

Graduate Student

**Cognitive and Affective Responses by Lubbock Chamber of Commerce Affiliates to
Agricultural News**

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ABSTRACT

One of the greatest challenges in agriculture today is helping the total U.S. population develop a basic understanding of the food, agricultural, and natural resource systems. Several of the most critical topics that confront our society include agriculture (Terry, 1993). The need for agricultural literacy is growing, specifically in the area of agricultural policy, but many individuals lack a basic understanding of how agricultural policy affects the global food, fiber, and natural resource industry (Goeker, 1992).

This study is a replication of the methods based on Davis' (2003a) study which looked into the affects of agricultural news presented to Hispanic/Latino populations of West Texas. Davis (2003a) recommended a Caucasian population be studied for cross-cultural comparisons; therefore, this study explored the cognitive and affective responses of Lubbock Chamber of Commerce affiliates when presented agricultural policy news in differing presentation mediums.

As in the Davis study, this study used an experimental posttest-only control-group design to compare four presentation media: print, electronic text, audio, and video. Participants were members of multiple committees of the Lubbock Chamber of Commerce (n=60). The participants were assigned to one of four treatment groups or a control group. The dependent measure included aided recall, unaided recall, and issue salience.

Results indicated a significant difference in aided recall between print and electronic text and a moderate correlation between aided recall and issue salience. No significant difference existed between agricultural issue salience and media presentation. The author suggests replication in other Caucasian populations, as well as other specific ethnic groups.

Key Words: Media Presentation, Cognitive, Affective, Print, Electronic Text, Television, Radio

Cognitive and Affective Responses by Lubbock Chamber of Commerce Affiliates to Agricultural News

Introduction

The number of individuals choosing for agricultural careers in rural communities has declined sharply (Goeker, 1992). Previous studies indicate the population as a whole generally is not literate about the production of food and fiber in the U.S. (Campbell, 1997). Working in areas to promote a higher knowledge base in agricultural facts helps secure the future for agricultural communicators (Frick, Kahler, & Miller, 1991). Rogers (1983) states that media iare the primary source for attaining initial awareness about agriculture. Agricultural literacy must continue to expand through media to reach general populations (Frick et al., 1991).

Davis (2003a) explored the effects of agricultural policy news presented to the Hispanic/Latino population of West Texas. It was recommended to study the effects of different presentation media in other ethnic populations of West Texas. This study design is a replication of the methods of that research. Davis (2003a) used the Agenda-Setting Theory to compare media channels containing agricultural content and focused on the English and Spanish language. The research used an experimental posttest-only control-group design to compare four English and Spanish presentation media: newspaper print, electronic text, video news release, and radio news release. The dependent measure included aided recall, unaided recall, and issue salience. Results indicated significant differences in aided recall between English newspaper print and English electronic text, Spanish newspaper print, and Spanish electronic text. A significant difference also occurred between English video news release and Spanish electronic text. Results indicated a strong correlation between aided and unaided recall. Although a

change in issue salience was evident, no significant differences existed between agricultural issue salience and media channel.

This study follows the Davis (2003a) study and was designed to find the best medium presentation method to send messages and receive the highest cognitive level response and the strongest issue salience by determining the effectiveness of four different medium presentation methods dealing with agricultural issues. In this study, the learners were made up of Lubbock Chamber of Commerce affiliates. The media used in this study consisted of: print, electronic text, audio, and video. The author measured salience among these issues, and aided and unaided recall.

In order to accomplish the purpose of the study the following questions were formulated:

- 1) What forms of mass media and agricultural reporting have the highest recall effect on Lubbock Chamber of Commerce affiliates?
- 2) What forms of mass media and agricultural reporting have the highest issue salience effect on Lubbock Chamber of Commerce affiliates?
- 3) Is there a relationship between recall and issue salience among the Lubbock Chamber of Commerce affiliates when consuming agricultural policy news?

Research Hypotheses

The following research hypotheses, constructed from the literature review, were tested:

- 1) Lubbock Chamber of Commerce affiliates in the medium presentation groups of print, electronic text, video, and audio will exhibit statistical differences in aided recall of agricultural policy news.

- 2) Lubbock Chamber of Commerce affiliates in the medium presentation group of print, electronic text, video, and audio will exhibit statistical differences in unaided recall of agricultural policy news.
- 3) Lubbock Chamber of Commerce affiliates in the medium presentation groups of print, electronic text, video, and audio will exhibit statistical differences in issue salience when given a news story dealing specifically on agricultural policy news.
- 4) There are relationships among the medium, unaided recall, aided recall, and issue salience among Lubbock Chamber of Commerce affiliates when consuming agricultural policy news.

Theoretical/Conceptual Framework

Experiments on media effects have been conducted on media presentation methods to unearth which medium best suits the general audiences' recall and salience. Public opinion forms through the primary focus of certain issues; this in turn, establishes salience.

The "medium is the message," a phrase coined by Marshall McLuhan, exemplifies the reversal of the traditional dominance of content over the medium (Munday, 2003). This study focuses on the medium of presentation channels with the message being agricultural news.

The Agenda-Setting Theory, defined by McCombs and Shaw (1972), found an almost perfect correlation between media story coverage and issue salience. News stations and publications set the agenda simply by deciding what stories they will cover and those they will not at any given time. "Researchers usually define the media agenda as consisting of a hierarchical ranking of issues, according to the amount and prominence of news coverage," (Perry, 1996, p. 73). McCombs and Shaw (1972) attempted to explain the reasons people cognitively process and develop issue salience. They found that the high correlation between

amounts of media coverage and issue importance had a great influence on mass media research. The Agenda-Setting Theory shifts the focus of away from the immediate effects of mass media to more of a long-term effect on cognition (Shaw, 1979). This notion promotes a positive association between mass media and consumers of news issues.

Concerns are often raised as to which stories emphasize important issues when the mass media set the agendas (Perry, 1996). Viewers, listeners, and readers take in what is considered “important” by the presentation medium. Agricultural communicators seek ways to convey the importance of agriculture to the public sector. An issue’s importance can expand and shrink again as a result of a lucid communication presentation (Bonk, Griggs, & Tynes, 1999).

The less knowledgeable an individual is about the subject featured, the more susceptible he/she tends to be towards the media’s outlook on the matter and the importance it is given (Althaus & Tewksbury, 2002). The general public’s knowledge, attitudes, and perceptions towards agriculture are seemingly on a down hill slope, with each generation moving a little farther away from the agrarian environment (Doerfert, 2003). Unfortunately, many people, especially in urban areas, do not understand how food is produced, or the financial complexities associated with farm legislation (Boone, Meisenbach, & Tucker, 2000). Much of the information people receive about risks from agriculture comes from the mass media.

Televisions, newspapers, and magazines are among top information sources. Mass media’s innate ability to influence behavior, social change, and policy agenda render them essential to any discussion concerning agricultural production (Doerfert, Akers, Haygood, & Kistler, 2003).

Cognitive effects are supported by the Agenda-Setting Theory of media effects (Davis, 2003a). Understanding cognitive effects involves experiencing how people can learn new information from the mass media. Interpretation of the information received relates to one’s

individual experiences (Symes, 1995). Different medium presentations stimulate different types of cognitive processing (Harris, 1999).

The Newcomb-Trefz model (1987) captures the cognitive foundation of the Agenda-Setting Theory. For this study we mainly focused on the model's lower level, recall/remembering. Recall is Newcomb and Trefz's (1987) first level of learning behavior and is a key step in importing knowledge. Once people have remembered an issue, they have the capacity to take it to the next cognitive level. Understanding the information is not required or assumed. The information is lost without the remembering step; retaining information makes it become knowledge. The second level in the Newcomb and Trefz model (1987) is processing, taking what was remembered and putting it to use in different situations. This level addresses the issue salience of agenda setting. Creating is the third level, and evaluation is the fourth.

Recommendations have been suggested by Boone, Miller, and Brown (1996) for agricultural communicators to continue researching media communication and improving information to educate their clientele. However, relatively few studies similar to this measure cognitive recall or issue salience change when exposed to the various forms of media presentation (Boone, 1994). News presentation media exert a significant influence on perceptions of current salient issues (Davis, 2003a). This absence makes it difficult to link specific media elements with any desired outcomes of salience.

Literature Review

Approximately 1,500 daily newspapers and 7,415 weekly newspapers are circulated throughout the U.S. encompassing 56.9 million readers. Although these numbers have dropped from the 1980's (Bonk et al., 1999), newspapers remain a powerful force. From printed versions, individuals are able to construct their own images and meaning of the text in which

they consume. Print superiority is further supported because of the results it affords in the cognitive processes (Gunter, Furnham, & Griffiths, 2000). Readers are self-paced and exercise more cognitive control over information processing and easier facilitate the storage of information (Gunter et al., 2000). Previous studies show evidence on the recall effectiveness of print being a better medium than audio only and audiovisual modes (Davis, 2003a).

Boone et al. (1996) state that a vast quantity of information is becoming accessible to citizens through new channels, such as the superhighway. Many newspaper companies provide Internet editions, in hopes to keep the competitive edge television had in terms of immediate coverage (Bonk et al., 1999). Rapid communication through electronic media magnifies the speed of the senses (Symes, 1995). Nielsen (2000) states that “doing” (the movement of scrolling) makes a stronger emotional impact than just seeing alone.

On the other hand, since online communication is very specialized according to the individual, some feel it allows people to create information environments that are too personalized, ultimately separating themselves off from the larger, more general, information bases of the public agenda (Althaus & Tewksbury, 2002). Sparks (2002) states, with the rapid advancement of new online technology: it encourages “traditional media-effects scholars to ask new questions and design new research paradigms,” (p.186).

Radio is better for notifying, reminding, or telling uncomplicated stories that can be easily remembered (Davis, 2003b). Studies prove radio conditions elicit a significantly lower recall level when compared to print and television (Facorro & DeFleur, 1993); this may be because of the fact that when listening to radio news, full attention is rarely devoted to just the broadcast. In Davis’ (2003a) study, the Hispanic/Latino participants revealed a higher mean recall score in Spanish audio, as compared to the English audio, English electronic text, Spanish

print and Spanish electronic text. However, it should be noted this difference was not statistically significant.

For video, studies have shown recall is enhanced by presenting information using both visual and verbal forms (“Learning Theories,” 1996). Postman (1986) argues that the television has had a negative effect on culture as a whole because it destroys the logical thought process. However, children have shown to consistently remember news better from television than from print (Gunter et al., 2000). This could be, in part, due to the limited vocabulary of children; making some concepts better comprehended by pictures than words alone.

Methods and Procedures

Data collection took place at seven committee meetings held by the Lubbock Chamber of Commerce during July 8, 2004 through August 30, 2004. Participants were solicited after their meeting was over. The study took place in a boardroom, classroom, or lecture hall setting. All of the meetings were held in Lubbock, Texas.

Before the treatments, the research process was explained; subjects were asked to read a letter of explanation of the study and sign to signify they understood the processes and rights as a participant as part of a Human Subjects consent form. They were then asked to fill out a demographic information sheet, asking the following: sex, age, race, highest education level completed, marital status, number of children, business/occupation and voting behavior on a federal, state, and local/county level. The next section consisted of fill-in-the-blank questions asking the number of hours spent consuming news in each of the four mediums being tested.

The subjects then watched, listened, or read the medium of their corresponding setting; the control group proceeded to the aided recall section of the questionnaire; they did not

consume media for this study. This medium presentation consisted of three news stories, and all media provided the same content. The story of interest, titled “Government Agricultural Subsidies Good for All” distributed by Texas A&M, interviewing Dr. Carl Anderson, agricultural economist, was presented in the pre-determined presentation media formats. This story fell in between two “dummy” stories involving current events; one reporting on the rising cost of gas, and the other the increase in prescription drug prices.

Immediately following the treatment, individual responses regarding the social, economic, and political issue salience were recorded by asking the participants to list the five most important news issues of today in order of importance from their personal viewpoint. Participants were also individually tested on their recall levels to determine the level of cognition through a post-test of unaided and aided recall questions. The unaided recall was stated as an open-ended question asking the participants to list as much as possible on the second story, which was about agriculture. The aided recall was established through a 12 question multiple choice test. Again, questions were asked about the second story, which pertained to agriculture.

Figure 1 offers a representation of the research design.

R	a ₁	O ₁
R	a ₂	O ₁
R	a ₃	O ₁
R	a ₄	O ₁
R	C	O ₁

Figure 1: Gall, Borg, & Gall (1996) post-test-only control-group, randomized subject design

R = random assignment, O₁ = posttest measures, a₁ = print (newspaper, magazine), a₂ = television (video), a₃ =(radio) audio, a₄ =Internet (electronic text), C = control group

This study employed a posttest-only control group with randomized subject design and multiple conditions. A pretest is not in the administration process. This plan was designed so the subjects would not affect the external validity, mainly pretest sensitization, of the experiment.

The qualitative, independent variable consisted of the five treatment levels (print, electronic text, video, and audio, and the control group). The dependent variables measured in this study comprised of issue salience, unaided recall, and aided recall.

The population consisted of Lubbock Chamber of Commerce affiliates living in the Lubbock area that attended chamber meetings. A sample (n=60) was selected. This number (n=60) was derived from multiplying five, the number of presentation mediums and the control group, by 12, the number of participants for each group. This recommendation comes from Davis (2003a), and is supported by Tang's chart (Kirk, 1995, p. 814). In Davis' aided recall analysis, an observed power of .91 was reported. Tang's chart (Kirk, 1995, p. 814) recommends a treatment size of 12 for replication.

Instrumentation

The measurement and treatment instruments, tested for face and content validity, were constructed and evaluated by experts in mass media. A journalist from the *Lubbock Avalanche-Journal* helped write the print instrument. This version was also placed in html format for the electronic text. The audio-only track was used from the video portion of the treatment.

Administration of a pilot test for the multiple-choice test verifies internal consistency. This instrument was given to a similar population not included in the sample, of 21 faculty and staff in the graduate school at Texas Tech University. The Kuder-Richardson-20 (KR-20) yielded an alpha level of 0.69 for the pilot test. The reliability of the aided recall test was measured by KR-20 formula for multiple-choice exams, after the posttest were filled out. This

reliability was recorded at 0.72 and deemed acceptable for this study. The two portions of issue salience and unaided recall sections of the instrument were analyzed qualitatively. Strict data analysis procedures were employed to ensure instrument reliability for issue salience and unaided recall.

For the unaided portion of the experiment, all true statements recorded in the description were scored as a +1. Untrue statements recorded in the description were scored as a -1. The true and untrue points were summed up for each statement pertaining to the agricultural news story. Taking the number of points in the individual story attains a mean recall percentage for the agricultural news story, and helps assume equal recall.

Asking participants to list the five most important social, economic, and political issues of today provides an issue salience base. These responses were qualitatively analyzed. Code assignments to any responses relevant to agriculture or natural resources correlate with their rank in the five spots provided. The responses were weighted as follows: listed 1st = coded 5, listed 2nd = coded 4, listed 3rd = coded 3, listed 4th = coded 2, listed 5th = coded 1 (Trochim, 2002).

Data Analysis

All demographic and posttest measures were documented from the instruments provided; the questionnaire was developed by the researcher and adapted from Davis (2003a). The issue salience and unaided recall portion of the experiment were investigated using the content analysis outlined in Berg (2001). The aided recall portion, a 12 question multiple-choice test, was recorded as means from each medium. The quantified data was used in statistical procedures. Windows SPSS® was used to analyze the data.

Findings and Results

Participants were solicited and selected from a Caucasian population of Lubbock Chamber of Commerce affiliates, meaning they could reside in other areas of West Texas. Davis (2003a) recommended ethnic groups other than the Hispanic/Latino population, such as Caucasians, be studied for cross-cultural comparison. The sample consisted of 60 (n=60) adults. It was reported in the 2000 Census that 62.5% of Lubbock County was composed of white persons, not of Hispanic/Latino origin, as compared to 52.4% in the state of Texas (U.S. Census Bureau, 2000). In this study, it was recorded that 31.7% (19) were male and 68.3% (41) were female. In Lubbock County 51.1% of the population is female, as compared to 50.4% in Texas (U.S. Census Bureau, 2000).

The average age of the participants was 40.3 (SD=12.3); 21 was the youngest age recorded and 65 was the oldest age in the study. The median age of the participants was 39. Single participants comprised 11.7% (seven) of the sample, 83.3% (50) were married, and 5% (three) were divorced. There were zero participants who were widowed.

The education level of the participants varied from some high school to graduate and professional degrees. The majority of the participants had a bachelor's degree (66.7%). Four participants indicated they had some college, while 16 reported a graduate or professional degree. Zero participants indicated they just had some high school, high school graduate or equivalent (GED), associate degree in college or in the category labeled "other (please specify)."

The number of children reported by the participants ranged from zero to four. Twenty-five (41.7%) of the participants had two children followed by 16 (26.7%) with zero children. Two participants (3.3%) reported having four children.

The media consumption of the analysis reported an average video viewing of 11.7 (SD=8.0) hours per week for participants. The audio medium followed with 10.3 (SD=13.5)

hours listened to per week; electronic text ranked third with 7.3 (SD= 8.3) hours per week, and print usage of 5.1 (SD=4.7) hours per week for the participants was the lowest.

Print produced the highest average aided recall of 0.77 (SD=0.11) of the media studied, followed by video with an average of 0.64 (SD=0.18) recall. The lowest recall was electronic text with an average of 0.52 (SD=0.20). Table 1 reports mean scores, standard deviations, standard error, and confidence intervals (lower and upper bound) for each treatment group and the control treatment group.

Table 1:
Summary of aided recall for treatment groups

Treatment	M	SD	SE	95% Confidence Interval for M	
				Lower	Upper
Print (newspapers and magazines)	.77	.11	.03	.70	.84
Internet (electronic text)	.52	.20	.06	.39	.65
Radio (audio)	.60	.15	.04	.50	.70
Television (video)	.64	.18	.05	.53	.75
Control	.28	.12	.03	.20	.35

SE – Standard Error

Video revealed the highest average of unaided recall at 4.17 (SD=2.98). The lowest unaided recall score occurred in the audio group with an average score of 3.08 (SD=2.27). Table 2 provides data for each of the four treatment groups involved in the research.

Table 2:
Summary of unaided recall for treatment groups

Treatment	M	SD	SE	95% Confidence Interval	
				Lower	Upper
Print (newspapers and magazines)	4.00	2.95	.85	2.12	5.88
Internet (electronic text)	3.58	2.57	.74	1.95	5.22
Radio (audio)	3.08	2.27	.66	1.64	4.53
Television (video)	4.17	2.98	.86	2.27	6.06
Control	0.00	0.00			

SE – Standard Error

In the issue salience portion agriculture and/or natural resources related issues were listed by 18 (30%) of the participants. Responses resembled current issues consistent with current mass media coverage from the summer of 2004.

Research Null Hypothesis One

H₀1: Lubbock Chamber of Commerce affiliates in the media presentation groups of print, electronic text, video, and audio will exhibit no statistical differences in aided recall of agricultural policy news.

The following research hypothesis was developed *a priori* at the $\alpha = .05$ level.

$$H_01: \mu_1 = \mu_2 = \mu_3 = \mu_4$$

$$H_a1: \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$$

The Levene’s test for equality of variances for aided recall was not significant; therefore, the assumption of homogeneity of variances was satisfied (Kirk, 1995). To test the null hypothesis of no difference in aided recall between print, video, audio, or electronic text treatment groups, an ANOVA was utilized. Table 3 gives the detailed results of the ANOVA used to test the hypothesis of no difference between the four treatment groups.

Table 3:
Analysis of variance comparing print, electronic text, video, and audio treatment groups on aided recall scores

Source	SS	df	MS	F	p
Between	1.60	4	.400	16.36	.001*
Within	1.34	55	.024		
Total	2.94	59			

*significant at $\alpha = .05$

The obtained omnibus $F(4, 55) = 16.36, p = 0.00$ was significant; therefore, the null hypothesis of no difference in aided recall print, electronic text, video, and audio treatment groups was rejected. The strength of the relationship between the dependent variable of aided

recall and the independent variable of media was strong. The statistic had a moderate effect size ($F= 0.26$). The analysis of variance (ANOVA) indicated an observed power of 0.82. A power of greater than 0.80 is considered acceptable (Kirk, 1995).

The analysis of variance revealed the F statistic as significant at 16.36. A post-hoc comparison was then used to determine the location of the significance. A Tukey post-hoc comparison was used to locate significant mean differences. Table 4 presents the results from the Tukey post-hoc comparison.

Table 4:
Tukey post-hoc comparison of print (P), video (V), audio (A), and electronic text (ET), and control (C).

	M	P	V	A	ET	C
P	0.77	--	0.13	0.17	0.25*	0.49*
V	0.64		--	0.04	0.12	0.36*
A	0.60			--	0.08	0.32*
ET	0.52				--	0.24*
C	0.28					--

* $p < .05$

Significant differences exist in mean comparisons between print and electronic text. The control group also indicated significant differences with print, video, audio, and electronic text.

Research Null Hypothesis Two

H₀2: Lubbock Chamber of Commerce affiliates in the medium presentation groups of print, electronic text, video, and audio will exhibit no statistical differences in unaided recall of agricultural policy news.

The following research hypothesis was developed *a priori* at the $\alpha = .05$ level.

$$H_{02}: \mu_1 = \mu_2 = \mu_3 = \mu_4$$

$$H_{a2}: \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$$

The Levene's test for equality of variances for unaided recall was not significant; therefore, the assumption of homogeneity of variances was not satisfied (Kirk, 1995). To test the null hypothesis of no difference in unaided recall between print, video, audio, or electronic text treatment groups, an analysis of variance (ANOVA) was utilized. Table 5 gives the detailed results of the ANOVA used to test the hypothesis of no difference between the four treatment groups.

Table 5:
Analysis of variance comparing print, electronic text, video, and audio treatment groups on unaided recall scores

Source	SS	df	MS	F	p
Between	8.42	3	2.80	.382	.767
Within	323.50	44	7.34		
Total	331.92	47			

**significant at $\alpha = .05$*

The obtained omnibus $F(3, 44) = 0.382$, $p = 0.767$ was not significant; therefore, the null hypothesis of no difference in unaided recall print, electronic text, video, and audio treatments was not rejected. There was no significant difference in treatment groups for unaided recall.

Research Null Hypothesis Three

H₀₃: Lubbock Chamber of Commerce affiliates in the medium presentation groups of print, electronic text, video, and audio will exhibit no statistical differences in issue salience when given a news story dealing specifically on agricultural policy news.

The following research hypothesis was developed *a priori* at the $\alpha = .05$ level.

$$H_{03}: \mu_1 = \mu_2 = \mu_3 = \mu_4$$

$$H_{a3}: \mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$$

The Levene's test for equality of variances for issue salience was not significant; therefore, the assumption of homogeneity of variances was satisfied (Kirk, 1995). To test the null hypothesis of no difference in issue salience between print, video, audio, or electronic text treatment groups, an analysis of variance (ANOVA) was utilized. Table 6 gives the detailed results of the ANOVA used to test the hypothesis of no difference between the four treatment groups.

Table 6:
Analysis of variance comparing print, electronic text, video, and audio treatment groups on issue salience scores

Source	SS	df	MS	F	p
Between	11.27	4	2.817	.746	.565
Within	207.58	55	3.774		
Total	218.85	59			

**significant at $\alpha = .05$*

The obtained omnibus $F(4, 55) = 0.746$, $p = 0.565$ was not significant; therefore, the null hypothesis of no difference in issue salience for print, electronic text, video, and audio treatments was not rejected. There was no significant difference in issue salience as it relates to treatment groups.

Research Null Hypothesis Four

H₀₄: There are no linear relationships among unaided recall, aided recall, and issued salience among Lubbock Chamber of Commerce affiliates when consuming agricultural policy news.

The preceding research null hypotheses was developed *a priori* at the $\alpha = .0166$ level. Correlation coefficients were computed among the three dependent measures—unaided, aided, and issue salience. Using the Bonferroni approach to control for a Type I error across the three

correlations, a p-value of less than 0.0166 ($.05/3 = 0.0166$) was required for significance (Bonferroni, as cited in Green, Salkind, & Akey, 2000).

The results of the correlation analyses presented in Table 7 illustrates one out of three correlations was statistically significant and was equal to 0.328, the aided and issue salience.

Table 7:
Correlations among the three dependent measures

	Aided recall	Unaided recall	Issue Salience
Aided recall	--	0.208	0.328*
Unaided recall	0.208	--	0.213
Issue salience	0.328*	0.213	--

* $p < .0166$

The correlation of aided recall and issue salience was moderate; therefore, the null hypothesis of no linear relationship between aided recall and issue salience was rejected. The higher the aided recall score of the participant, the more likely they were to list an agricultural or natural resource topic as an important political and/or social issue.

Conclusions

Research Hypothesis One:

The results from this study indicated a statistical significance in aided recall for print, video, audio, and electronic text. A post-hoc test identified the significant mean separation among treatment groups. Significant differences existed between print, and electronic text. The control group also indicated significant differences with all four treatment groups. These findings are consistent with the literature, which expresses print superiority, especially in comparison with electronic text, among adult populations (Facorro & DeFleur, 1993).

Research Hypothesis Two:

The results of the analysis revealed no significant differences among treatment groups for unaided recall. These data were reported as qualitative data and are outlined in the discussion portion of this chapter.

Research Hypothesis Three:

The results of the analysis revealed no significant differences among treatment groups for issue salience. These data were reported as qualitative data and are outlined in the discussion portion of this chapter. Furthermore, these data were correlated with aided recall and further discussed in hypothesis four.

Research Hypothesis Four:

The results from this study revealed a moderate correlation among aided recall and issue salience. The more agricultural information a participant retains, the more likely they will report an agricultural or natural resource related issue as a salient issue.

Discussion

Descriptive

The highest mean recall score resulted from the print treatment group. The rest are ordered as follows: video, audio, and electronic text. The qualitative data from the unaided recall resulted in the following order from highest to lowest: video, print, electronic text, and audio. Although print was first in the aided recall section, it was recorded as the least amount of time is spent. Video produced higher recall in the unaided portion.

Finally, the other component of the Agenda-Setting Theory, issue salience, was qualitatively supported in this study. When participants were asked the five most important

social and political issues, one agricultural story, hidden in a three-story news segment, resulted in adoption of agricultural topics as salient issues.

Inferential

Among the recall measures, only aided recall revealed a significant difference among treatment groups. The post-hoc test in the aided recall analysis revealed print as significantly better than electronic text. Furthermore, the post-hoc revealed all treatment groups as significantly better than the control group. When these cognitive results are associated with the Agenda-Setting Theory, it is important to place printed publications pertaining to the importance of agriculture in the hands of individuals who will consciously read them. Also, make Internet publications printer friendly so the user can print the material and not read it on the computer screen to produce a higher recall level.

The linear relationship between aided recall and issue salience ($r=.328$) strengthens the association of material exposure and retention, and the development of a person's salient issues outlined in the Agenda-Setting Theory.

Recommendations for practioners

Based on this study's results and findings and conclusions, recommendations for further practice and research have been made. An in-depth needs assessment when addressing any population through mass media channels is recommended. It is recommended by the researcher that media campaign developers and practitioners consider outcomes of this study when addressing the constituents of West Texas, especially as it relates to agricultural issues. Listed below are recommendations for addressing the Lubbock Chamber of Commerce affiliates of West Texas on agricultural issues. These were generated by the researcher as a result of the literature review and study results.

1. Use a variety a media channels when possible. There is a direct correlation between channel diversity, exposure time, and overall campaign effectiveness.
2. Because of limited consumption time and a lack of overall cognitive effectiveness, direct resources away from electronic text channels.
3. Commodity or interest groups should invest their time and resources to produce mass media public relations material to enhance issue salience of certain topics.

Again, an in-depth needs assessment to provide a full comprehension of the subjects under consideration is recommended by the researcher when planning or facilitating any mass media campaign. People conducting such media presentation research should also stay well informed on current trends of media effectiveness research and theory to yield the best results.

Recommendations for Further Research

First, it is recommended this study be replicated to determine if the current study's findings are consistent. Replications should take place in various population settings in West Texas. Also, replications should be performed with extended treatment periods in each of the four groups. In order to measure delayed recall, it is important to solicit a population that can easily be contacted after an extended period. Delayed recall by mail survey was attempted in this study, but due to a low response rate and the resulting unequal treatment groups, statistical analysis could not be conducted on this measure.

Second, the researchers recommend further investigation into media channel recall as it relates to learning style.

Third, it is recommended the descriptive statistics and correlation assumptions from this study be validated. An adequate sample size for the target population is needed to validate the descriptive and qualitative portion of the instrument used in this study.

Fourth, the researchers recommend a comparison of the Davis (2003) study and the results of this study.

Finally, it is recommended the study be replicated with a Black/African American population in West Texas. This would yield insight to cross-cultural associations of mass media effectiveness and consumption. Facorro and DeFluer (1993) provide evidence that people of different societies and cultures learn from news differently, even when content and conditions of exposure are identical.

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