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Amber Krause

Courtney Meyers

Erica Irlbeck

Todd Chambers

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Abstract

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

Keywords

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

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RESEARCH

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

ABSTRACT

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

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KEY WORDS

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

INTRODUCTION

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

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

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

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

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

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

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

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

LITERATURE REVIEW/THEORETICAL FRAMEWORK

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

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

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

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

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

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

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

PURPOSE AND RESEARCH QUESTIONS

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

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

METHODS

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

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

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

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

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

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

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

Table 1

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

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

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

Table 2

Possible Message Frames Used in YouTube Videos About Proposition 37

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

Note. Adapted from Abbot et al. (2001)

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

RESULTS

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

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

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

Table 3

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

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

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

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

Table 4

Crosstab of On-Camera Sources by Message Position

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

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

Note. ^a source originally coded as "other".

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

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

Table 5
Crosstab of Message Appeals by Message Position

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

RQ3: For each message position, what message frames exist in YouTube videos about Proposition 37?

The seven frames provided in the code book were *human health*, *environmental*, *regulatory*, *business*, *morality/ethics*, *right to know*, and *other*. The most frequently used frame in the sample was *right to know* ($n = 97$, 59.9%), followed by *human health* ($n = 83$, 51.2%). The *regulatory* frame was used in 44.4% of the videos ($n = 72$), while the *morality/ethics* frame was used in 42% of the sample ($n = 68$).

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

Table 6
Crosstab of Message Frames by Message Position

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

CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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ABOUT THE AUTHORS

Amber Krause completed her master's degree in agricultural communications at Texas Tech University in 2014. This manuscript is part of her thesis research.

Dr. Courtney Meyers is an associate professor in agricultural communications at Texas Tech University.

Dr. Erica Irlbeck is an associate professor in agricultural communications at Texas Tech University.

Dr. Todd Chambers is the associate dean for undergraduate affairs in the College of Media & Communication, both at Texas Tech University.