1978). Additionally, the scale was also adapted from the scales used by Meyers (2008) and Rhoades (2006). The alpha reliability of this attitude measurement was .90. The attitude index response items were categorized to the real limits standard of: 1.00 to 2.33 = *Least Favorable*, 2.34 to 3.66 = *Neutral* and 3.67 to 5.00 = *Most Favorable*. The perceived transparency variable was created from a four-item scale, which had an alpha reliability of .86. These items were based on the overall transparency segment from Rawlins's (2008b) transparency instrument. The responses for perceived transparency scale ranged from 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree nor Disagree*, 4 = *Agree*, to 5 = *Strongly Agree*. The perceived transparency index response items were categorized to the real limits standard of: 1.00 to 1.49 = *Strongly Disagree*, 1.50 to 2.49 = *Disagree*, 2.50 to 3.49 = *Neither Agree nor Disagree*, 3.50 to 4.49 = *Agree*, and 4.50 to 5.00 = *Strongly Agree*.

A panel of experts reviewed the instrument for face and content validity. The panel of experts included four professors with specializations in agricultural communication, evaluation, and mass communication as well as an assistant professor specializing in extension education. In addition, the instrument was pilot tested with 31 college students and the alpha reliabilities found in the pilot test were found to be adequate.

A convenience sample was used to sample students from the population of University of Florida students. Both qualitative and quantitative researchers commonly use convenience samples to address practical constraints, efficiency, and accessibility, (McMillan & Schumacher, 2010). Additionally, convenience samples have been commonly used in psychology and consumer research studies with college student subjects (Peterson, 2001). Although data from studies using convenience samples are not generalizable to the larger population, the findings are still useful and can provide valuable insight to better understanding relationships (McMillan & Schumacher, 2010).

The limitations associated with external validity should be recognized during interpretation of the results of this study. Because a convenience sample was used the population threat to external validity does exist, thus indicating that the results cannot be determined to be representative of the greater University of Florida undergraduate population or national undergraduate student population. Additionally, since multiple treatments were used the generalizability of the results is limited to similar multi-treatment situations (McMillan & Schumacher, 2010).

The sample included 989 subjects from eight university courses. The courses included in the sample were from the College of Agriculture and Life Sciences as well as the College of Journalism and Mass Communications. These courses included students from a variety of majors and class rank. Subjects were offered 5 points extra credit in their course as incentive to participate in the study. Data were assessed for class effect and no effect was found. Administration of the survey followed the procedures for web survey distribution outlined by Dillman, Smyth, and Christian (2009) and the subjects were sent an email with the link to the survey. A total of 793 subjects responded to the survey. However, only 688 of these responses were usable. Responses were removed from the sample because the subjects indicated that they could not see the Facebook page ( $n = 78$ ), subjects took the survey twice ( $n = 11$ ), subjects were not part of the millennial generation ( $n = 10$ ), and subject data was missing for the majority of variables ( $n = 6$ ). The resulting response rate based on the accessible population was 69.6% ( $n = 688$ ); however, the overall response rate was 80.2% ( $n = 793$ ).

To ensure that the experimental manipulations functioned properly, a series of manipulation checks were conducted. The manipulation checks included an assessment of attentiveness to the stimuli, comparisons between high and low transparent communication groups and high and low personal relevance groups, and respondent identification of the high transparent communication treatment at the end of the survey. All manipulation checks showed that the manipulations were functioning as intended.

SPSS® 20.0 was used to analyze the data from this study. A factorial analysis of variance was used to analyze hypothesis one. The second hypothesis was analyzed using multiple linear regression. The assumptions of both analyses were checked and no violations were found. The demographic analysis of the subjects can be found in Table 1.

Table 1

| <i>Demographics of Respondents</i>                               |          |      |
|------------------------------------------------------------------|----------|------|
| Characteristic                                                   | <i>n</i> | %    |
| Gender                                                           |          |      |
| Female                                                           | 465      | 67.6 |
| Male                                                             | 221      | 32.1 |
| Self-reported area of residence while growing up                 |          |      |
| Subdivision in a town or city                                    | 306      | 44.5 |
| Urban or suburban area outside of city limits                    | 220      | 32.0 |
| Rural area (not a farm)                                          | 100      | 14.5 |
| Downtown area in a city or town                                  | 39       | 5.7  |
| Farm                                                             | 22       | 3.2  |
| Employment in the livestock industry                             |          |      |
| No                                                               | 563      | 81.8 |
| Yes, in the past                                                 | 61       | 8.9  |
| Yes, currently                                                   | 50       | 7.3  |
| I or someone in my immediate family plans to in the next 4 years | 11       | 1.6  |
| Class rank                                                       |          |      |
| Junior                                                           | 263      | 38.2 |
| Sophomore                                                        | 163      | 23.7 |
| Freshman                                                         | 51       | 7.4  |
| Graduate student                                                 | 4        | 0.6  |

## Results

*H1: Subjects exposed to high transparent communication and high personal relevance will have more positive attitudes toward the communication than those exposed to low transparent communication and low personal relevance.*

A two-way between groups analysis of variance was conducted to determine the effect of the different transparent communication and personal relevance treatments on attitude toward the communication. The independent variables were transparent communication (high, low) and personal relevance (high, low). The dependent variable was attitude toward the communication.

This hypothesis was partially supported. The interaction of personal relevance and transparent communication was not significant,  $F(1,686) = .001, p < .980$ . However, the two-way between



groups analysis of variance did reveal a main effect for transparent communication,  $F(1,686) = 6.090, p = .014$  (Table 2). Those receiving high transparent communication had a slightly more favorable attitude ( $M = 3.92, SD = .52$ ), than those receiving low transparent communication ( $M = 3.82, SD = .53$ ). The means can be found in Table 3. A main effect for personal relevance was not found,  $F(1,686) = .417, p = .519$ .

Table 2

| <i>Effect of Transparent Communication and Personal Relevance on Attitude Toward Communication</i> |           |           |           |          |          |
|----------------------------------------------------------------------------------------------------|-----------|-----------|-----------|----------|----------|
| Source                                                                                             | <i>SS</i> | <i>df</i> | <i>MS</i> | <i>F</i> | <i>p</i> |
| Personal relevance                                                                                 | .116      | 1         | .116      | .417     | .519     |
| Transparent communication                                                                          | 1.694     | 1         | 1.694     | 6.090    | .014     |
| Personal relevance*Transparent communication                                                       | .000      | 1         | .000      | .001     | .980     |
| Error                                                                                              | 189.760   | 682       | .278      |          |          |
| Total                                                                                              | 3301.003  | 686       |           |          |          |

Table 3

| <i>Attitude Means by Treatment Group</i> |                                |                               |              |
|------------------------------------------|--------------------------------|-------------------------------|--------------|
|                                          | <u>High personal relevance</u> | <u>Low personal relevance</u> |              |
|                                          | <i>M (SD)</i>                  | <i>M (SD)</i>                 | <i>Total</i> |
| High transparency                        | 3.93 (.52)                     | 3.91 (.53)                    | 3.92 (.52)   |
| Low transparency                         | 3.83 (.55)                     | 3.81 (.51)                    | 3.82 (.53)   |
| Total                                    | 3.88 (.54)                     | 3.86 (.52)                    |              |

*Note:* The attitude categories were broken down as follows for interpretation 1.00 to 2.33 = *Least Favorable*, 2.34 to 3.66 = *Neutral* and 3.67 to 5.00 = *Most Favorable*.

*H2: When controlling for transparent communication and personal relevance, perceived transparency will have a positive effect on attitude toward the communication.*

Multiple linear regression was used to test this hypothesis. Transparent communication, personal relevance, and perceived transparency served as predictors of attitude toward the communication in this model. The perceived transparency index had a grand mean of 3.80 ( $SD = .68$ ) (Table 4). The model was found to be significant,  $F(3,684) = 99.035, p = .000$ . Additionally, the predictors explained 30.4% of the variance in attitude toward the communication. Perceived transparency was the only predictor that was significant,  $t = 16.965, p = .000$ . This result indicated that a one-unit increase in perceived transparency would result in a .426 increase in attitude. The results of this hypothesis can be seen in Table 5.

Table 4

*Perceived Transparency Grand Means among Treatment Groups*

|                                            | <i>n</i> | <i>M</i> | <i>SD</i> |
|--------------------------------------------|----------|----------|-----------|
| High personal relevance, high transparency | 177      | 3.91     | .66       |
| High personal relevance, low transparency  | 173      | 3.73     | .68       |
| Low personal relevance, high transparency  | 166      | 3.85     | .66       |
| Low personal relevance, low transparency   | 171      | 3.71     | .70       |
| Total                                      | 687      | 3.80     | .68       |

*Note:* The perceived transparency categories were broken down as follows for interpretation 1.00 to 1.49 = *Strongly Disagree*, 1.50 to 2.49 = *Disagree*, 2.50 to 3.49 = *Neither Agree nor Disagree*, 3.50 to 4.49 = *Agree*, and 4.50 to 5.00 = *Strongly Agree*

Table 5

*Multiple Linear Regression Analysis for Variables Predicting Attitude toward the Communication*

| Variable                  | <i>B</i> | <i>t</i> | <i>p</i> |
|---------------------------|----------|----------|----------|
| Constant                  | 2.235    | 22.965   | .000     |
| Transparent communication | .010     | .281     | .779     |
| Personal relevance        | .027     | .796     | .426     |
| Perceived transparency    | .426     | 16.965   | .000     |
| R <sup>2</sup>            | .304     |          |          |
| F                         | 99.035   |          |          |

## Conclusions and Discussion

The first hypothesis, formed based on the theoretical framework of ELM and transparency, predicted that those receiving the high transparent communication and high personal relevance treatment would have a more positive attitude toward the communication than those who received low transparent and low personal relevance treatments. This hypothesis was partially supported. The interaction of personal relevance and transparent communication was not significant. However, the main effect for transparent communication was significant. This suggested that those who received high transparent communication would have higher mean attitude scores than those who received low transparent communication. Although the main effect of personal relevance was not significant, an inspection of the means table indicated that those who received high personal relevance treatments had slightly more favorable attitudes than those who received low personal relevance treatments.

The second hypothesis predicted that when controlling for transparent communication and personal relevance, perceived transparency would have a positive effect on attitude toward the communication. This hypothesis was supported. Perceived transparency was found to be a significant predictor of attitude toward the communication. This finding indicated that those with a higher perceived transparency score would have a higher attitude score than those with a lower perceived transparency score.

## Theoretical Implications

Perceived transparency and manipulated transparent communication were found to have a significant impact on attitude toward the communication. The relationship between transparency and attitude has not been previously explored. The findings from this study suggest that attitude

toward the communication increases positively for each increase in perceived transparency. In addition, those receiving the high transparent communication manipulation had slightly more favorable attitudes than those who received the low transparent communication manipulations. This finding is important to understand because previous research has shown that attitudes are predictive of behavior (Petty & Cacioppo, 1996; Petty et al., 2009). Thus, the findings suggest that positive influences of transparency on attitude may also result in positive behavioral outcomes.

Using ELM, the design of the research suggested that the manipulation of personal relevance would impact the subject's motivation to process the communication. However, no significant differences were found between those who received high and low personal relevance treatments and personal relevance did not have a significant impact on attitude toward the communication. Transparent communication may have been more salient than personal relevance to the subjects participating in this study. The lack of significance may also be explained by previous identification of low involvement associations with food (or in this case food related information) (Beharrell & Denison, 1995) or the transient nature of college students. In addition, this lack of significance may be due to personal relevance confounding with prior knowledge, a problem observed previously with personal relevance (Petty & Cacioppo, 1986). Since personal relevance serves as a motivational factor in ELM and was not significant in this study, it cannot be concluded that the subjects had the motivation to process the communication. Thus, it is likely that the attitudes formed were based on the peripheral processing route. In this case, perceived transparency likely served as a peripheral cue that led to further peripheral processing. Previous research has also found a prevalence of peripheral processing in studies of ELM and agriculture (Frewer et al., 1997; Veberke, 2005).

However, the effects of transparent communication and personal relevance on attitude toward the communication may have been different if respondents had been exposed to the message stimuli multiple times. In addition, the static nature of the Facebook page may have influenced respondents' attitudes differently than if the Facebook page was live and subjects were able to interact with it. The static nature of the Facebook page was necessary to control the message stimuli for all respondents.

### **Practical Implications**

A need existed to understand how transparency could impact the livestock industry, in order to bring together those who support (Garner, 2009; Roybal, 2012) transparency in the industry and those who oppose it (Potter, 2011). The results of this study indicate the use of transparent communication, specifically when communicating with those in the Millennial Generation, would be beneficial to the livestock industry. Transparent communication is likely to result in more favorable attitudes among the Millennial Generation. Literature indicates that Millennials find confidence in companies that communicate transparently (Red McGregor, 2012) and this study suggests that Millennials will have more favorable attitudes toward those who communicate in a transparent manner. Additionally, the findings suggest that transparent communication in the agricultural industry should go beyond the tracking and tracing (Barling et al., 2009; Beulens et al., 2005; Opara & Mazaud, 2001; van Dorp, 2003; Wognum et al., 2011) of food products and should encompass transparent communication practices throughout the entirety of the production process.

However, practitioners should be cautioned that communicating in a transparent manner does not ensure improved attitudes. The target audience of the communication must first access and attend to the communication (Fagotto & Graham, 2007). In addition, the target audience must perceive the communication to be transparent (Gower, 2006). In this study, the subjects were incentivized with extra credit to participate in the study and read the message stimuli. Outside the experimental setting, the transparent communication must be presented in a manner that the target audience would attend to. Strategies, such as the use of consumer or audience testimonials, may be effective in attracting a broader target audience to attend the communication. If targeting

Millennials, it may be appropriate to use a social media interface such as Facebook because this is a media channel that the Millennial Generation is motivated to use (Nielsen, 2014). Practitioners should assess the needs of their target audience and the media that they commonly use. This assessment will allow practitioners to determine the best channel to communicate through in order to reach their target audience before implementing transparent practices.

Practitioners should also explore ways to make communication about the livestock industry more personally relevant to their target audience. Identifying shared values of the target audience and the industry may allow for practitioners to provide communication that motivates the audience to process the information. Identifying overlapping values in their differing cultural systems is essential to narrowing the communication gap between producers and consumers (Higgins, 1991).

Practitioners should plan for the additional challenges associated with the implementation of transparent communication. The literature suggests that the exposure of weaknesses, unauthorized use of information, loss of independence, a proactive management style, and additional costs are all challenges associated with transparency (Barling et al., 2009; Buelens et al., 2005; Rawlins, 2008a; Rawlins, 2008b). Practitioners should be prepared to deal with each of these challenges and address them as they arise.

### **Direction for Future Research**

As this study found that transparency has a significant effect on attitude toward the communication, further research should be done to connect transparency to ELM. It was concluded that the attitudes observed in this study resulted from peripheral processing. However, it cannot be concluded that the same results would be present if central processing were to occur. A follow-up study should be done to determine if central processing of transparent communication would lead to the same effects on attitudes. Additionally, further research examining transparency in ELM should measure elaboration to provide further insight to the processing route, as well as the strength and endurance of the resulting attitudes.

Since personal relevance was not found to be significant, further research should be done to determine if high personal relevance on the topics of food or livestock production can be achieved with the Millennial Generation. Additionally, alternative manipulations of personal relevance in this context should be assessed. Exploration of values among this generation and framing communication around these values to increase personal relevance should be pursued. Interest and willingness to access and attend to agricultural information on social media should also be explored among the Millennial generation. Future research should include the effect of transparent communication in a face-to-face setting as well as in other agricultural contexts. Additionally, future studies should utilize a general population audience to determine if the results found among college students are similar among the general population.

The future of US agriculture depends on the industry's ability to narrow the communication gap between those who produce and consume food (Igo & Frick, 1999). This research provides preliminary indications that transparent communication can positively impact attitudes toward communication from the livestock industry. However, further applied communications research is needed to re-connect the communication between producers and consumers (Higgins, 1991).



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