MEDIA DEPENDENCY DURING A POTENTIAL AGRICULTURAL TERRORIST ATTACK ON THE U.S. FOOD AND FIBER SYSTEM

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CHAPTER I

INTRODUCTION

Terrorism. As defined by Hoffman (2006), terrorism is violence or the threat of violence used for political gain. The attacks on the morning of September 11, 2001, on the World Trade Center and the Pentagon were the most deadly terrorist attacks to occur in the United States of America. Immediate television coverage brought graphic images into the homes, offices and schools of many nations (Schuster, et al., 2001). In addition, news media's continuous coverage of the attacks led many Americans directly affected by the attacks to develop posttraumatic stress syndrome (Ahern, et al., 2002).

Background and Setting

Since September 11, 2001, government agencies, private entities, and individual citizens have analyzed and discussed the vulnerabilities of the United States' infrastructure (Goodrich, Schneider, Webb, & Archer, 2005) to a potential terrorist attack. As early as the mid-90s, analysts, policymakers and the media have brought attention to terrorist threats involving weapons of mass destruction, most notably chemical and biological weapons (Pate & Cameron, 2001). Because of real attacks and recent propaganda, the U.S. has identified areas within the economic, social and political realms as priorities to defend against terrorism. Within these priority areas are agricultural networks (Goodrich et al., 2005).

A potential attack on the U.S. agricultural sector, specifically the food and fiber system, could result in major economic crisis, loss of confidence in governmental agencies, and human casualties (Monke, 2004). In addition, the stability of the agricultural and food industry is imperative to the well being of the social, economic, and political structures of the U.S.

Chalk (2004) noted agriculture and food industries are susceptible to deliberate and accidental contamination. Vulnerabilities in the infrastructure include the concentrated nature of present U.S. farming practices, livestock's susceptibility to disease, lack of organization in reporting disease between regulation agencies and producers, lack of veterinarian training in identifying foreign animal diseases (FADs), and a general lack of security in farm-related enterprises (Chalk).

Chalk (2004) also estimated one in eight people in the U.S. work in an occupation that is supported or is directly involved in food production. Therefore, agriculture is a major contributor to the U.S. economy through its employment as well as its sales (Kohnen, 2000). In 2005, U.S. agriculture accounted for $1.2 trillion of the gross domestic product (USDA, 2008) with $62.5 billion coming from exports (Brooks & Carter, 2005). Thus, the U.S. is not the only nation state that relies on the production of U.S. food and fiber goods. The U.S. exported more than one billion tons of grains, meat and fiber as a whole in 2005 (Brooks & Carter, 2005). As other countries continue to rely on outside food resources to supply growing and increasingly affluent populations, the importance on the U.S. food and fiber system will increase and so will the importance of protecting this system.

Arguably, the U.S. food supply is one of the safest in the world (Lindsay, 2008). Yet, consumer concerns regarding the safety of the food supply have increased the last 10 years (Kalaitzandonakes, Marks, & Vickner, 2004; Piggott & Marsh, 2004). Contamination of food products such as meat (Piggott & Marsh, 2004), leafy greens (FDA, 2006) or processed foods like peanut butter (FDA, 2009) has added to consumer concern.

With its potential vulnerabilities and economic impact, it is imperative that the U.S. prepares and protects the agriculture and food infrastructure against deliberate attacks or accidental contamination of its food supply. As preparatory measures by industry and governmental agencies have been integrated into the agricultural infrastructure (Goodrich et. al, 2005), agroterrorist attacks can only be reduced, not prevented. Thus, if an attack occurs, the public will be required to make potential life-sustaining decisions based on prior knowledge and newly disseminated information (Ashlock & Cartmell, 2007).

Food and agriculture information is supplied by multiple sources including the mass media (Patrick & Ullericj, 1996; Verbeke, 2005; Whateley, Doerfert, Kistler, & Thompson, 2005). Whatley et al. (2005) identified family, government agencies, professional associations, formal education, and the media as sources primarily used by the public to access agricultural and food safety information. Cartmell (2001) stated mass media supplies the public with a large amount of agricultural news and can greatly influence the public's perceptions about agricultural issues. As the populace of developed countries, such as the U.S., become less involved with production agriculture, the reliance on mass media for relevant information about issues related to agriculture

increases (Kalaitzandonakes & Vickner, 2004). In addition, it is posited audiences of mass media become more dependent on media sources for information in complex societies (Ball-Rokeach & DeFleur, 1976).

The Pew Research Center for the People and the Press (2008) noted Americans seek information about various topics, including agriculture, through various mediums. In its 2008 report on trends in news consumption, The Pew Research Center estimated about 52 percent of Americans receive most of their news information through local television news, 34 percent seek most of their news information through daily newspapers, 35 percent listen daily to news on the radio, and about 37 percent depend on online news sources for information with many individuals using multiple mediums. In addition, it was reported traditional news sources are steadily declining. An increasing audience segment relies on the Internet for news with 82 percent getting their news throughout the day and about half of the 13 percent who make up this segment opting to not watch television news altogether (Pew, 2008).

Individuals who seek media do so based on three primary dimensions of human motivation: understanding, orientation, and play (Ball-Rokeach, Rokeach, & Grube, 1984). Further, individuals may depend on certain media channels to satisfy a specific dimension, but also may use a variety of media channels to meet certain information or entertainment needs (Ball-Rokeach, 1985).

Considering the increased news availability and considering more than half of Americans actively seek news through mass media sources, it is imperative to understand how dependent upon these sources the public is in formulating perceptions of agroterrorism, and more specifically, the threat of a terrorist attack on the food and fiber

system. Ball-Rokeach and DeFleur (1976) hypothesized under certain conditions media messages become more relevant to individuals, thus increasing the dependency between source and receiver. Therefore, the public's dependence on mass media is a critical variable in understanding when and why information disseminated through the media affects the public's perception toward a specific topic.

Statement of the Problem

As the potential for agroterrorist attacks becomes more prominent and the discourse on national security becomes more mainstream, it is imperative that scholars analyze the mechanisms for and perceptions of those individuals who will ultimately be making decisions not only for their own livelihoods, but also decisions that could affect the livelihoods of future generations. In addition, recent events such as 9/11, food recalls and food-related illness outbreaks have changed or begun to change the social, economic and political cultures of this country through policy changes impacting everything from the transportation of foods to new regulations that affect production practices. Media dependency theory (MDT) hypothesizes that in developed societies where there is a mass media presence and where social conflict or change is introduced, there becomes a high level of dependence on the media system for information, which may lead to changes in perceptions and beliefs (Ball-Rokeach & DeFluer, 1976). It is important for governmental agencies, terror response teams, commodity groups, and producers to understand how individuals will use media during a potential contamination to a sector of the agricultural industry, whether it is accidental or purposeful. Additionally, it is crucial to understand how previous knowledge of the food and fiber system might influence one's perceptions and media use.

Significance of the Study

As noted by Monke (2004) and reiterated by Chalk (2004), the agricultural sector has a potential impact on the U.S. social, economic and political livelihoods of its citizens. Although there have been few substantiated cases of agroterrorism in the U.S., heightened media coverage and policy implementations of national security measures after 9/11 have potentially influenced the level of perceived threat of a terrorist attack on the food and fiber system. Moreover, the vulnerable infrastructure of agricultural entities not only enhances the potential for its attack, but also creates the possibility for accidental contamination. It is important to understand how individuals respond to a growing bombardment of mass media coverage (Gigli, 2004), especially on issues that may, in their own respects, question the current state of safety.

Purpose

The purpose of this study was to determine the relationship of individual media dependency (action orientation, social understanding) based on factors of their perceived threat of agricultural terrorism to the U.S. food and fiber system and their knowledge of agriculture. A convenience sample of former Oklahoma State University former students with e-mail addresses was used and instruments were adapted for survey responses.

Research Questions

The following research questions were used to guide the study:

1. Does normal media use influence individual dependency on news mediums (TV, Internet, radio, print media) for news information or decision-making?
2. Can perceived threat regarding agricultural terrorist attacks to the U.S. food and fiber system determine media dependency?

3. Which individual media dependency goal type (Dependency for Social Understanding, Dependency for Action Orientation) best determines perceived threat of agricultural terrorist attacks to the U.S. food and fiber system?
4. Does a general understanding of agriculture have a relationship with media dependency for agricultural terrorist news information or decision-making?
5. Do certain social factors have a relationship with media dependency during a perceived agricultural attack to the U.S. food and fiber system?

Limitations of the Study

The following limitations were identified for this study:

1. The study was limited to a convenience sample of former Oklahoma State University students who had active e-mail addresses on record during the spring of 2009.
2. The study was limited to selected news mediums.
3. The results, findings and implications cannot be generalized beyond the population of former Oklahoma State University students used in this study.
4. Not all social factors that influence media dependency, knowledge or threat were included in the data collection procedures of this study.

Basic Assumptions of the Study

This study was conducted under the following assumptions:

1. Participants have access to mass media during their daily activities and actively pursue information and entertainment through such outlets.
2. Participants answered all questions about media use truthfully and accurately.

3. Participants did not use any resources to aid in answering general agricultural knowledge questions.
4. Participants voluntarily seek news information from mass media channels as well as interpersonal networks.

Definition of Terms

The following terms were defined for operation and use in this study:

Agroterrorism: any deliberate attack, biological or otherwise, against agriculture or food production, transportation of agricultural products, or processing of agricultural goods with the intent of harming or causing perceived threat to a society through physical, economic or political damage (Goodrich et al., 2005).

Action orientation: an individual's pursuit of information for the intent of making personal behavioral decisions (DeFleur & Ball-Rokeach, 1989).

Food and Fiber System: any systemic process that includes the cultivation or rearing of food (crop or animal) and/or fiber (Leising, Igo, Heald, Hubert, & Yamamoto, 1998).

Individual Media Dependency: an individual's desire and efforts to seek information about a social environment through mass media channels (Ball-Rokeach, 1985).

Level of threat: the amount of perceived or real threat an individual attributes to an event (Loges, 1994).

Public: a group of individuals who share concerns and experiences as a whole (Ball-Rokeach & DeFleur, 1976).

Social environment: a general term used to denote all environs that may affect an individual's understanding or orientation goals (Lowrey, 2004).

Social understanding: an individual's attempt to understand his/her broad, social environment (DeFleur & Ball-Rokeach, 1989).

System Media Dependency: audience dependence on mass media to inform about elements of society (Ball-Rokeach & DeFleur, 1976).

Terrorism: a purposeful attack or use of implied danger against a society, economy or government to inflict harm or intimidate, usually for political or religious ideals (Goodrich et al., 2005).

Threat: any perceived or real harm an individual feels that disrupts normal assumptions about themselves or their environment (Ball-Rokeach & DeFleur, 1976).

Total media dependency: degree of dependence an individual attributes to media messages to obtain goals of social understanding and action orientation (Lowrey, 2004).

Summary

The food and fiber system is an integral component to the U.S. infrastructure, specifically political, economic and social structures. An attack on this system could potentially create a large-scale disruption to the social environment of the U.S. Media dependency theory posits developed societies, like the U.S., will seek and depend on mass media when the social environment becomes uncertain or when threatened.

It is important to understand the relationship between media dependency and perceived threat of a terrorist attack on the U.S. food and fiber system. Many agricultural groups as well as mainstream media can benefit from knowing the influences on dependency relations. Ball-Rokeach and DeFleur (1976) posited media could have the

potential to influence an audience's behavior or opinion. Thus, it is critical to assess the relationships that affect media dependency behaviors to understand how potential catastrophe might influence policy and practice.

The purpose of this study was to determine individuals' media dependency (action orientation, social understanding) based on factors of perceived threat of agricultural terrorism to the U.S. food and fiber system and knowledge of agriculture.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this study was to determine individuals' media dependency (action orientation, social understanding) based on factors of perceived threat of agricultural terrorism to the U.S. food and fiber system and knowledge of agriculture. Chapter I addressed the background and setting for this study as well as the problem and need. Chapter I also provided the research questions, limitations, and assumptions for this study.

In this chapter, the theoretical and conceptual frameworks for this study will be addressed. In addition, agroterrorism will be defined and discussed as it relates to the threat of a potential U.S. attack. This chapter will also explore previous findings and developments within the media dependency framework, media dependency on macro and micro levels, influences on media dependency. This chapter also will explore the variables of threat as it pertains to terror and general knowledge as it pertains to agriculture.

This review of literature focused on findings related to media dependency; more specifically, media dependency as it relates to the selected mediums used in this study. In addition, literature was selected to highlight the influence ambiguity or uncertainty has on media dependency relations.

Agroterrorism

Chalk (2004) posited impacts of an agroterrorist attack on the U.S. would quickly extend beyond the scope of the agricultural community into other factions of society. By definition, agroterrorism is "any deliberate introduction of detrimental agents, biological and otherwise, into the agricultural and food processing system with the intent of causing actual or perceived harm" (Goodrich et al., 2005, p. 1). Kohnen (2000) noted few cases of deliberate attacks of agricultural or food processing systems have been recorded, but also stated deliberate attacks may represent normal outbreaks that occur naturally or inadvertently.

Chalk (2004) identified the economic impact of an agroterrorist event would be immediate, effecting the direct loss of contaminated products or the destruction of diseased produce or animals. In addition, economic impact of such an event would affect market values, thus impacting producers, distributors, and processors, while inadvertently influencing international embargos and/or commerce. Cupp, Walker II, and Hillison (2004) echoed the economic impact of deliberate contamination by positing, "agriculture is one of the easiest sectors of the U.S. economy to disrupt, and its disruption could have catastrophic consequences for the U.S. and world economies" (p. 97).

In addition to economic instability, consumer confidence in the food supply may decrease (Chalk, 2004; Cupp et al., 2004). Although public perception of food products in the U.S. has consistently been positive with little concern from the general public of its safety (Nelson, 2001), an attack or contamination of the food supply could lead to loss of trust or substantiate any prior distrust. Yeung and Morris (2001) argue consumer confidence in the food supply is decreasing due to the growing concern surrounding food

risks and public health. Recent and historical outbreaks may have damaged consumer confidence in the food supply and created awareness of food risks. According to Yeung and Morris, "consumer awareness of food safety related risks has been heightened by incidents involving microbiological contamination…" (p. 270). Grunert (2005) claimed consumer perception of food safety is directly related to food choice and consumer demand.

Although not a common occurrence, suspected use of agroterrorism exists. Germany inoculated horses and mules sent from U.S. ports to allies during the first World War with anthrax and glanders, but no cases of human illness were recorded. During World War II, Japan allegedly used anthrax against Russia. Britain accused Russia of infesting its crops with potato beetles during the war (Kohnen, 2000). According to Geissler (1999), Germany, the United Kingdom, the U.S., Canada, Japan, as well as other countries, had biological weapons programs during World War II. In addition, these programs experimented with anti-animal and anti-crop diseases. Although many of these programs were defensive in nature (research on preventive outbreaks, counter agents, vaccines) some were offensive (Geissler, 1999). Most notably, during the Vietnam War the U.S. used a substance referred to as "Agent Orange" to destroy Vietnamese foliage and crops (Stellman, Stellman, Christians, Weber, & Tomasallo, 2003).

Agroterrorism does not only occur at the nation-state level. Monke (2004) identified individuals or "substate groups" who have used biological weapons on agriculture targets. In 1952, the Mau Mau, an insurgent group in Kenya, exposed cattle at a mission with a local plant toxin killing 33 head. In Oregon, a cult spread salmonella in salad bars at restaurants in protest of a local election (Monke, 2004).

Kohnen (2000) highlighted potential reasons why nation states or terrorist groups use or could use attacks on agricultural networks as the following: potential for profit fluctuations in agricultural markets could economically cripple one nation while improving the sales/trade of another; destruction of animals or plants — certain groups are interested in damaging animals or plants such as anti-genetically modified organism groups.

Although no confirmed case of agroterrorism against the U.S. exists, government agencies charged to protect the food supply rely on public reaction to incidental contamination to predict and plan for a deliberate attack on the food and fiber system (Ashlock, 2006). Specifically, contaminations of the beef (Ashlock et al., 2006; Ruth & Eubanks, n.d.) and spinach industries have made practitioners and policy makers aware of the economic and social disruption an attack on the food system could have. Ruth and Eubanks (n.d.) noted media's role and potential influence during such disruptions. In a framing study of the 2003 U.S. BSE disease outbreak, media frames indicated the news coverage was negative and potentially caused uncertainty and fear in U.S. and foreign consumers.

Theoretical Framework

Media dependency theory critically analyzes the relationship between audience, media, and society and focuses on the level of dependence of mass media to inform (Ball-Rokeach, & DeFleur, 1976). Media dependency theory (MDT) analyzes audience dependence on media for information because dependence "is a key variable in understanding when and why media messages alter audience beliefs, feelings, or

behavior" (p.5). As society grows more complex, the dependency on mass media for "unique information functions" increases (p.6).

Ball-Rokeach and DeFleur (1976) defined MDT as "a relationship in which the satisfaction of needs or the attainment of goals by one party is contingent upon the resources of another party" (p.6). Initial studies focused mainly on audiences and hypothesized audiences tend to depend on certain mediums for specific information. Further, MDT theorized the relationships between audiences and media in a complex society might have influence on audience attitudes, agendas, and beliefs. In addition, this relationship could define values or construct social reality (Ball-Rokeach & DeFleur).

Values can be defined as individual evaluative measures applied to self, others, and situations (Ball-Rokeach & Loges, 1996). Most, if not all, members of society are able to access values. In addition, most members of society are able to articulate their own and others' values (Rokeach & Ball-Rokeach, 1989). Thus, when values compete against one another, individuals must choose one value over another. Often value choices create a state of tension or conflict. Individuals must justify their choice with themselves and others and may rely on mass media messages to resolve tension or conflict created by making a value choice (Ball-Rokeach & Loges, 1996). Interestingly, values are one of the few ways of encoding the idea of self and others during ambiguous or threatening conditions. However, in social environments where threat or ambiguity is introduced, the dependency on the media system of that social environment should increase (Ball-Rokeach, 1985). This relationship is expressed in Figure 1.

Ambiguity, or the inability to define or select a definition of a situation, affects an individual's dependency upon media information sources (Ball-Rokeach & DeFleur,

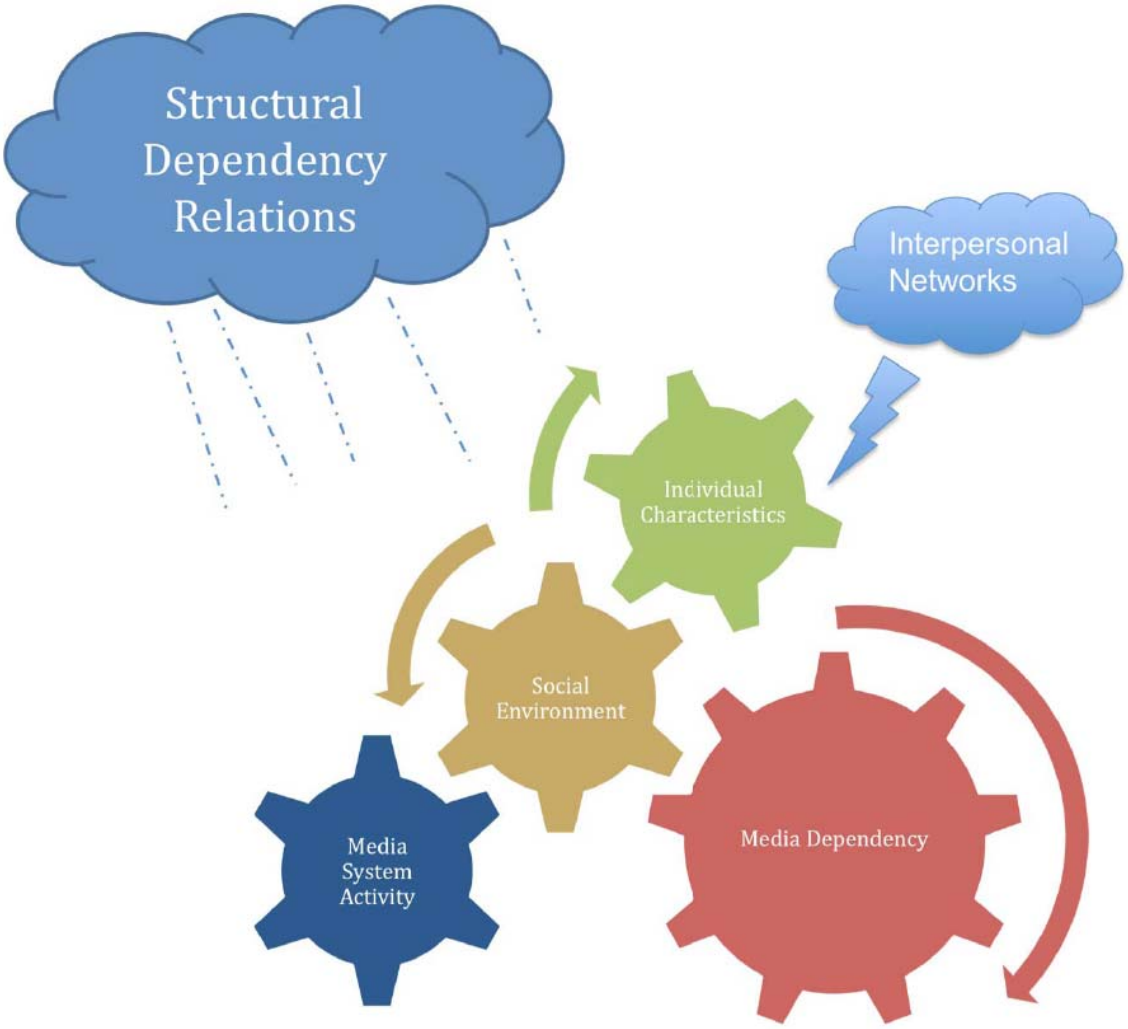

Figure 1. Determinants of Individual System Dependency Relations (Ball-Rokeach, 1985).

1976). As insufficient information or the inability to select sufficient information from another becomes apparent, dependency on media sources for information should increase. Thus, in any situation where ambiguity exists and interpersonal networks lack information to resolve ambiguity, the media becomes an alternative source for information due to its structural position in modern societies (Hirschburg, Dillman, & Ball-Rokeach, 1986).

Based on this concept, three hypotheses were developed on information-seeking activities to resolve ambiguity:

1) The mass media will be the primary information system employed by persons seeking to resolve ambiguity.
2) When media information is insufficient to resolve ambiguity, people will nonetheless continue to look to the media for ambiguity-resolving information.
3) People sharing the same ambigous experience will exhibit similar patterns of media use, despite social categories and individual differences (Hirschburg et al., 1986, p. 119).

In a study observing media use during the Vietnam War, it was noted when the legitimacy of the war was questioned, individuals and interpersonal networks "required access to media information resources to resolve their ambiguities about the meaning of the war" (Ball-Rokeach, 1998, p. 15). In addition, incomplete or contradictory media information could create ambiguity. Ball-Rokeach (1985) explained "personal efficacy or a sense of being on top of things is undermined when we are unable to count on stable social organization or unable to formulate projections about the future course of events that affect our lives (p. 498)." Journalists are bombarded with scientific information daily and often make scientific claims seem more certain than they are or present both sides of an issue with equal weight, creating ambiguity in the reader or viewer (Stocking, 1999).

Dependency on the media system is often explained by five factors: structural factors, contextual factors, media factors, interpersonal network factors, and individual factors (Ball-Rokeach, Rokeach, & Grube, 1984). Structural factors incorporate the

media's interdependency with other systems, specifically political, economic and social systems. Contextual factors are the extent to which the level of threat, predictability, and interpretability of nature of the social environment that individuals interact with one another or social groups. Media factors include the media system's messages and the construction, quality and nature of media messages. Interpersonal network factors are the ways peer groups affect individuals' expectations of media messages and motivations. Individual factors are the goals that are met or satisfied by an individual's media use.

Later research in media dependency (Ball-Rokeach, 1985) focused on the individual as a unit of measurement rather than audience as a whole. This research focused on the individual's desires and efforts to seek information about a social environment through media. For individuals, media dependency is based on three broad goals: understanding, orientation, and play (Ball-Rokeach et al., 1984). In addition, these goals were separated into sub-dimensions of self and society (Figure 2).

Understanding	Orientation	Play
Self understanding Refers to increasing the understanding of who we are. (e.g. learning about your understanding of conservation)	**Action orientation** Refers to pursuing goals regarding personal behavioral decisions. (e.g. deciding on how to conserve the park)	**Solitary play** Refers to attaining individual goals of enjoyment, escape, etc. (e.g. enjoying conserving the park as an individual)
Social understanding Increasing the understanding of the larger social environment. (e.g. interpreting the conservation message of the park)	**Interaction orientation** Attaining goals relating to how to interact with other individuals. (e.g. conserving the park while interacting with others)	**Social play** A shared experience where the presence of others is necessary for attaining goals. (e.g. gain pleasure in conserving park with family/friends)

Figure 2. Goal Dimensions of Media System Dependency Relations (DeFleur & Ball-

Rokeach, 1989; Akers, Segrest, Kistler, Smith, Davis, & Baker, 2005)

In the context of media dependency, goals are the key dimension of individual motivation (Ball-Rokeach, 1985). Furthermore, goals can be divided into personal or "self" goals and "social" goals based on the nature of human motivation to "understand themselves and their social environment" (Ball-Rokeach & DeFleur, 1989, p. 306). Historically, researchers have focused on the goals of understanding, orientation and play (Loges, 1994; Morton & Duck, 2000) and have found media dependency can vary by goal type (DeFleur & Ball-Rokeach, 1989). However, when individuals have feelings of ambiguity or threat, the goals of understanding and orientation are often met by various types of media (Hirshburg, et al., 1986; 1986, Loges, 1994, Lowrey, 2004). Play goals, or using the media to satisfy entertainment or relaxation goals, serve a large portion of the public (Glade, 2004), but dependency does not increase as an individual's level of perceived threat increases (Loges, 1994). Thus, previous findings suggest as an individual's perception of threat increases, their media dependency to satisfy personal and/or social goals narrows to understanding and orientation goals.

The goal of understanding involves increasing understanding of oneself in the context of social norms and increasing understanding of society as a whole (DeFluer & Ball-Rokeach, 1989). This goal type examines the mechanisms an individual uses to assess themselves and their understanding of their place in society based on how they comprehend their social environment. Lowrey (2004) explained understanding goals as a means of information gathering to comprehend and to interpret society and self. In a study of media use after the 1980 Mount St. Helens volcanic eruption, it was discovered individual dependency on media information for goals of understanding increased as

ambiguity caused by the eruption increased (Hirshburg, et al., 1986). In addition, certain media channels are used more frequently or sought for information more during times of disruption or crisis than in normal times (Ball-Rokeach et al., 1999; Loges, 1994; Loges & Ball-Rokeach, 1993; Lowrey, 2004; Patwardhan, & Yang, 2003). During the 1980 Mount St. Helens eruptions, dependency on television to satisfy goals for social and self understanding increased (Hirshburg, et al., 1986). Moreover, dependency on radio to meet social understanding goals increased in similar times of ambiguity (Loges & Ball-Rokeach, 1993). Lowrey (2004) discovered during a large-scale social disruption individuals depend on media to satisfy social understanding goals.

The goal type, orientation, focuses on obtaining information regarding specific tasks and/or behaviors (Lowrey, 2004). These goal types differ from understanding goals as understanding goals focus on cognitive choice where orientation goals require an action or interaction (Ball-Rokeach, et al., 1984). Orientation goals refer to an individual's pursuit of information that can be used to aid in individual behavioral decisions as well as how to properly function in social environments (DeFluer & Ball-Rokeach, 1989). In times of uncertainty, action orientation goals, or goals involving personal behavioral decisions, tend to be closely related to media dependency (Loges, 1994; Lowrey, 2004; Padmini & Yang, 2003). Loges (1994) noted dependency increased most for action orientation goals when individuals felt threatened. Thus, individuals sought radio as a medium for information involving decisions about where to go for health-related services, financial advice, and general household services as well as what to buy and where to go (Loges).

Media Dependency and Media Type

As noted, individuals use many types of media to form media dependencies. In addition, a variety of goals are met by media (Reece & Palmgreen, 2000). In the U.S., the most common mediums used to satisfy individual goal types are television, print sources (newspapers and magazines), radio and the Internet.

Television

Television in the U.S. has become a cultural practice (Van Eijck, & Van Rees, 2000). Research on the societal influence of television has ranged from violent behavior (Gerbner, 1976) to obesity (Marshall, Biddle, Gorely, Cameron, & Murdey, 2004). Much of media dependency research has focused mainly on television as a medium as well (Ball-Rokeach, et al., 1984; Hirshburg, et al., 1986). One reason television may be so important to the U.S. culture is its combination of recognized benefits (Van Eijck & Van Rees, 2000). Television is a visual media that is viewed as an essential part of a household.

In the context of media dependency, television is often the most dependent medium for satisfying individual goal types during normal times (Glade, 2004; Lowrey, 2004). In addition, during times of ambiguity or threat, individuals often report a dependency on television to satisfy the same goal types. Loges (1994) posited familiarity with a certain medium would intensify during times of threat or ambiguity. Thus, studies often find the dependency on television increases during ambiguous events in time (Hirshburg, et al., 1986; Loges, 1994; Lowrey, 2004; Glade, 2004). However, Lowrey (2004) posited television dependency during times of crises in not merely the result of habit. "TV possesses certain intrinsic qualities that lend themselves to threatening events

– immediacy, ease of use, and a combination of visual and textual symbols. There may also be a sense that television will be the medium of choice for expert sources, as it has been for prior momentous news events" (Lowrey, 2004, p. 354).

In a study following the September 11, 2001, attacks on the World Trade Center, visual media (i.e. television) became more dependent as a news source than print media during the two months following the terrorist attacks. Respondents noted a 25.9 percent increase in visual media use for news information during the two months following the attack where other forms of media (i.e. print and radio) did not significantly increase (Lowrey, 2004).

Visual media has been used to increase awareness of the natural environment, the same environment that would be affected by an attack on the food and fiber system. Akers, et al. (2005) evaluated the effectiveness of visual media to enhance environmental awareness using a pre-test/post-test design. Their findings supported previous media dependency relations findings. Visitors to a state park expressed significant changes in their awareness levels of conservation after viewing a conservation video. Thus, a dependency on visual media to inform the public about the natural environment existed even without a disruption to the social or natural environment.

Print sources

Printed materials have been a part of the news process in the U.S. since the 1600s (Rodman, 2009). In many ways, the newspaper shaped mass media and defined the concept of news in the U.S. Historically, newspaper readership has been correlated with certain demographic variables such as education (Bogart, 1984) and was the main source for news information for U.S. citizens. Recent trends in media use suggest newspapers as

a printed source, may be on the decline (Rodman). A study on media use by the Pew Research Center (2004) noted a change in news seeking habits of Americans. The Pew initiative discovered 20 percent more Americans use television than newspapers as a news information source. Previous research noted television and newspapers were used simultaneously to gather news information and did not show preference as to which medium was more acceptable as a news source (Bogart, 1984).

Media dependency studies have focused on which goal dimensions are satisfied by print sources (Loges, 1994; Lowrey, 2004), how dependency relations with print sources affect intensity of media dependencies (Loges, 1994) and how media dependency affects print source readership (Loges & Ball-Rokeach, 1993).

In a study of newspaper readership, researchers explored how media dependency relations with certain goal types affect readership habits (Loges & Ball-Rokeach, 1993). Their findings discovered that individuals who have an intense dependency on print source mediums to satisfy understanding goals spent significant time reading the newspaper. However, the opposite was found for individuals with a more intense action orientation dependency relation. Individuals who expressed a stronger dependency on print sources to meet action orientation goals, spent less time reading the newspaper (Loges & Ball-Rokeach).

In times of large scale disruption to the social environment, individuals expressed a higher dependency on newspapers than radio, the Internet and peer groups (Lowrey, 2004). In addition, those who normally sought news and information from a print source showed no significant changes in media use during a large scale attack on the U.S. – that

is to say, they did not significantly depend on television as a source for goal satisfaction following the September 11, 2001, attacks.

Radio

During the 1930s, radio was considered a popular form of entertainment and means to gather news information (Rodman, 2009). In this "Golden Age" of radio, the public's dependency relations were evident by their reaction to a particular radio broadcast. In 1938, a play based on H.G. Wells's novel *War of the Worlds* was aired on public radio. Many listeners believed the play was an actual broadcast and reacted in unconventional ways (Rodman). Although no research was conducted to measure dependency relations of the public during this event, in retrospect, individuals showed some dependence on radio to meet orientation and understanding goals.

Although the radio broadcast of *War of the Worlds* was fictional, the public's reaction to real-world events during this era created similar dependency relations. After the bombing of Pearl Harbor, an estimated 60 million listeners tuned in to hear the U.S. President's response to Congress. In addition, U.S. citizens continued to rely on their radios for war-time information for the remainder of the war (Rodman, 2009).

Even though more popular and interactive mediums are available to the public, there is considerable evidence individuals depend on radio to meet certain goal types. Loges (1994) explained radio dependency increases for social understanding and action orientation goal types most when individuals feel threatened. In addition, familiarity and normal use of radio is a strong predictor of an individual's dependency on radio during a time of ambiguity or threat (Lowrey, 2004). In a study of media consumption in college-age students around the time of the September 11, 2001 attacks, Glade (2004) discovered

radio became a dependent medium for information when television was unavailable or when normal functions of the radio were interrupted. "I usually listen to the radio more for the music (solitary play), not for the news. But, during this week, there was no music, only news" (Glade, 2004, p. 47). The results of this study posited that younger adults rely on radio more for play goals rather than understanding or orientation goals: "during that week, I listened to the radio. It became my escape from the world of news" (Glade, p. 47).

Internet

The Internet has become a necessity for a large portion of the global society, serving such functions as a way to quickly disseminate information and as a means of enhancing the communications experience (Baker, Wagner, Singer, & Bundorf, 2003; Harder & Linder, 2008). However, some research suggests the uses of the Internet are common to traditional media as well (Flanagin & Metzger, 2001). The Internet World Statistics Website (2009) reported the U.S. is second in Internet use among the global society behind China. In addition, more than 75 percent of Americans use the Internet in some capacity. Internet users in the U.S. alone have increased 138 percent since 2000 (Internet World Stats).

In a study measuring Internet use for in-depth, specialized information, results indicated a large portion of U.S. citizens seek in-depth information about health, science or business on a weekly basis (Riffe, Lacy, & Varouhakis, 2008). More than 50 percent of respondents reported they sought in-depth health information once a week where 40 percent indicated they sought in-depth scientific information at least once a week.

Patwardhan and Yang (2003) explored Internet dependency relations and online

consumer behavior. They posited the Internet to be a medium that attracted active audiences who sought a specific purpose or goal. Their findings indicated individuals who used the Internet often sought action orientation and social understanding goals. Individuals seeking action orientation goals were more likely to make online purchases where those seeking social understanding goals tended to use the Internet as an information resource to explain the current state of the world (Patwardhan & Yang).

Ironically, a study measuring Internet use following the days after the September 11, 2001, terrorist attacks on the U.S. noted a decline in Internet users in the U.S. (Rainie & Kalsnes, 2001). Secondary data indicated 56 percent of Internet users went online daily for "any purpose" before the terrorist attacks. The week after the events, 51 percent of Americans indicated they had been online for "any purpose." Users also indicated they did not send or receive e-mail at the same rate following the attacks. However, respondents reported a 5 percent increase in using the Internet to seek news information in the days following September 11, 2001. Interestingly, Internet users reported an increase in news information seeking weeks after the attack where most other uses returned to normal (Rainie & Kalsnes, 2001).

Media Dependency and Social Factors

In the history of media dependency research, few social factors have been directly linked to media dependency (Donohew, Palmgreen, Rayburn II, 1987; Hirschburg et al., 1986; Morton & Duck, 2000). However, individual media dependency hypothesized social structure – an individual's location (class, status, power) within a society, indirectly affects his or her dependencies on media and should affect personal goal priorities (Ball-Rokeach, 1985). An analysis of social and psychological factors on media

use discovered numerous social factors mixed with psychological, economic, and political factors create a complex milieu that influence media use and consumption (Donohew, et al., 1987). However, Morton and Duck (2000) explained social identity might influence social norms directly and indirectly. In a study of gay men's attitudes toward safe sex practices, media dependency and measures of social identity were used to predict safe sex attitudes in the gay community. Findings indicated when an interaction between an individual's media dependency and their social identity, the effect on safe sex attitudes directly and indirectly influenced perceptions of social norms within the gay community (Morton & Duck).

Social capital or social resources individuals rely on in their personal or professional lives, may affect media dependencies as well. Lowrey (2004) posited that as individuals spent more time in a community and become more involved in community activities, their reliance on media for information decreases. Thus, individuals with more social capital are likely to access information from interpersonal networks rather than media. However, during social disruption, years one lived in a community strongly predicted media dependencies on the Internet and print sources. Lowrey suggested this might indicate long-time residents of a community come to depend on local media such as the local paper or city web sites for information because they are comfortable or familiar with the format.

Individual factors have been tested within the media dependency paradigm with little consistency. Hirschburg, et al. (1986) did not find any significant difference among age groups with media dependency after a natural disaster. Yet, during a man-made disaster, age proved to be the only demographic factor to be a determinant of media

dependency. Lowery (2004) discovered younger audiences were more reliant on media channels for information about the 9/11 attacks than older audiences. Loges (1994) posited age was a strong predictor of media dependencies on action orientation goals but was not a significant predictor for understanding goals.

Gender has shown some influence on media dependency. In a study of perceived threat and media dependency relations, gender was the primary predictor for magazines in all goal orientations except social understanding (Loges, 1994). In addition, gender was a significant predictor of action orientation goals for newspapers, magazines and television dependencies. Gender was also a strong predictor of time spent reading news online (Patwardhan & Yang, 2003). About 11 percent of the variance in time spent reading news online was explained by gender. In addition, male users were more likely than female users to read news online.

An individual's educational level seems to affect television media dependency (Hirschburg et al., 1986; Loges, 1994). Although not a linear relationship, education was a significant predictor of television dependency after the Mount St. Helens eruption (Hirschburg et al). In addition, Loges (1994) noted, "education was the most consistently significant predictor of the intensity of the dependency relation" (p. 14). For all goal types, low education levels predicted a greater intensity in media dependencies. Ethnicity was also a strong predictor of intensity of media dependency relations for orientation and understanding goals (Loges).

Other demographics, such as income, rural/urban residence and political affiliation have explained variance within the media dependency paradigm. Although rarely significant (Loges, 1994; Lowrey, 2004), income has been used to test media

dependency. However, Hirschburg, et al. (1986) explained rural and urban residence has some statistically significant effect on media dependencies but cautions the effects are relatively small.

General Knowledge of Agriculture

Agriculture is one of the oldest industries in the world. It is often defined as the process of cultivating the soil for crop production and/or raising livestock (Leising, Igo, Heald, Hubert & Yamamoto, 1998). In addition to the production of food and/or fiber, the definition of agriculture includes the commercial processes of agricultural production such as packaging, marketing and distributing.

Frick, Kahler, and Miller (1991) defined agricultural literacy as understanding the food and fiber system including being able to comprehend and communicate basic foundational concepts about agriculture. Scholars have measured agricultural literacy of Americans for more than 20 years (Horn & Vining, 1986).

Frick, Birkenholz, and Machtmes (1995) studied agricultural knowledge and perceptions of agriculture of rural and urban adults. It was discovered that most adults were more knowledgeable about animals than plants. Overall, higher educated individuals had a higher level of agricultural knowledge than less educated participants. In addition, participants living on farms in rural areas were more knowledgeable toward agriculture than rural non-farm participants and urban participants. Frick, et al. (1995) concluded both rural and urban participants were somewhat knowledgeable about agriculture and both groups held relatively positive perceptions of agriculture.

Pense and Leising (2004) studied food and fiber knowledge of high school students in the Midwestern region of the U.S. Students were stratified into three groups:

rural, suburban, and urban. It was determined that all students regardless of major or school type had some knowledge of the food and fiber system. In addition, students majoring in agricultural education did not significantly differ in agricultural knowledge compared to general education majors. However, it was determined that high school seniors were not considered agriculturally literate.

A study of Missouri secondary school educators from 146 schools with vocational agriculture programs revealed administrators from predominately rural areas of Missouri had a relatively high level of general agriculture knowledge (Harris & Birkenholz, 1996). In addition, this study noted agriculture teachers were the most knowledgeable of the agricultural industry where language arts and mathematics teachers were the least knowledgeable of the agricultural industry. Similarly, Wright, Stewart and Birkenholz (1994) found students who participated in agricultural programs were more knowledgeable of agriculture than students who did not participate in agricultural programs.

Although studies have noted different outcomes in agricultural literacy (Pense & Leising, 2004; Wright, et al., 1994), most agree on the importance of the public being knowledgeable of general agriculture to one's attitude toward agricultural commerce. Harris and Birkenholz (1996) noted high knowledge scores and positive attitudes toward the agricultural industry in secondary school educators. Elliot and Rosenberg (1987) posited attitudes about a particular subject are influenced by the amount and type of media exposure. In their study of adults in a Northeast metropolitan area, media exposure to scientific information best predicted an individual's feelings of mastery of science

issues. Thus, evidence of media exposure influencing feelings of efficacy toward a particular subject exists (Elliot & Rosenberg).

Threat

In developed societies, the media take on unique information functions. Ball-Rokeach and DeFleur (1976) explained one of these unique functions in American society is to disseminate information in times of emergencies. As mentioned (Ball-Rokeach, 1985), individual media dependency posits an asymmetrical relationship between one's social environment and the media system's activity (Figure 2.) Thus, the natural threat or ambiguous nature of emergency should result in certain media dependencies in the U.S. (Hirscburg, et al., 1984; Loges, 1994; Lowrey, 2004; Glade, 2004).

Although threat has been defined a number of ways, Loges (1994) developed a conceptual definition of threat that focuses on three human emotions: danger, conjecture and vulnerability. Thus, threat occurs when an individual perceives exposure to or is in actual danger of loss or harm. In addition, a degree of uncertainty and "guess work" is essential to the construction of a threat or a threatening situation. "Danger" is essential to threat as it evokes negative emotion. Threat, as it is defined here, cannot be a positive experience. "Conjecture" is essential to the process as a level of uncertainty adds to the negative emotion perceived or real threat evokes. Humans, by design, are threatened by that which is uncertain, but believable. Lastly, "vulnerability" is a necessary component to threat. Without the belief of personal exposure (proximity) to danger, an individual does not perceive a potential "warning" or "alert" as threatening (Loges).

An individual can feel threatened whether actual harm is evident or not. No factual evidence of threat must be present for someone to perceive a situation as threatening (Loges, 1994; Muris & de Jong, 1993). In addition, as one feels threatened or perceives threat, an individual first seeks support from others in coping with threat, especially if the threat is to personal safety or potential death (Bowlby, 1969). Lowrey (2004) suggested during times of threat, interpersonal networks or peers would be less effective than media at resolving ambiguity created by threat stating media put individuals in contact with expert information and resources to handle threat where as peer groups may not be equipped to supply helpful information. Loges (1994) posited that during times of threat, a person could receive reassurance from a media source. Lowrey (2004) noted for an individual to form a dependency relation because of threat, the event or situation that caused feelings of threat must disrupt normal assumptions about everyday activities as well as normal routines to function in these everyday activities.

In a study of perceived threat and media dependency, findings indicated threat was a strong predictor of the intensity of media dependency relations (Loges, 1994). Thus, as an individual feels threatened, the level of dependency on media for information increases. Loges (1994) found this to be true for all media, even when demographic variables were controlled. Lowrey (2004) discovered individuals who were concerned about threat had an increased reliance on media for information. However, certain social factors influence media dependency relation intensity. Loges found age was a strong predictor of media dependency intensity for radio and education level was a strong predictor of intensity for television and radio. Lowrey discovered age to be an important

determinant of media dependency. He found the younger an individual to be, the more dependent on media they were for information about a crisis.

Interestingly, in a study of media dependency and social disruption (Lowrey, 2004), perception of threat was a stronger predictor of an individual's dependency on interpersonal networks than it was for media dependency. This finding directly contrasts previous hypotheses that during times of heightened threat or ambiguity, individuals rely more on media to satisfy personal and social goal types.

Summary

Although terrorist attacks to the food and fiber system can be economically, politically, and physically damaging, there has not been a substantiated case of agroterrorism in the U.S. However, cases of deliberate agricultural attacks exist.

The theory of media dependency explores the relationship between audience, media, and society. This relationship is based on the contingency that audience goals are satisfied by media-controlled messages. Media dependency posits an individual has three broad motivational goals. Within these goals are goal types. Previous research explains certain media channels are used to satisfy two particular goal types during times of ambiguity or threat: social understanding and action orientation. Media dependency on social understanding goals refers to an individual's need for media messages in understanding their current social environment. Dependency on media to satisfy action orientation goals explains the need individual's have for media to provide information that is used to make behavioral decisions.

Previous research has found that during times of uncertainty, certain dependency relations are strengthened. Specifically, goals related to social understanding and action

orientation become dependent on selected media channels for information. Although this relationship often intensifies, the level of intensity usually returns to normal when the threat is resolved.

Studies within the agricultural literacy framework maintain individuals differ in their general understanding of agriculture. In addition, individuals with a higher understanding of agriculture-related processes tend to have a positive outlook toward agriculture.

CHAPTER III

METHODOLOGY

This study sought to determine the relationships between and among individual media dependencies, knowledge of agriculture and perceived threat of an attack on the U.S. food and fiber system. Chapter I discussed the background and importance of this study. Chapter II provided the theoretical framework for this study.

The purpose of this study was to determine individual media dependency (action orientation, social understanding) based on factors of perceived threat of agricultural terrorism to the U.S. food and fiber system and knowledge of agriculture. The following research questions were used to guide the study:

1. Does normal media use influence individual dependency on news mediums (TV, Internet, radio, print media) for news information or decision-making?
2. Can perceived threat regarding agricultural terrorist attacks to the U.S. food and fiber system determine media dependency?
3. Which individual media dependency goal type (Dependency for Social Understanding, Dependency for Action Orientation) best determines perceived threat of agricultural terrorist attacks to the U.S. food and fiber system?
4. Does a general understanding of agriculture have a relationship with media dependency for agricultural terrorist news information or decision-making?

5. Do certain social factors have a relationship with media dependency during a perceived agricultural attack to the U.S. food and fiber system?

In this chapter, the methods and procedures used to answer the research questions are addressed. This chapter identifies the design of the study, selection methods for subjects, instrumentation creation/selection, and data collection and analysis procedures.

Institutional Review Board

It is required by Oklahoma State University policy and federal regulations that a review be conducted and approval granted for research studies involving the use of human beings before researchers begin investigation. In accordance with institutional policy, the office of University Research and the Institutional Review Board (IRB) of Oklahoma State University conducted a review of this research study to protect the rights and welfare of human subjects involved in biomedical and behavioral research. As such, this study received examination and was granted permission for execution. The IRB code for this study was AG0918. A copy of the approval is presented in Appendix A.

Research Design

The study was designed to be a descriptive correlation design where perception of threat of agroterrorism was the independent variable (IV). Total Media Dependency, Dependency on Social Understanding, and Dependency on Action Orientation were the dependent variables. A Total Knowledge Score also was created and used as a predictor variable in one of the models. Selected demographic characteristics were held constant in all models (Figure 3).

A survey created by Lowrey (2004) to measure media dependency during a large-scale social disruption in the U.S. and a survey measuring food and fiber knowledge (Pense & Leising, 2004) were modified for the instrument in this study. Scales for Total Media Dependency, Dependency on Social Understanding, and Dependency on Action

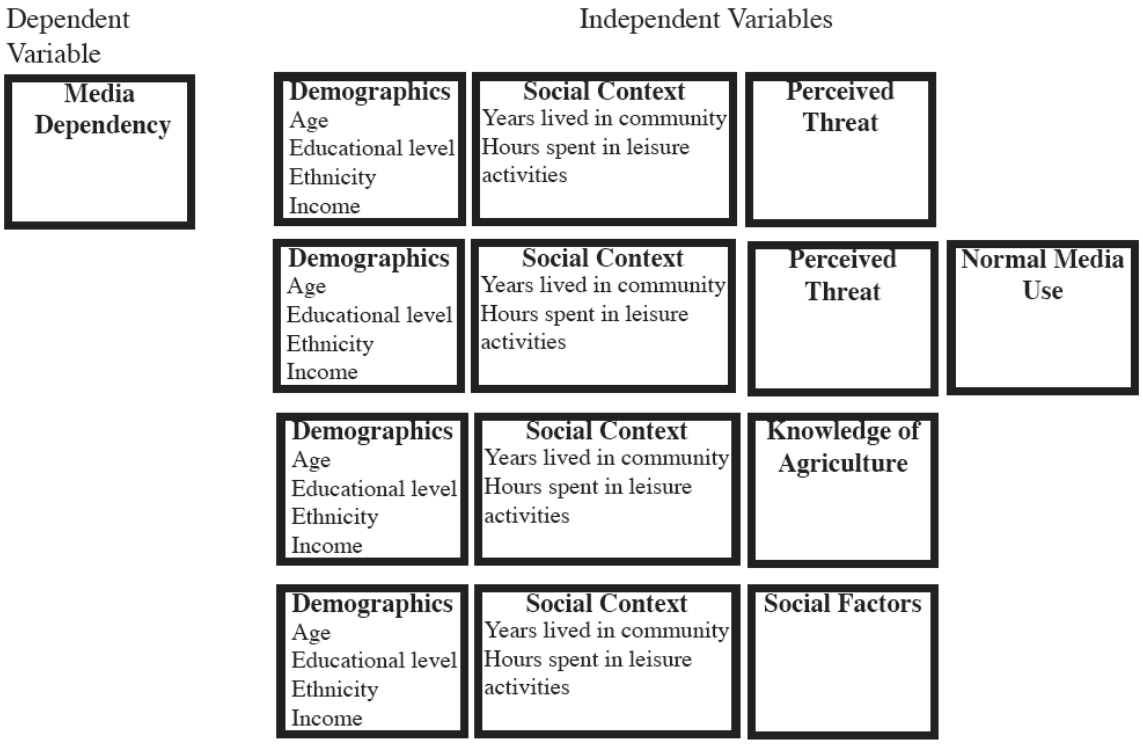

Figure 3. Regression Models for Media Dependency during a Potential Agricultural Terrorist Attack.

Orientation were modified from Lowrey (2004) to fit within the context of a potential terrorist threat to the U.S. food and fiber system. Contextual modifications addressed terminological discrepancies, however, question construction was not changed. Knowledge questions were selected based on the relevance of pre-identified agricultural literacy concept themes (Pense & Leising) to understanding baseline knowledge of the food and fiber system. Ten questions were selected that addressed five standards in understanding the food and fiber system: the meaning of food and fiber systems, the

essential components of food and fiber systems, understanding food and fibers' relationship to society, understanding the local, national, and international importance of food and fiber systems, and understanding food and fiber systems careers. The independent variable, Degree of Threat, was measured using a modified scale from Lowrey (2004).

Subject Selection

The population (N=43,209) consisted of former Oklahoma State University students whose contact information was accessible through a database maintained by the OSU alumni association. Through a formal request (Appendix B), the researcher obtained a list of Oklahoma State University former students who had an e-mail address on record from Oklahoma State University's Alumni Association. The list was compiled from a larger database that is shared by the alumni association and the Oklahoma State University Foundation, the University's donor and fundraising entity. The population (N=43,209) included graduates, attendees, and any individual who enrolled in coursework at Oklahoma State University but might not have completed a degree. This population was selected based on its convenience as well as its variability. The database consisted of subjects from all 50 states, varying age groups, as well as different professional backgrounds.

There is little agreement among statisticians as to how large a sample should be to establish a reasonable chance of discovering significance involving regression parameters (Green, 1991; Pedhazur, 1997). Some "rules of thumb" suggest using a subject-to-predictor ratio (Schmidt, 1971) where others suggest using power analytic techniques

(Cohen, 1988, Green, 1991). Power analytic techniques are determined using alpha, power and effect size.

Power analytic tables (Green, 1991) were used to determine sample size for this study. To detect small effect sizes with one predictor variable, a sample of 400 was sought. Values for alpha, power and effect size are predetermined to estimate sample sizes with the power tables. Alpha is preset at .05, the traditional level of significance. Power is set at .80. This value was used because it is considered appropriate for a wide range of behavioral research areas (Cohen, 1998). Effect sizes are set at R^2 values of .02 for small effect sizes, .13 for medium effect sizes and .26 for large effect sizes (Cohen).

Krejcie and Morgan (1970) established a formula for determining sample sizes based on population size. According to their table, 381 subjects should be sampled to ensure a representative sample of the population (N=43,209). To ensure enough responses to satisfy both Green (1991) and Krejcie and Morgan (1970), the researcher oversampled (n=7,902).

E-mail addresses, major, college affiliation, graduation date and current residence were requested. College affiliation was used to stratify. Other information was sought to establish variance in the population. Percentages were calculated for each college to maintain a consistent representation of the population in the sample. Therefore, as arts and sciences majors represented 27 percent of the population, 27 percent of the sample population consisted of arts and sciences majors. Ten colleges were identified: arts and sciences (n = 11,754), engineering and technology (n =6,079), human and environmental sciences (n = 3,761), education (n= 3,991), agricultural science and natural resources (n =

5,305), graduate college (n = 14), osteopathic medicine (n =1,092), international studies (n = 64), business (n = 10,197), and veterinary medicine (n = 952).

Data were presorted by college affiliation in a Microsoft Excel spreadsheet. Next, e-mail addresses were sorted in alphabetical order. Then, random numbers were assigned to the alphabetized e-mail addresses. The RAND() function within Microsoft Excel was used to establish randomized numbers for e-mail addresses within each college. Once randomized numbers were created for e-mail addresses, the randomized numbers were sorted in numerical order from lowest to highest.

Subjects were selected within each college from lowest randomized number to highest randomized number based on the percentage each college affiliation represented in the population. Thus, because arts and sciences represented 27 percent (n = 11, 754) of the total population, 27 percent (n=2,124) of arts and sciences subjects were represented in the sample starting from the lowest randomized number and ending at the 2,124th lowest randomized number. Based on this method, a total sample size of 7,902 subjects was established. Table 1 lists the total sample based on college affiliation.

Instrumentation

An instrument used by Lowrey (2004) to measure media dependency during large-scale social disruption was modified to measure individual media-system dependency relations in subjects. Language concerning the September 11, 2001 attack was changed to represent a potential attack on the U.S. fiber system. In addition, degree of threat was modified to represent perceived threat.

Media Dependency

Total Media Dependency was measured by averaging 16 survey items. Questions about the helpfulness of four mediums (TV, Web, radio, and print) in providing information about a perceived threat to the nation and community, helping victims, and protecting oneself from a potential agroterrorist attack were used to identify Total Media Dependency. Using perceived helpfulness to measure media dependency has been used in prior studies and is generally accepted (Lowrey, 2004; Loges, 1994). Items were measured using a 5-point Likert-type scale. Scales ranged from 1 (not at all helpful) to 5 (extremely helpful). Lowrey (2004) did not identify middle ranges, however, for this study, 3 was considered a neutral value. When analyzing data, means above 3.00 were considered helpful while means below 3.00 was considered not helpful.

The media dependency goals (social understanding, action orientation) were measured by averaging survey questions as well. Dependency on Social Understanding was measured by averaging questions about the helpfulness of four mediums (TV, Web, radio, and print) in informing the participants about threats to the nation and to the community (eight items). Dependency on Action Orientation was measured by averaging questions on the media's helpfulness in providing information about helping victims and on protecting oneself against agroterrorism (eight items).

Knowledge of Agriculture

Knowledge of agriculture was measured through 10 questions (Appendix H) that asked about general agriculture knowledge (Pense & Leising, 2004). The knowledge section asked participants to answer multiple choice questions to the best of their ability

from a selection of four answers with one being correct. A Total Knowledge Score was determined by scoring the questions and calculating a percentage of correct responses.

Table 1

Sample Size Based on College Affiliation and Percentage of Total Population

College	Total (N)	% of Population	Sample Size
Arts and sciences	11,754	27	2,124
Engineering and technology	6,079	14	1,101
Human and environmental sciences	3,761	8.7	684
Education	3,991	9.2	724
Agricultural sciences and natural resources	5,305	12.3	968
Graduate	14	.04	31
Osteopathic medicine	1,092	2.5	197
International studies	64	.15	12
Business	10,197	24	1,888
Veterinary medicine	952	2.2	173
TOTAL	43,209	100	7,902

Perceived Threat

Degree of perceived threat was determined by averaging four items (see Appendix H), each using 5-point, Likert scales with 1 being “not at all concerned” and 5 being “extremely concerned.” Means above 3.00 were considered as concerned where

mean scores below 3.00 were considered to be not concerned for analysis. Subjects were asked how concerned they were that the nation would be harmed by an agricultural terrorism attack, how concerned they were that their community would be harmed by an agricultural terrorism attack, how concerned they or someone they knew would be physically harmed by an agricultural terrorism attack, and how concerned they were that they or someone they knew would be financially harmed by an act of agricultural terrorism.

Validity and Reliability

A panel of experts consisting of agricultural communications experts, disaster/crisis experts, agricultural education experts, social science experts, and food crisis experts were used to determine face and content validity. Experts were asked to review each item of the instrument and its pairing/matching with its construct (Crocker & Algina, 1986). A critique form (Appendix D) created to assess survey instruments was modified to assist panel members in evaluating the instrument. The panel was instructed to take the survey as well as complete the critique form. Comments were gathered from the panel and issues concerning wording, content related to demographic variables and question order were addressed. A pilot test was administered to former Oklahoma State University students excluded from the sample group to measure internal consistency. The pilot study consisted of 50 subjects randomly selected and stratified based on college affiliation. The pilot subjects were removed from the population before sampling procedures were administered. A coefficient alpha was used to determine internal consistency. Cronbach's Alpha scores were calculated on all scales. In addition, reliability coefficients were created for each medium (TV, Web, radio, and print) and

each variable for the pilot data. The alphas for the dependent variables of social understanding and action orientation were .907 and .946, respectively. For total media dependency, the alpha was .952. Reliability scores were calculated for each media type. The alphas for measuring dependency on TV, radio, Web, and print were .905, .931, .941, and .947, respectively. The Cronbach's alpha for the independent variable, perception of threat, was .947 for the pilot data.

Data Collection Procedures

The instrument was distributed via the World Wide Web and accessed through individually created url addresses received through e-mail. The researcher used surveymonkey.com to administer and host the survey. Collection procedures followed standard e-mail survey protocol (Schaefer & Dillman, n.d.). Two e-mail contacts were made throughout the collection time. The first contact was an introductory e-mail (Appendix F) informing the subject of the study and confidentially of the responses. In addition, a personalized link to the instrument was included as well as a link generated by surveymonkey.com to "opt out" of the survey. The first contact was made April 14, 2009. The introductory e-mail contact served not only to inform the receiver of the request to participate but also to refine the useable e-mail address list. The next contact was a reminder e-mail (Appendix G) that included a link to the questionnaire. Again, this contact stated the purpose of the questionnaire and ensured the receiver of its confidentiality. The reminder e-mail was sent on April 21, 2009, one week after the initial contact. Data collection closed on May 5, 2009, four weeks after the initial contact.

Data Analysis Procedures

Data collected from the instrument was coded for analysis. This procedure allowed for continuous and categorical data to be compared and analyzed simultaneously. Regression analysis was sought to analyze the data. The prediction models and interactions were analyzed using regression statistics. The Statistical Package for Social Sciences (SPSS) 16 for Windows was used to analyze the data. All analyses were analyzed at $\alpha = .05$ *a priori.* Actual R^2 values were determined as well as the adjusted R^2 values. Adjusted R^2 values control for shrinkage based on the amount of criterion variables and sample size used in the study (Pedhazur, 1997). Tolerances were checked for evidence of multicollinearity before variables were entered into the model and regression statistics were run to ensure basic assumptions of linear regression were met. In addition, scatter plots were analyzed to check for assumptions of linearity and histograms were analyzed for normal distribution.

Regression models (Figure 3) were developed based on theory and temporal logic (Lowrey, 2004). Independent variables were entered in blocks with selected demographic information entered first, years in community and volunteer hours entered next, and perception of threat, entered third. The order represents the likelihood individual dependencies are formed by one's individual characteristics, then by the social context, and finally by the level of threat or ambiguity one feels or perceives (Ball-Rokeach, 1985; Lowrey, 2004).

Individual media dependencies for selected news medium types were analyzed by entering data into blocks with demographic information entered first, social context variables entered next, degree of threat entered third, and normal use of media entered

fourth. Normal media use was coded into a 5-point scale where 0 = "never use," 1= "1-5 hours" of use a week, 2= "6-10 hours" of use a week, 3= "11-15 hours" of use a week, and 4 = "16 or more hours" of use a week. Variables were recoded using the recode variable function of SPSS 16 for Windows.

Summary

This chapter discussed the methods and procedures used to develop this study. In addition, procedures to increase validity and reliability were addressed. A convienance sample of Oklahoma State University former students who attended Oklahoma State University who have an e-mail address listed in the Oklahoma State University's Alumni Association database was used. The term "former" was used because some individuals in the database did not receive a degree.

The instrument used to collect data was modified from existing instruments and tested for face and content validity using a panel of experts. Reliability was tested through a pilot study. Data collection followed procedures introduced by Schaefer and Dillmon (n.a.) for Internet surveys. Surveymonkey.com was used to distribute, collect and manage data collection.

CHAPTER IV

FINDINGS

Chapter I addressed the need to understand the relationship between media dependency, previous knowledge and perceived threat as it relates to a deliberate attack on the U.S. food and fiber system. In addition, the need and purpose of this study were addressed.

Chapter II provided the theoretical framework that guided this study. Previous findings in media dependency theory, specifically how uncertainty and ambiguity affect media dependency relations, were highlighted. In addition, the constructs of threat and knowledge of agriculture were discussed.

Chapter III discussed the methods and procedures used to design the study. In addition, methods for data collection and tests of validity and reliability were provided.

This chapter focuses on the findings of this study. The purpose of this study was described through specifically addressing each research question.

Purpose

The purpose of this study was to determine the relationship of individual media dependency (action orientation, social understanding) based on factors of their perceived threat of an agricultural terrorism event to the U.S. food and fiber system and their knowledge of agriculture. A convenience sample of Oklahoma State University former students with e-mail was used and instruments were adapted fro survey responses.

Research Questions

The following research questions were used to guide the study:

1. Does normal media use influence individual dependency on news mediums (TV, Internet, radio, print media) for news information or decision-making?
2. Can perceived threat regarding agricultural terrorist attacks to the U.S. food and fiber system determine media dependency?
3. Which individual media dependency goal type (Dependency for Social Understanding, Dependency for Action Orientation) best determines perceived threat of agricultural terrorist attacks to the U.S. food and fiber system?
4. Does a general understanding of agriculture have a relationship with media dependency for agricultural terrorist news information or decision-making?
5. Do certain social factors have a relationship with media dependency during a perceived agricultural attack to the U.S. food and fiber system?

Response Rate

The data collection period was from April 14, 2009, to May 5, 2009, for a total collection time of four weeks. A stratified random sample (n=7,902) was selected from the target population (N=43,209). Some e-mail addresses selected were not valid or "bounced back" to the sender during the collection period. Thus, only 5,915 contacts were made. Of the sample contacted, 682 completed the survey for a response rate of 11.5 percent.

Non Response

Non-response error was checked by comparing early and late respondents (Lindner, Murphy, & Briers, 2001). Subjects who responded before the second e-mail

contact (before April 21, 2009) were considered early respondents and subjects who responded on or after April 21, 2009, were classified as late respondents. Independent sample t-tests were conducted using SPSS 16 for Windows. All demographic variables as well as all independent variables and dependent variables were checked for inconsistency. Means from scaled items were used to determine inconsistency. No significant ($p < .05$) differences between early and late respondents were found.

Population

The population (N=43,209) consisted of former Oklahoma State University students whose e-mail address was accessible through an alumni database. Respondents were stratified by college affiliation and randomly selected using a randomized number generator. A web-based survey was developed using surveymonkey.com. The sample population was contacted via e-mail with the link to the instrument.

Findings related to Demographics

Respondents indicated 57.2 percent were male (*n*= 333), where 42.8 percent were female (*n*=249). Ninety-nine did not specify their gender. The majority (67.3%) were employed full-time while almost one-quarter (22.7%) were currently not employed. About 38 percent of respondents described their 2008 household income from all sources as being more than $100,000 before taxes as shown in Table 2.

The average age of respondents was 48.18 years old with a range of 22 to 90. The typical respondent indicated they had lived in their current communities for 18.48 years with a range from 0 to 74 years. The majority (65.9%) of respondents indicated they were conservative (30.8%) or moderately conservative (34.8%) in their political beliefs and had never served in the military (80.2%).

Respondents indicated a large percentage (92.8%) considered themselves as white or Caucasian. Native American or Alaskan Native (4.3%) was the next largest ethnic

Table 2

2008 Household Income from All Sources of Income before Taxes

Income	*n* (*n=681)*	*P*
Less than $25,000	19	2.8
$25,000 to $50,000	64	9.4
$50,000 to $75,000	100	14.7
$75,000 to $100,000	116	17.0
More than $100,000	257	37.7
Did not respond	125	18.4

group. Most (98.5%) Respondents received at least a bachelor's degree as shown in Table 3.

The majority (56.5%) of respondents owned a dog or cat as a companion animal where 41 (6%) owned working dogs. Very few participants owned a horse (*n*=38, 5.6%) or livestock (*n*=65, 9.5%). The respondent spent 4.3 hours a week participating in leisure activities like bridge groups, 1.9 hours a week participating/volunteering with youth programs such as scouting, and 2.4 hours a week participating in religious groups such as church.

Findings related to Research Question 1

Research question one sought to determine if normal media use of respondents influence individual dependency on selected news mediums (television, Internet, radio, print media) for news information or decision-making. Descriptive statistics were

Table 3

Highest Level of Education Completed by Respondents

Education level	*n*	*P*
Completed high school	3	.4
Vocational or technical school	1	.1
Completed an associate ‘s degree	7	1.0
Completed a bachelor’s degree	561	38.3
Some graduate work (no degree)	72	10.6
Completed a master’s degree	180	26.4
Doctorate, law or medical degree	65	9.5
Did not respond	92	13.5
Total	589	100

analyzed to determine any trends of media use and to determine if respondents sought mass media for issues concerning a potential agricultural attack on the U.S. food and fiber system. Linear regression was used to determine media dependencies for selected news mediums.

Respondents indicated that during normal times, television and the Internet are used most for seeking news information. The respondent spent about nine hours a week on the Internet and television, respectively, seeking news information (Table 4).

Respondents ranged from 0 to 100 hours spent a week for television, 0 to 60 hours spent a week for radio, 0 to 50 hours spent a week for print, and 0 to 80 hours spent a week on the Internet seeking news information.

Table 4

Hours of Weekly Media Use during Normal Times as a News Information Source

Media	*M*	*SD*	Rank
Internet (*n*=614)	9.02	9.71	1
Television (*n*=614)	8.98	8.44	2
Radio (*n*=601)	5.00	7.14	3
Print (*n*=594)	4.00	5.00	4

Survey respondents indicated they spend an average of 4.5 hours a week seeking information about terrorist threats to the food and fiber system through television, 3.65 hours a week through the Internet, 2.62 hours a week through radio, and 1.58 hours a week through print mediums (Table 5).

Table 5

Weekly Media Use in Hours Seeking Information about Terrorist Threats to the Food and Fiber System

Media	*M*	*SD*	Min	Max	Rank
Television (*n*=600)	4.52	8.20	0	50	1
Internet (*n*=600)	3.65	7.59	0	100	2
Radio (*n*=586)	2.62	6.44	0	60	3
Print (*n*=587)	1.58	3.02	0	35	4

Almost half (45.2%, *n*= 600) did not use television as a media source for information about terrorist threats to the food and fiber system. Approximately half of respondents noted they did not use any media sources for information about terrorist threats to the food and fiber system on a weekly basis (Table 6).

Table 6

Use of Media for Information about Terrorist Threats to the Food and Fiber System

Media	Used Media?	
	Yes (%)	N (%)
Television (*n*=600)	54.3	45.7
Internet (*n*=600)	42.5	57.5
Radio (*n*=586)	48.7	51.3
Print (*n*=587)	56.2	43.8

Most respondents were not overly trustworthy of the news media in reporting on any issue. On a 4-point Likert-type scale with 1 = "not at all trustworthy" and 4 = "extremely trustworthy," respondents indicated their mean level of trust for Internet and television was 2.30 and 2.27, respectively (Table 7).

Helpfulness of Media

Respondents did not report any media being "extremely helpful" or "not at all helpful" in providing information about potential terrorist threats to the national food and fiber system (Table 8).

Table 7

Trustworthiness of News Media on Reporting any Issue

Media	*M*	*SD*	Rank
Radio (*n*=621)	2.55	.68	1
Print (*n*=621)	2.52	.72	2
Television (*n*=621)	2.30	.72	3
Internet (*n*=620)	2.27	.65	4

Note. 1= "not at all trustworthy, 4 = "extremely trustworthy"

Table 8

Helpfulness of Media in Providing Information about Potential Terrorist Threats to the National Food and Fiber System

Media	*M*	*SD*
Television (*n*=585)	3.26	1.25
Internet (*n*=588)	3.05	1.20
Radio (*n*=585)	3.04	1.23
Print (*n*=586)	2.80	1.08

Note. 5-point, Likert-type scale where 1= "not at all helpful", 5= "extremely helpful"

Respondents reported television was helpful and radio was neutral at providing information about potential terrorist threats to the food and fiber system of their community. In addition, print sources and the Internet were not helpful in providing

information about potential terrorist threats to the food and fiber system of their communities (Table 9).

Table 9

Helpfulness of Media in Providing Information about Potential Terrorist Threats to the Food and Fiber System in Respondents' Local Communities

Media	*M*	*SD*
Television (*n*=579)	3.13	1.28
Radio (*n*=584)	2.99	1.25
Print (*n*=580)	2.75	1.14
Internet (*n*=585)	2.72	1.21

Note. 5-point, Likert-type scale where 1= "not at all helpful", 5= "extremely helpful"

Respondents indicated television was helpful (*M* = 3.22) for providing information on how to help victims of terrorist attacks to the food supply. Respondents also indicated other media were neutral or not helpful (Table 10). Respondents indicated television was neutral (*M* = 3.07) in providing information on how to protect against terrorist attacks to the food and fiber system (Table 10).

Respondents reported that none of the selected media were "extremely helpful" nor were they "not helpful at all" at providing information on how to protect yourself against terrorist attacks to the food and fiber system (Table 11).

Table 10

Helpfulness of Media in Providing Information on how to Help Victims against Terrorist Attacks to the Food and Fiber System

Media	*M*	*SD*
Television (*n*=577)	3.22	1.30
Radio (*n*=582)	3.00	1.26
Internet (*n*=583)	2.86	1.25
Print (*n*=583)	2.79	1.15

Note. 5-point, Likert-type scale where 1= "not at all helpful", 5= "extremely helpful"

Table 11

Helpfulness of Media in Providing Information on how to Protect Yourself Against Terrorist Attacks to the Food and Fiber System

Media	*M*	*SD*
Television (*n*=582)	3.07	1.30
Internet (*n*=587)	2.99	1.28
Radio (*n*=582)	2.82	1.23
Print (*n*=583)	2.79	1.18

Note. 5-point, Likert-type scale where 1= "not at all helpful", 5= "extremely helpful"

Individual Media Dependency for Selected News Mediums

Respondents indicated that normal media was a statistically significant predictor of individual media dependency relations for television. After adding normal television

use to the model, the *R*-square value predicting a dependency on television went from .029 to .050, indicating that with normal television use in the model, predictors explain five percent of the variance (Table 12)

Respondents reported individual dependencies for radio was best predicted by degree of threat and normal radio use. The addition of degree of threat and normal radio use to the model improved the R-square value for radio media dependency from .021 to .041. Adding normal radio use to the model increased the predictors' explanation of the variance from .033 to .041, indicating that individual characteristics, social context, degree of threat and normal radio use explains approximately 4 percent of the total variance (Table 12).

Both print sources and the Internet dependencies significantly improved when normal media use was added to the models. Respondents reported individual media dependencies are best predicted by normal media use for all selected mediums. In addition, degree of threat was statistically significant in predicting media dependencies for radio and print (Table 12).

Findings related to Research Question 2

Research question 2 sought to determine if perceived threat for respondents regarding a potential terrorist attack on the U.S. food and fiber system can predict media dependency. Descriptive statistics were used to determine if respondents were concerned by a potential attack on the food and fiber system. Regression statistics were utilized to determine the relationship between perceived threat and media dependency.

Perceived Threat of Agricultural Terrorism

On a scale where 1 = "not at all concerned" and 5 = "extremely concerned," respondents (n = 681) reported a mean level of concern the nation could be harmed by an

Table 12

Summary of Regression Analysis for Individual Media Dependencies of Respondents of Selected News Mediums – Final Models

	Coefficients in Table are Beta Weights			
	TV (n= 563)	Radio (n= 573)	Internet (n= 580)	Print Sources (n= 570)
Age	-.030	.037	-.040	-.026
Education level	-.047	-.030	-.045	-.059
Ethnicity	-.011	.030	-.006	-.029
2008 income	-.036	-.004	.021	-.018
Years lived in community	.059	.064	-.039	.108*
Hours spent in community group – leisure activities	-.044	-.022	-.047	-.039
Hours spent in community group – youth programs	-.084	-.097*	-.049	-.064
Hours spent in community group – religious groups	-.054	.033	-.049	-.058
Degree of Threat	.089	.107*	.048	.091*
R^2 without normal media use	R^2 = .029	R^2 = .033	R^2 = .023	R^2 = .031
Normal Media Use	.151**	.093*	.159**	.131**
R^2 with normal media use	R^2 = .050	R^2 = .041	R^2 = .047	R^2 = .045

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

agricultural terrorist attack of 3.63. Respondents reported they were less concerned about agricultural terrorist threats to their local communities with a mean level of concern of 3.35. Respondents indicated they were neutral in their concern for an agricultural terrorist attack causing physical or financial harm to themselves or someone they know by reporting mean levels of concerns of 3.16 and 3.01, respectively.

There was significant support for perceived threat being a strong predictor of media dependency. Prediction models for Total Media Dependency, Dependency for Social Understanding, and Dependency for Action Orientation were all significant when degree of perceived threat was added to the model (Table 13). Overall, the R-square value for Total Media Dependency was .028, indicating with degree of threat added to the model, all predictors explain about 3 percent of the variance. A partial correlation of .104 for Degree of Perceived Threat indicated the variable attributed for 1 percent of the unique variance.

Findings related to Research Question 3

Research question three sought to determine which individual media dependency goal type (Dependency for Social Understanding, Dependency for Action Orientation) best predicts perceived threat of a potential terrorist attack on the U.S. food and fiber system.

Before regression models for Dependency for Social Understanding and Dependency for Action Orientation goal types were analyzed, variables were checked for intercorrelation. The variables showed a statistically significant, positive correlation with one another. A Pearson's correlation coefficient of .889 indicated a strong relationship among the variables at the $p < .01$ level (Table 14).

Table 13

Summary of Regression Analysis for Variables Predicting Respondents' Media Dependency

	Coefficients in Table are Beta Weights		
	Total Media Dependency (*n*= 543)	Dependency for Social Understanding (*n*= 563)	Dependency for Action Orientation (*n*= 566)
Age	-.018	-.009	-.004
Education level	-.058	-.047	-.066
Ethnicity	-.028	.006	-.032
2008 income	-.018	-.035	-.024
Years lived in community	.065	.040	.076
Hours spent in community group – leisure activities	-.018	-.044	.000
Hours spent in community group – youth programs	-.093*	-.077	-.098*
Hours spent in community group – religious groups	-.036	-.036	-.023
Degree of Threat	.105*	.097*	.112**
	R^2 = .028	R^2 = .032	R^2 = .023

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

Table 14

Intercorrelations among Dependent Variables, Total Media Dependency, Dependency for Social Understanding, and Dependency for Action Orientation

Variable	1	2	3
		n = 543	
1. Total Media Dependency	—	.969**	.974**
2. Dependency for Social Understanding		—	.889**
3. Dependency for Action Orientation			—

Note. ** p < .01

Since the variables for social understanding and action orientation goals were highly correlated, no regression analyses were conducted as this is a violation of the assumptions of linear regression (Pedhazur, 1997).

Findings related to Research Question 4

Research question four sought to determine if a general understanding of agriculture affects media dependency for agricultural terrorist news information or decision-making for respondents. Frequencies were used to see how respondents answered the knowledge portion of the survey. Linear regression was utilized to determine the relationship between knowledge of agriculture and media dependency.

Respondents (*n*= 612) averaged 6.7 correct answers out of 10 general agricultural knowledge questions. About half (54.4%) of respondents correctly answered at least seven of the 10 questions (Table 15).

Table 15

Cumulative Knowledge Scores of Respondents

Correct	*n*	*P*
1	1	.2
2	3	.7
3	18	2.9
4	39	6.4
5	88	14.4
6	115	18.8
7	144	23.5
8	117	19.1
9	66	10.8
10	21	3.4
Total	612	100

The question respondents missed most commonly related to the essential components of the food and fiber system and how plants and animals meet the needs of society in ways other than food. The majority (57.5%) of respondents incorrectly answered what an essential part of the food and fiber system was. About half (47.6%) of respondents incorrectly answered how plants and animals meet the needs of society in ways other than food. The most correctly answered questions were concerned with the agricultural workforce. About 77 percent of respondents correctly answered questions asking how the U.S. population compares with other countries in the percentage of the workforce working directly in production agriculture and what sector of agriculture employees the fewest workers.

There was no statistical support for knowledge of agriculture being a predictor of total media dependency theory. With the Total Knowledge Score added to the model, the R-square value was .018. The beta weight for Total Knowledge Score was -.019 (Table 16).

Table 16

Summary of Regression Analysis for Knowledge of Agriculture Scores Predicting Respondents' Total Media Dependency

Variable	*B*	*SE B*	β
Age	.000	.004	.016
Education level	-.050	.041	-.060
Ethnicity	-.058	.105	-.027
2008 income	-.010	.040	-.013
Years in Community	.005	.004	.076
Hours spent in community group - leisure activities	-.001	.009	-.007
Hours spent in community group - youth programs	-.021	.012	-.089
Hours spent in community group - religious groups	-.013	.019	-.032
Total Knowledge Score	-.001	.003	-.019

Findings Related to Research Question 5

Research question five sought to determine if certain social factors affect media dependency during a potential terrorist attack on the U.S. food and fiber system. Demographic variables were entered as independent variables. With all demographic

variables in the model, the *R*-square value was .033, indicating that 3.3 percent of the variance can be explained by demographic information. Political belief was the only demographic characteristic to be statistically significant at the $p < .05$ level (Table 17).

Table 17

Summary of Regression Analysis for Demographic Variables Predicting Total Media Dependency of former Oklahoma State University students – Final Model

Variable	*B*	*SE B*	β
Age	.002	.004	.037
Education level	-.058	.042	-.069
Ethnicity	-.050	.105	-.023
2008 income	-.021	.041	-.026
Political belief	.089	.043	.108*
Military Service	.140	.138	.058
Years in Community	.004	.004	.059
Hours spent in community group – leisure activities	-.004	.009	-.019
Hours spent in community group – youth programs	-.021	.012	-.083
Hours spent in community group – religious groups	-.004	.019	-.012
Employment status	-.023	.068	-.019
Gender	.027	.104	.014

Note. $R^2 = .003$, Adjusted $R^2 = .005$; * $p < .05$

Trust in the selected mediums was statistically significant in predicting media dependency. Responses indicated about 16 percent of the variance was explained by trustworthiness in selected news mediums. Trustworthiness of television on reporting any issue produced a beta of .290 (Table 18). Zero order correlations indicated there was a moderate amount of redundancy among measures of television, radio, print and Internet trustworthiness. Zero order correlations were .34 for television, .24 for radio, .29 for print and .24 for Internet. Partial correlations for trustworthiness of television was .16 and .10 for Internet, which indicates trustworthiness for television predicted 2.6 percent of the unique variance and Internet predicted one percent.

Summary

The findings indicated the typical former Oklahoma State University student was male (57.2%), employed (67.3%) and 48.18 years old. The majority of respondents were white (92.8%) and lived in their current communities an average of 18.48 years. Most (96.9%) received at least a bachelor's degree and held conservative political beliefs.

Normal media use was statistically significant in predicting individual media dependencies for all selected news mediums (television, R^2 = .050; radio, R^2 = .041; Internet, R^2 = .047; and print, R^2 = .045). R-square values indicated small effect sizes. The typical respondent spends nine hours a week on the Internet and nine hours a week watching television for news information.

Respondents were not extremely concerned about potential terrorist attacks on the U.S. food and fiber system but did indicate some concern. The degree of perceived threat was a significant predictor of Total Media Dependency, Dependency for Social Understanding, and Dependency for Action Orientation.

Table 18

Summary of Regression Analysis for Trustworthiness of Selected News Mediums Predicting Total Media Dependency of Respondents

Variable	*B*	*SE B*	β
Age	.003	.004	.046
Education level	-.029	.038	-.035
Ethnicity	-.032	.096	-.015
2008 income	-.017	.036	-.021
Years in Community	.004	.003	.062
Hours spent in community group – leisure activities	-.003	.008	-.016
Hours spent in community group – youth programs	-.020	.011	-.082
Hours spent in community group – religious groups	-.010	.017	-.028
Trustworthiness - television	.290	.078	.211**
Trustworthiness - radio	.065	.075	.045
Trustworthiness - print	.167	.076	.124*
Trustworthiness - Internet	.166	.073	.111*

Note. R^2 = .161, Adjusted R^2 = .138; * $p < .05$, ** $p < .01$

Findings indicated measurements for Dependency for Social Understanding and Dependency for Action Orientation were highly correlated. The correlation coefficient between the variables was .889, indicating a strong positive relationship. Thus, no further analysis to determine which variable best predicted degree of threat was administered.

There was no indication that general knowledge of agriculture affected Total Media Dependency. With Total Knowledge Scores added to the model, R-square values did not significantly increase nor were beta weights statistically significant.

A small, but significant relationship exists between political belief and Total Media Dependency. Trustworthiness in selected news mediums was a significant predictor of Total Media Dependency. The R-square value for the model when trustworthiness was entered was .161, indicating 16 percent of the variance can be explained by the model. According to Cohen (1988) this is a medium effect size.

CHAPTER V

CONCLUSIONS, IMPLICATIONS & RECOMMENDATIONS

Chapter I provided the background and setting explaining the importance of agriculture to the U.S. political, economic and social structures as well as the possible disruption that would happen in these structures if a terrorist attack to the food and fiber system occurred. In addition, Chapter I discussed the importance of understanding how the public uses media to make decisions and how uncertainty created by terrorist events disrupts normal media functions.

Chapter II discussed the interplay of media, society, and audience as it pertains to Media Dependency Theory. This chapter addressed the possibilities of and potential disruption of an terrorist attack on the U.S. food and fiber system. In addition, this chapter provided the conceptual framework for this study.

Chapter III explained the methodological procedures used to develop, collect and analyze this study. Procedures to increase validity and reliability also were addressed. This chapter also provided the sampling methods used to gather and collect responses.

Chapter IV provided the major findings of this study. This chapter addressed specific questions about the relationship between media dependency and perceived threat and knowledge of agriculture of former Oklahoma State University students.

This chapter provides a summary of the purpose and objectives of this study, rationale for the study, methods and findings of the study, and conclusions based on findings from this study. Recommendations for practice and future research also are provided in this chapter.

Summary

The U.S. is no longer immune from terrorism. In addition, the agricultural infrastructure is vulnerable to terrorist attacks (Chalk, 2004). The media, government and society of the U.S. have discussed and analyzed the possibilities of future attacks on the U.S. (Goodrich et al., 2005). The relationship with the media and the public is a tripartite relationship (Ball-Rokeach & DeFleur, 1976). The relationship between the media system, society and audience creates dependencies on mass media to satisfy certain individual goals (Ball-Rokeach, 1984; Ball-Rokeach & DeFleur, 1976). These dependencies, if substantial, lead to cognitive effects such as the creation and resolution of ambiguity or uncertainty (Ball-Rokeach & DeFleur).

It is critical for communications practitioners, agricultural communicators, government agencies and private agricultural enterprises to understand the mechanisms and processes the public uses to make decisions. By analyzing media dependency relations as well as variables that may affect dependency, one might begin to understand the media's influence on how and why certain sectors of the population make decisions. This study was designed using the logic that threat, whether it is physical or financial, creates ambiguity in a social environment. In addition, a general understanding of the broader subject, in this case, agriculture might influence media dependency.

The purpose of this study was to determine the relationship of individual media dependency (action orientation, social understanding) based on factors of their perceived threat of agricultural terrorism to the U.S. food and fiber system and their knowledge of agriculture. A convenience sample of Oklahoma State University former students with e-mail was used and instruments were adapted fro survey responses.

Research Questions

The following research questions were used to guide the study:

1. Does normal media use influence individual dependency on news mediums (TV, Internet, radio, print media) for news information or decision-making?
2. Can perceived threat regarding agricultural terrorist attacks to the U.S. food and fiber system determine media dependency?
3. Which individual media dependency goal type (Dependency for Social Understanding, Dependency for Action Orientation) best determines perceived threat of agricultural terrorist attacks to the U.S. food and fiber system?
4. Does a general understanding of agriculture have a relationship with media dependency for agricultural terrorist news information or decision-making?
5. Do certain social factors have a relationship with media dependency during a perceived agricultural attack to the U.S. food and fiber system?

Population

Former Oklahoma State University students were selected as the population for this study. The population (N=43,209) was specifically former Oklahoma State University students who provided an e-mail address to the University's alumni

association. Since not everyone in the database received a degree from Oklahoma State University, the population was referred to as "former students" rather than alumni.

Research Design

This study employed multiple regression analysis to determine if relationships existed between media dependencies and perceived threat and knowledge of agriculture. Previous research, temporal logic and theory were used to build regression models. An instrument was used to collect data. Two instruments previously tested for reliability and validity were modified to create the instrument for this study. Data were collected, summed and averaged to create the variables used in this study. Total Media Dependency, Dependency for Social Understanding, and Dependency for Action Orientation were selected as criterion variables. Degree of Perceived Threat was selected as a predictor variable for most models, but a Total Knowledge Score was used to analyze how knowledge affects media dependency in one of the models.

A panel of experts reviewed the instrument for face and content validity. A pilot test was administered to subjects from the population who were not randomly selected in the sample. Reliability coefficients for scaled items were analyzed for consistency.

Data Collection Procedures

An Internet survey was distributed to 7,902 randomly selected subjects. Data collection began April 14, 2009, and ended May 5, 2009. Collection procedures followed a tested e-mail survey protocol (Scaefer & Dillmon, n.d.). An initial contact was made through e-mail that explained the study, its purpose and provided a link to the survey. An opt out link was also included in the introductory e-mail. A reminder e-mail was sent April 21, 2009. This contact restated the purpose of the study and included a link to the

survey as well as a link that removed the subject from the sample population. Surveymonkey.com was utilized to build the online survey as well as manage mailings and collect data.

Data was collected in a Microsoft Excel spreadsheet and transferred to the software program, Statistical Package for the Social Sciences (SPSS) 16 for Windows, where data was coded and analyzed.

Data Analysis Procedures

Survey items were used to create measures for Total Media Dependency, Dependency for Social Understanding, Dependency for Action Orientation, Degree of Threat and Total Agricultural Knowledge Scores. Total Media Dependency was measured by averaging 16 survey items about helpfulness of selected news mediums in providing information about threats to the nation, community, and about helping victims and protecting oneself from agricultural terrorist attacks. Dependency for Social Understanding was measured by averaging eight scaled items about the helpfulness of selected news mediums in providing news information about agricultural terrorist threats to the nation and local communities. Dependency for Action Orientation was measured by averaging eight scaled items about the helpfulness of selected news mediums in providing information about how to help victims of an agricultural terrorist attack and about how to protect oneself from an agricultural terrorist attack.

Degree of perceived threat was measured by averaging four items about concerns dealing with an agricultural attack. Questions included concerns about how the nation and their communities would be harmed in an agricultural terrorist attack to the food and fiber system. In addition, questions addressing concerns about himself or herself or

someone they know being physically or financially harmed by a terrorist attack to the food and fiber system were used to create the Degree of Perceived Threat variable. Total Knowledge Scores were created by taking 10 questions about the general understanding of the U.S. food and fiber system and averaging the correct responses. A percentage of correct responses was created as a measure of total knowledge of the food and fiber system.

Data was entered into blocks to test the models. To measure the relationship between Total Media Dependency, Dependency for Social Understanding and Dependency for Action Orientation, and Degree of Threat, models used a temporal logic (Lowrey, 2004) where selected demographic variables were entered in the first block, measures of social capital (years in community, community involvement) entered second, and Degree of Threat entered third. For dependencies for selected news mediums, normal media use was added into a fourth block.

To test the relationship between Total Media Dependency and knowledge of the food and fiber system, Total Knowledge Score was substituted into the third block for Degree of Threat. To test the relationship between social factors and Total Media Dependency, demographic variables were entered in the model without blocking or specifying order.

Major Findings

Demographic information indicated the typical former Oklahoma State University student was employed (67.3%), white (92.8%), and had at least a bachelor's degree (96.9%). The majority (57.2%) of respondents were male and the average age was 48.18 years old. Respondents indicated they lived in their current communities an average of

18.48 years. Respondents spent about nine hours a week on the Internet and nine hours a week watching television for news information.

Selected news medium dependencies of respondents were predicted best by normal media use by respondents. R-square values indicated the effects of normal media use on individual media dependencies were small (Cohen, 1988). However, when normal media use was added to the model, normal media use was statistically significant in predicting media dependency for television (β = .151), radio (β = .093), Internet (β = .159) and print (β= .131).

Degree of Perceived Threat was a statistically significant predictor of Total Media Dependency, Dependency for Social Understanding, and Dependency for Action Orientation. With Degree of Threat added to the model, R-square values indicated about three percent of the variance for Total Media Dependency was explained. Small effect sizes were found for Dependency for Social Understanding (R^2 = .032) and Dependency for Action Orientation (R^2 = .023) as well.

Measures for Dependency for Social Understanding and Dependency for Action Orientation were highly correlated, thus no further analysis to determine which goal type was most influenced by Degree of Threat occurred.

A general understanding of the food and fiber system was not a significant predictor of Total Media Dependency. When Total Knowledge Scores were added to the model, no statistical significance was present. In addition, R-square values did not increase with Total Knowledge Scores included in the model.

When demographic information was entered in the model, political affiliation was the only statistically significant predictor of Total Media Dependency. In addition,

trustworthiness of selected news mediums was a significant predictor of media dependency. With trustworthiness of selected news mediums entered in the model, the model explained about 16 percent of the variance.

Conclusions

Conclusions were based on research questions that guided this study.

1. Does normal media use influence individual dependency on news mediums (TV, Internet, radio, print media) for news information or decision-making?

Based on findings related to this question, respondents' normal media use does influence their individual dependency on selected news mediums. Glade (2004) reported similar findings following the 9/11 terrorist attacks. In his study, college students relied on familiar news mediums to satisfy social and orientation goals, while depending on their normal entertainment mediums to provide escape or solace from the attacks. Lowrey (2004) discovered normal media use was a significant predictor of individual medium dependency for the Internet, radio and print sources. However, unlike this study, normal use for television was not significant. All selected mediums (television, Internet, radio, and print) were statistically significant in this study in predicting media dependency.

Respondents in this study reported they normally spend nine hours a week seeking news information from television, nine hours a week seeking news information from the Internet, five hours a week seeking information from radio, and four hours a week seeking news information from print sources. These findings are comparable to a Pew Research Center (2004) report on the public's news seeking activity. In its report,

the research center indicated about 82 percent of Americans actively seek news information from mass media sources. Respondents of this study spent an adequate time seeking news information from mass media sources during a typical week. In addition, the Pew study noted the various mediums Americans use to seek news information. Respondents in this study reported using various mass media sources to seek news information as well. Although television and the Internet were used most often, substantial time seeking news information from radio and print sources were reported.

2. Can perceived threat regarding agricultural terrorist attacks to the U.S. food and fiber system determine media dependency?

The conclusion drawn from this study concerning research question two was perceived threat is a statistically significant predictor of media dependency. Although effect sizes were small, with the independent variable, Degree of Threat, in the model, beta weights for Degree of Threat were statistically significant. This finding is consistent with previous findings. Lowrey (2004) reported the variable of threat significantly improved R-square values in regression models used to predict media dependencies after the 9/ll terrorist attacks. Loges (1994) noted the variable of threat significantly explained the variance in media dependency of selected news mediums when demographic variables were controlled.

In addition to being consistent with previous studies, this finding supports the theory of individual media dependency (Figure 2). Ball-Rokeach (1985) posited degree of threat influences personal goals. In this study, Degree of Perceived Threat increased

the variance explained by selected demographic variables and variables of social capital, suggesting the presence of perceived threat increases the predictability of media dependencies for social understanding goals and for action orientation goals.

3. Which individual media dependency goal type (Dependency for Social Understanding, Dependency for Action Orientation) best determines perceived threat of agricultural terrorist attacks to the U.S. food and fiber system?

The conclusion made for research question three that the dependent variables, Dependency for Social Understanding and Dependency for Action Orientation, were highly correlated, thus breaking a basic assumption of linear regression (Pedhazur, 1997). In similar studies of media dependency goal relations, there was no evidence presented to suggest social understanding and action orientation goal types were highly correlated.

4. Does a general understanding of agriculture have a relationship with media dependency for agricultural terrorist news information or decision-making?

The conclusion drawn from this study concerning research question four was general understanding of agriculture does not have a significant relationship with respondents' dependency on media for agricultural terrorist news information or decision making. Previous studies have noted educational level significantly affects media dependency (Hirschburg et al., 1986; Loges, 1994). Harris and Birkenholz (1996) reported a general understanding of specific content knowledge affects attitudes toward

the content area. In addition, media exposure to scientific information can improve feelings of mastery of scientific issues (Elliot & Rosenburg, 1987) suggesting a negative correlation would exist between general agricultural knowledge and media dependency toward issues concerning the food and fiber system. However, this study did not find any evidence such a relationship exists.

5. Do certain social factors have a relationship with media dependency during a perceived agricultural attack to the U.S. food and fiber system?

The conclusion drawn from this study concerning research question five was political affiliation and trustworthiness of media were indirectly linked to media dependency. Trustworthiness in selected news mediums was the best predictor of any variable used in numerous models for this study. A moderate effect size was reported when trustworthiness scores were added to the model. These findings are inconsistent with previous studies. Although limited demographic information has affected media dependency in a statistically significant manner (Donohew et al., 1987; Hirschburg et al., 1986; Loges, 1994; Lowrey, 2004; Morton & Duck, 2000), none of the historically significant factors were found to be linked to media dependency in this study. Most commonly, age (Loges, 1994; Lowrey, 2004) and educational level (Hirschburg et al., 1986; Loges, 1994) are linked to media dependency, but were not found to be significant in this study.

This study did find that trustworthiness of sources to report on any issue was significant in predicting media dependencies. Lowrey (2004) implied the more an

individual becomes aware and comfortable with a medium, the stronger the dependency on that medium becomes. Although trustworthiness was a strong predictor of media dependency, respondents indicated they were less trusting of sources they used the most for news information. Whatley et al. (2005) noted information sources for food safety protocol used by residents of a west Texas community were not overly trusted, including mass media sources.

Implications

Recent attempts to explain the uncertainty toward the food and fiber system and its affect on cognitive choices have created a discourse among agriculturalists about the implications of perceptions and mass media's role in the process (Frewer, Howard, Hedderley, Sheperd, 1999; Grunert, 2005; Kalaitzandonakes et al., 2004; Piggot & Marsh, 2004; Yeung & Morris, 2001). Media Dependency Theory provides a logical framework to assess how ambiguity influences the relationship between mass media and the audiences it serves (Ball-Rokeach, 1985; Ball-Rokeach & DeFleur, 1976; Ball-Rokeach & DeFleur, 1989, Littlejohn, 1983). Particular focus on how media is used during a perceived or real threat to the social environment, in particular, has led to a new line of inquiry within the media dependency literature (Glade, 2004; Loges, 1994; Lowrey, 2004).

This study built upon previous studies within the media dependency framework, specifically studies that used social disruption as a contextual basis. However, it is important to note the findings of this study should not be generalized beyond the population. Based on the findings of this study, it is implied respondents are concerned with a potential terrorist attack on the U.S. food and fiber system and spend a fair amount

of time seeking information about potential terrorist attacks to the food and fiber system. Glade (2004) noted that days after the terrorist attacks on 9/11, college students returned to normal media consumption practices. In addition, Rainie and Kalsnes (2001) reported Internet users quickly returned to their normal Internet practices a week after the attacks. Thus, it is suggested that even during times of large-scale disruption within a social environment, normal media use best predicts how one will use mass media sources. The findings of this study support this statement. For respondents, how they used the selected media channels during normal times as information sources was a significant predictor of individual media dependencies of selected mediums. Thus, the amount of time per week respondents spent seeking news information from selected mediums significantly predicted their media dependency on that medium.

Loges (1994) posited the intensity of media dependencies would increase as the degree of threat increased. Findings from this study support this hypothesis. When measures of perceived threat were added to the model, explanation of variance for Total Media Dependency, Dependency for Social Understanding, and Dependency for Action Orientation increased 1 to 3 percent. Lowrey (2004) reported degree of threat, especially in times of uncertainty, was a strong predictor of an individual's dependency on media to satisfy specific goal types. Similar findings indicate media dependency relations intensify during times of ambiguity but only for a short time (Glade, 2004; Raine & Kalsnes, 2001). Thus, the findings of this study suggest respondents' degree of threat by potential agricultural terrorist attacks to the food and fiber system is a significant predictor of their dependency on media for information on potential attacks to the food and fiber system.

Implications for Media Dependency Theory

Individual media dependency posits that as society becomes more complex, thus more ambiguous, society becomes more dependent on mass media to provide information about understanding the current state of society as well as information on how one might orient in such an environment. This study analyzed the relationship between perceived threat and one's media dependencies. Findings from this study supported the hypothesis that as the social environment becomes more complex due to the degree of ambiguity or threat increasing, individual media dependencies also increase (Ball-Rokeach, 1985). In addition, individual media dependency theory critically explains the relationship among individual characteristics and the social environment (Ball-Rokeach, 1985). Although no demographic characteristics were found to be significant predictors of media dependency in this study, findings did indicate there is a relationship between structural location and media dependency. Trustworthiness of news mediums had a statistically significant relationship with media dependency. The findings from this study suggested that as an individual became more trusting of media (perhaps because of familiarity) the more dependent they were on that medium for news information. This finding supports the theory base by exhibiting the relationship among the media system, social environment, media dependency (Ball-Rokeach, 1985).

Recommendations for Future Research

This study used a population that exists in a social environment where despite recent food contaminations, still believes the food supply is relatively safe (Grunert, 2005). Findings from this study suggest there is a relatively low level of concern toward potential terrorist attacks to the food and fiber system. This finding could be a result of

the social environment. Thus, this study should be replicated using a population that exists within a social environment where previous events have questioned the protective functions of its food supply such as United Kingdom. In addition, future research should be sought to determine if audiences within the U.S. social environment are concerned by possible attacks to the U.S. food supply. This line of inquiry should also involve studies of perceptions of responsibility, that is who/what governmental, private or social entity is responsible for protecting the nation's food supply.

Further research should explore the hypothesis that during times of large-scale social disruption, individuals may combine goal dimensions to accommodate the immediate goal of "survival." Findings from this study suggest the goal dimensions of social understanding and action orientation were correlated when respondents sought news or decision-making information from selected news mediums. Previous studies found during times of uncertainty caused by disaster, the goals for understanding and orientation intensified media dependency (Glade, 2004; Hirschburg et al., 1986; Loges, 1994; Lowrey, 2004). Future research should take into consideration the mulifunctions of today's mass media as it pertains to these goal types. Grant (1989) posited media messages are not mutually exclusive to understanding, orientation or play goal dimensions stating, "any media message may serve more than one type of dependency" (p.33). As the dissemination of news is instant and global, research should analyze how audiences decipher news messages for use to satisfy goal types.

Although this study used reliable measures from a previous study (Lowrey, 2004), further research should focus on reoperationalizing the variables of social understanding and action orientation to determine if collinearity was a measurement error. In addition,

research should continue to test the hypotheses stated by Media Dependency Theory. Although a substantive theory base, small effect sizes were reported in the findings of this study. Small effect sizes could be a result of sample size (Pedhauzer, 1997), but further investigation into how the social environment, individual characteristics and the media system itself affects dependency relations should be investigated.

Specific investigation into how interpersonal networks affect individual media dependency should be sought. Rogers (1996) maintained mass media is used as the primary source for initial awareness, but peer groups are more influential in decision-making. Small effect sizes detected by this study may be a result of respondents' reliance on their interpersonal networks for news information and decision-making rather than mass media.

Research should continue to investigate media dependencies on specific news mediums. Previous research as well as findings from this study noted that during times of uncertainty, media dependencies for selected mediums intensify. Grant (1989) explained that the more an individual was interested or aroused by content, the greater the intensity of cognitive arousal. Lowrey (2004) noted that a dependency for television may be explained by the nature of television (visual and auditory) or because of the historical use of expert sources attached to this medium. Findings from this study also found dependencies were strongest for television. Thus, future inquiry should be conducted to determine if certain mediums naturally "arouse" individuals as well as explore the combination of medium and message in this process.

Future investigation on how audiences use mass media to make decisions should be sought. Findings from this study suggest respondents spend a substantial amount of

time seeking information from mass media sources. Future research should focus on how normal media use affects decision making, especially as it pertains to times of social disruption.

Although a general understanding of the food and fiber system was not a significant predictor of media dependency, future research on how content knowledge affects the cognitive process of decision-making should be addressed. Previous studies in the mass media's effect on knowledge acquisition posited the increase in flow of media messages increased knowledge for individuals with a higher education (Tichenor, Donohue, & Olien, 1970). Further research should be conducted to determine the relationship between content knowledge and the mass media, specifically as it relates to threat perceptions.

Finally, this study should be replicated using different populations. As individual characteristics affect the tripartite relationship of media dependency (Ball-Rokeach & DeFleur, 1989), specific characteristics associated with this population could have affected the findings.

Recommendations for Practice

Based on the findings of this study, agricultural communications practitioners and media professionals should be cognizant of the amount of time and the variety of resources respondents use in gathering news information. In addition, efforts to serve this population should be made to focus and create media messages toward interactive media channels. Respondents indicated they spent about twice as many hours per week seeking news information from television and the Internet. Thus, these mediums should be used to inform the public of potential threats to the food and fiber system.

Respondents indicated they did not completely trust news sources in reporting on any issue. Communications practitioners need to ensure accuracy in their messages by using accredited sources and checking facts to improve the trustworthiness of their audiences. In addition, respondents indicated they were relatively knowledgeable of the food and fiber system. Thus, communications practitioners should be educated and knowledgeable about the content they report.

Degree of perceived threat was a significant predictor of media dependency. Thus, private organizations and governmental agencies should be proactive in informing the public of potential hazards to the food supply. In an interview by The Futurist (Tucker, 2009), Barry Kellman, a DePaul University weapons expert, said biological warfare is likely to become a greater threat as technology makes bioweapons, such as anthrax, more accessible. Thus, efforts to reduce threat should be explored from all entities involved in the food and fiber system.

Respondents indicated they spent as much as one hour or more a week seeking information about terrorist threats to the food and fiber system. Current journalists should frequently report on food security and general safety of the food supply. In addition, communications educators need to address the growing trend in crisis communications needs of the agricultural sector as well as in other industries. Curriculum should focus on reporting messages during a large-scale social disruption and its affect on audience behavior.

Finally, communications practitioners need to be aware of how their audiences use messages. Findings from this study support a growing body of literature that suggest under conditions of ambiguity, individuals depend on the mass media for information.

Understanding how the public uses information during or immediately after a deliberate attack on the U.S. food and fiber system will enable messages to be more focused and direct, thus potentially reducing real and perceived threat allowing the social environment to maintain or recover quickly to more normal functions.

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APPENDIX A

Institutional Review Board Approval

Oklahoma State University Institutional Review Board

Date:	Wednesday, April 08, 2009
IRB Application No	AG0918
Proposal Title:	Determining the Public's Perceived Threat of Agroterrorism Based on the Dependency of Media
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved Protocol Expires: 4/7/2010

Principal Investigator(s):

J. Tanner Robertson
437 Ag Hall
Stillwater, OK 74078

Dwayne Cartmell
448 Ag
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☑ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Sheila Kennison, Chair
Institutional Review Board

APPENDIX B

Oklahoma State University Alumni Association

Computer Data Confidentiality Agreement

OSU ALUMNI ASSOCIATION
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Oklahoma State University Alumni Association
COMPUTER DATA CONFIDENTIALITY AGREEMENT

1. J. Tanner Robertson (hereinafter referred to as "Student Group") convening in Stillwater (City), OK (State), agrees to abide by all terms and conditions of this agreement.
2. Student Group agrees that the computer data and lists and other information therein are, and shall remain, the exclusive property of the Oklahoma State Univsersity Alumni Association (hereinafter referred to as "OSUAA") and such data shall not be utilized or disclosed to any person or entity without permission of OSUAA.
3. Student Group agrees that products produced from the OSUAA's file will be provided only for projects for OSU, unless directed by OSUAA in writing. Student Group agrees to return the original data tape(s), disk(s) and /or other media containing OSUAA file or any part thereof to OSUAA, at their request.
4. Student Group further agrees that neither it nor any of its directors, officers, employees, consultants or agents will disclose, rent lease, sell or enter into joint ownership agreement concerning any list(s), information, updates or enhancement(s) of the OSUAA's file in any form, or for any purpose, nor will Student Group retain, duplicate, or use any such information in any fashion or for any purpose whatsoever.
5. Student Group further agrees to these additional conditions:

A. _____
B. _____

Agreed to this: 3rd day of March , 2009

TO BE COMPLETED BY REPRESENTATIVE OF Student Group:

Signature: _____
Print Name: J. Tanner Robertson
Group Name Department of Agricultural Education, Communications, & Leadership
Address: 437 Agricultural Hall
Email: tanner.robertson@okstate.edu
Phone: 405-744-8135

TO BE COMPLETED BY RESPONSIBLE OSU CONTACT (e.g., Faculty Advisor)

Signature: _____
Print Name: Dwayne Cartmell (dissertation adviser)
Title: Associate Professor
Address: 436 Agricultural Hall
Email: Dwayne.cartmell@okstate.edu
Phone: 405-744-8036

APPENDIX C

Panel of Experts Request E-mail

Subject: Agroterrorism Instrument Review - Request from J. Tanner Robertson, Oklahoma State University

In an effort to ensure validity of my research instrument, I would like to ask your help in evaluating an instrument (Lowrey, 2004) modified to determine the public's dependency on media during a potential terrorist attack to the food and fiber system. The purpose of this study is to predict Oklahoma State University alumni's response to threat of a potential terrorist attack to the food and fiber system based on factors of individual media dependency (action orientation, social understanding) and knowledge of agriculture.

You have been identified as an expert in your field by the researcher. Other experts in the fields of animal science, sociology, educational psychology, agricultural communications, and agricultural education have been asked to participate in the evaluation process as well. Your critique and comments would be greatly appreciated. I will send you the instrument with an evaluation form Monday, March 2.

Attached will be information about the population as well as a list of the objectives for the study. I appreciate any feedback and participation you may give toward this project. I realize the strenuous schedules you keep and understand if you are unable to complete my request.

--
J. Tanner Robertson
Teaching Associate
Department of Agricultural Education,
Communications, and Leadership
Oklahoma State University
405-744-8135

APPENDIX D

Instrument Critique Form

Intrument Critique Form

1. Overall Evaluation of the Questionnaire

Please evaluate the questionnaire. Imangine you are an actual participant of the study and try and answer the questions following the instruction given in each section of the questionnaire. After you finish answering the actual questions, please complete this critique form. Feel free to provide any concerns or opinions. In the comment section under each scale, please provide suggestions for improving the question. Thank you for your participation.

1. Using a 5-point scale below, please indicate the extent to which you agree with the following statements. Please provide specific comments for items.

	Strongly Disagree	2	3	4	Strongly Agree
The instrument can measure the intended constructs	☐	☐	☐	☐	☐
The format of the questionnaire facilitates ease of reading	☐	☐	☐	☐	☐
The instructions are easy to understand	☐	☐	☐	☐	☐
The respondents will be able to answer to the questions without difficulties	☐	☐	☐	☐	☐
THe length of the survey is too long	☐	☐	☐	☐	☐
The participants(alumni of publicly-funded Oklahoma universities) will find the study interesting	☐	☐	☐	☐	☐

Please indicate question # before comment (i.e., 1. Operationalize constructs by...)

2. Knowledge Section

1. Using a 5-point scale below, please indicate the extent to which you agree with the following statements. Please provide specific comments for items.

	Strongly Disagree	2	3	4	Strongly Agree
The explanation about the knowledge section is easy to understand	☐	☐	☐	☐	☐
The knowledge questions represent a general understanding of the food and fiber system	☐	☐	☐	☐	☐
The knowledge questions appropriately measures its construct	☐	☐	☐	☐	☐

Please indicate question # before comment (i.e., 1. Operationalize constructs by...)

3. Media Use - Normal use & during times of terrorism

Intrument Critique Form

1. Using a 5-point scale below, please indicate the extent to which you agree with the following statements. Please provide specific comments for items.

	Strongly Disagree	2	3	4	Strongly Agree
The explanation about the normal times/terrorist event media use sections are easy to understand	☐	☐	☐	☐	☐
The media use questions are a good indicator of ones use of media	☐	☐	☐	☐	☐
The media use questions appropriately measures its construct	☐	☐	☐	☐	☐

Please indicate question # before comment (i.e., 1. Operationalize constructs by...)

4. Helpfulness of Media

1. Using a 5-point scale below, please indicate the extent to which you agree with the following statements. Please provide specific comments for items.

	Strongly Disagree	2	3	4	Strongly Agree
The explanation about helpfulness of media is easy to understand	☐	☐	☐	☐	☐
The helpfulness questions represent measures of understanding ones social environment and personal behavioral decisions	☐	☐	☐	☐	☐
The helpfulness questions appropriately measures its construct	☐	☐	☐	☐	☐

Please indicate question # before comment (i.e., 1. Operationalize constructs by...)

5. Threat of Agricultural Terrorism

Intrument Critique Form

1. Using a 5-point scale below, please indicate the extent to which you agree with the following statements. Please provide specific comments for items.

	Strongly Disagree	2	3	4	Strongly Agree
The explanation about perceived threat is easy to understand	☐	☐	☐	☐	☐
The threat questions represent measures of understanding ones social environment and personal behavioral decisions	☐	☐	☐	☐	☐
The threat questions appropriately measures its construct	☐	☐	☐	☐	☐

Please indicate question # before comment (i.e., 1. Operationalize constructs by...)

6. Demographic Information

1. Please provide additional feedback on demographic questions. Appropriate?, Inappropriate?, wording, add/remove?, etc..

APPENDIX E

Panel of Experts

Dwayne Cartmell
Associate Professor & Graduate Coordinator
Agricultural Education, Communications
& Leadership
Oklahoma State University

James Leising
Professor and Student Outcomes Assessment Coordinator
Agricultural Education, Communications
& Leadership
Oklahoma State University

Diane Montgomery
Professor
Applied Health & Educational Psychology
Oklahoma State University

Wilson Lowrey
Associate Professor & Graduate Program Director
College of Communication and Information Sciences
University of Alabama

APPENDIX F

Introductory E-mail

Introductory e-mail

To: Oklahoma State University Graduates
Subject: Oklahoma State University Needs your Assistance

Dear [FirstName] [LastName]:

I need your help! As a consumer of agricultural products, your perceptions of the food and fiber system in the United States is important. Your views on the threat of a terrorist attack on the food and fiber system as well as your use of media as an information source is crucial to understanding how agricultural professionals, mass communicators and government agencies prepare spokespeople to disseminate information during times of social disruption.

The primary purpose of this research study, "Determining the Public's Perceived Threat of Agroterrorism Based on the Dependency of Media," is to predict the public's response to threat of terrorism to the U.S. food and fiber system based on factors of individual media dependency and previous knowledge of agriculture. Your opinion is valuable as only a select number of alumni were selected for this study. Moreover, your responses will provide the agricultural industry as well as mass media with information that may improve information dissemination in times of threat to the food and fiber system.

This survey will take approximately 10 minutes to complete. Please respond to the questions in terms of your perceptions. You will be able to access the survey one time from your computer. If you are not able to access the online survey, please e-mail me at tanner.robertson@okstate.edu, and an alternate survey format will be provided.

By clicking on the link below, you are giving your consent to participate in this study. To access the online survey, please use your Internet browser of choice and go to:
[SurveyLink]

This link is uniquely tied to this survey and your email address. Please do not forward this message.

Your immediate response is greatly appreciated. Your responses are voluntary, anonymous, and will be treated confidentially. Responses to this survey will be stored online in a password-protected account until the survey is closed and then will be stored in a password-protected spreadsheet until the project is complete. Your e-maill address was accessed through an OSU alumni database.

You may choose at any time to withdraw from the study without penalty. The risks associated with this project are not greater than those ordinarily encountered in daily life.

Thank you for taking time to complete the survey. If you have any questions about this project, please feel free to call Tanner Robertson at 405-744-8135 or Dwayne Cartmell at 405-744-0461. If you have questions about your rights as a research volunteer, you may make contact with Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-1676 or irb@okstate.edu.

Sincerely,

J. Tanner Robertson

Please note: If you do not wish to receive further emails from us, please click the link below, and you will be automatically removed from our mailing list.
[RemoveLink]

APPENDIX G

Reminder E-mail

Reminder e-mail

To: Oklahoma State University Graduates
Subject: Oklahoma State University Needs your Assistance

Dear [FirstName] [LastName]:

Just a reminder that I need your help! About one week ago, you received an e-mail asking you to complete a survey about your views on the threat of a terrorist attack on the food and fiber system as well as your use of media as an information source.

This survey will take approximately 10 minutes to complete and is only available for a short time. Please respond to the questions in terms of your perceptions. You will be able to access the survey one time from your computer. If you are not able to access the online survey, please e-mail me at tanner.robertson@okstate.edu, and an alternate survey format will be provided.

By clicking on the link below, you are giving consent to participate in this study. To access the online survey, please use your Internet browser of choice and go to:
[SurveyLink]

This link is uniquely tied to this survey and your email address. Please do not forward this message.

You may choose at any time to withdraw from the study without penalty. The risks associated with this project are not greater than those ordinarily encountered in daily life.

Sincerely,

J. Tanner Robertson

Please note: If you do not wish to receive further emails from us, please click the link below, and you will be automatically removed from our mailing list.
[RemoveLink]

APPENDIX H

Survey Questionnaire

Determining the Public's Perceived Threat of Agroterrorism Based on

Assesement of General Agricultural Knowledge

The following questions will address your general knowledge of the food and fiber system in the U.S.

1. Which of the following does not influence farmer/producer decisions about what type of product to grow and how it is processed?

- ◯ Consumer preferences
- ◯ Government regulations
- ◯ Historical events
- ◯ Specific commodity prices overseas

2. A genetically modified corn plant has been developed with natural resistance to pests. What type of agricultural business will be most directly affected by this new technological advancement?

- ◯ Agricultural chemical company
- ◯ Feed and milling company
- ◯ Tractor and equipment dealership
- ◯ Veterinary supply store

3. Which of the following occupations is least related to the industry of agriculture?

- ◯ Fashion designer
- ◯ Park ranger
- ◯ Landscape designer
- ◯ Meat inspector

4. What is an essential part of the Food and Fiber System?

- ◯ Consumer demand
- ◯ Consumer supply
- ◯ Natural resources
- ◯ Value-added products

5. Why is America able to sustain a high standard of living?

- ◯ Agricultural industry
- ◯ International trade
- ◯ Micro-computer industry
- ◯ Stock market

Determining the Public's Perceived Threat of Agroterrorism Based on

Assesement of General Agricultural Knowledge

The following questions will address your general knowledge of the food and fiber system in the U.S.

6. What components does Agriculture include?

- ◯ Farming, distribution and research of food, clothing and shelter
- ◯ Production and regulation of food, clothing and shelter
- ◯ Production, processing and selling of food, clothing and shelter
- ◯ Production, processing, marketing and distribution of food and fiber

7. What has the least influence on production practices of farmers in the United States?

- ◯ Machinery costs to producers
- ◯ New York Stock Exchange
- ◯ Price of the commodity to the processor
- ◯ Consumer preferences

8. How does the percentage of the population working directly in farming and production agriculture in the United States compare to other countries in the world?

- ◯ Population is declining compared to less developed countries of the world.
- ◯ Population is greater than in less developed countries of the world.
- ◯ Population is greater than other developed countries of the world.
- ◯ Population is increasing due to population growth & the increasing demand for food.

9. Which agricultural sector has the least number of workers?

- ◯ Distribution
- ◯ Processing
- ◯ Production
- ◯ Transportation

10. How do plants and animals meet society's needs in ways other than food, clothing, and shelter?

- ◯ Fuels and electronics
- ◯ Medicines and plastics
- ◯ Medicines and recreation
- ◯ Plastics and recreation

Determining the Public's Perceived Threat of Agroterrorism Based on

Normal Media Use

The next set of questions ask about your typical media use during more normal times - for example, when the U.S. is not experiencing a terrorist threat to the food and fiber system or under terrorist attack.

11. During more normal times, about how many hours a week do you spend using the following media to get information?

Television ☐

Radio ☐

Print newspaper or magazine ☐

Internet ☐

12. How trustworthy do you think the news media are on any issue?

	not at all trustworthy			extremely trustworthy
Internet	◯	◯	◯	◯
Print newspapers or magazines	◯	◯	◯	◯
Radio	◯	◯	◯	◯
Television	◯	◯	◯	◯

Determining the Public's Perceived Threat of Agroterrorism Based on

Media Use During Times of Terrorism

Next, You are going to be asked about your use of the media during times of terrorist attacks, potential terrorist attacks and possible attacks on the food and fiber system.

13. About how many hours a week do you spend using the following media to get information about terrorist threats to the food and fiber system?

Television ☐

Radio ☐

Print newspaper or magazine ☐

Internet ☐

Page 4

Determining the Public's Perceived Threat of Agroterrorism Based on

Helpfulness of Media

The following questions address the helpfulness of the following media during a deliberate attack on the food and fiber system or purposeful contamination of agricultural products for a political, social or economic gain.

14. How helpful is the following media in providing information about potential terrorist threats to the national food and fiber system?

	not at all helpful				extremely helpful
Internet	◯	◯	◯	◯	◯
Personal communication (face-to-face, telephone, or e-mail)	◯	◯	◯	◯	◯
Print newspapers or magazines	◯	◯	◯	◯	◯
Radio	◯	◯	◯	◯	◯
Television	◯	◯	◯	◯	◯

15. How helpful is each of the following media for providing information about possible terrorist threats to the food and fiber system to your community?

	not at all helpful				extremely helpful
Internet	◯	◯	◯	◯	◯
Personal communication (face-to-face, telephone, e-mail)	◯	◯	◯	◯	◯
Print newspapers or magazines	◯	◯	◯	◯	◯
Radio	◯	◯	◯	◯	◯
Television	◯	◯	◯	◯	◯

16. How helpful is the following media for providing information on how to help victims of terrorist attacks to the food and fiber system?

	not at all helpful				extremely helpful
Internet	◯	◯	◯	◯	◯
Personal communication (face-to-face, telephone, e-mail)	◯	◯	◯	◯	◯
Print newspapers or magazines	◯	◯	◯	◯	◯
Radio	◯	◯	◯	◯	◯
Television	◯	◯	◯	◯	◯

17. How helpful is the following media for providing information on how to protect yourself against terrorist attacks to the food and fiber system?

	not at all helpful				extremely helpful
Internet	◯	◯	◯	◯	◯
Personal communication (face-to-face, telephone, e-mail)	◯	◯	◯	◯	◯
Print newspapers or magazines	◯	◯	◯	◯	◯
Radio	◯	◯	◯	◯	◯
Television	◯	◯	◯	◯	◯

Determining the Public's Perceived Threat of Agroterrorism Based on

Threat of Agricultural Terrorism

The following question asks how concerned you are about possible agricultural terrorist events.

18. How concerned are you that the one of the following could be harmed by an act of agricultural terrorism?

	not at all concerned				extremely concerned
Financial harm to you or someone you know	◯	◯	◯	◯	◯
Physical harm to you or someone you know	◯	◯	◯	◯	◯
The nation	◯	◯	◯	◯	◯
Your community	◯	◯	◯	◯	◯

Determining the Public's Perceived Threat of Agroterrorism Based on

Demographic Information

The following questions address your background information and personal characteristics.

19. Which of the following best describes your political beliefs? Would you say:

- ◯ Conservative
- ◯ Moderately conservative
- ◯ Moderate
- ◯ Moderately liberal
- ◯ Liberal

20. Have you ever served in the Military?

- ◯ Yes
- ◯ No

21. How many years have you lived in your present community?

Years ☐

22. How many hours a week, if any, do you spend participating in community groups and organizations like church, scouting and bridge groups?

Leisure activities ☐

Youth programs ☐

Religious groups ☐

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Determining the Public's Perceived Threat of Agroterrorism Based on

Demographic Information

The following questions address your background information and personal characteristics.

23. What is your age?

Age

24. What is the highest level of education you have completed?

- ◯ Did not complete high school
- ◯ Completed high school
- ◯ Vocational or technical school
- ◯ Completed an associate degree
- ◯ Completed a bachelor's degree
- ◯ Some graduate work (no degree)
- ◯ Completed a master's degree
- ◯ Doctorate, law or medical degree

Determining the Public's Perceived Threat of Agroterrorism Based on

Demographic Information

The following questions address your background information and personal characteristics.

25. What is your marital status?

26. How many children under 18 presently live with you?

27. Do you presently own any of the following animals?

- ☐ Dog or cat for companionship
- ☐ Horse
- ☐ Livestock
- ☐ Working dog or dogs

28. What is your gender?

- ○ Male
- ○ Female

Determining the Public's Perceived Threat of Agroterrorism Based on

Demographic Information

The following questions address your background information and personal characteristics.

29. In which of the following groups would you place yourself?

- ◯ African-American
- ◯ Asian or Pacific Islander
- ◯ American Indian or Alaskan Native
- ◯ White
- ◯ Hispanic

30. Are you presently employed full-time, part-time, or not employed?

- ◯ Full-time (40 or more hours a week)
- ◯ Part-time
- ◯ Not employed

31. Which best describes your 2008 household income from all sources of income BEFORE taxes?

- ◯ Less than $25,000
- ◯ $25,000 to $50,000
- ◯ $50,000 to $75,000
- ◯ $75,000 to $100,000
- ◯ More than $100,000

APPENDIX I

Summary of Regression Analyses - Total Media Dependency

Table 19

Summary of Regression Analysis for Variables Predicting Respondents' Total Media Dependency - All Final Models

Variable	*B*	*SE B*	β
Model 1			
Age	-.001	.004	-.018
Education level	-.049	.041	-.058
Ethnicity	-.060	.102	-.028
2008 income	-.015	.039	-.018
Years lived in community	.004	.004	.065
Hours spent in community group - leisure activities	-.003	.009	-.018
Hours spent in community group - youth programs	-.023	.012	-.093*
Hours spent in community group - religious groups	-.013	.018	-.036
Degree of Threat	.099	.045	.105*
Model 2	.000	.004	.016
Age	-.050	.041	-.060
Education level	-.058	.105	-.027
Ethnicity	-.010	.040	-.013
2008 income	.005	.004	.076
Years in Community	-.001	.009	-.007
Hours spent in community group - leisure activities	-.021	.012	-.089
Hours spent in community group - youth programs	-.013	.019	-.032
Hours spent in community group - religious groups	-.001	.003	-.019

Total Knowledge Score	.000	.004	.016
Model 3			
Age	.003	.004	.046
Education level	-.029	.038	-.035
Ethnicity	-.032	.096	-.015
2008 income	-.017	.036	-.021
Years in Community	.004	.003	.062
Hours spent in community group - leisure activities	-.003	.008	-.016
Hours spent in community group - youth programs	-.020	.011	-.082
Hours spent in community group - religious groups	-.010	.017	-.028
Trustworthiness - television	.290	.078	.211**
Trustworthiness - radio	.065	.075	.045
Trustworthiness - print	.167	.076	.124*
Trustworthiness - Internet	.166	.073	.111*
Model 4			
Age	.002	.004	.037
Education level	-.058	.042	-.069
Ethnicity	-.050	.105	-.023
2008 income	-.021	.041	-.026
Political belief	.089	.043	.108*
Military Service	.140	.138	.058
Years in Community	.004	.004	.059
Hours spent in community group - leisure activities	-.004	.009	-.019

Hours spent in community group - youth programs	-.021	.012	-.083
Hours spent in community group - religious groups	-.004	.019	-.012
Employment status	-.023	.068	-.019
Gender	.027	.104	.014

Note. R^2 = .028 for Model 1; R^2 = .032 for Model 2; R^2 = .161for Model 3; R^2 = .034 for Model 4; * $p < .05$; ** $p < .01$

APPENDIX J

Summary of Regression Analyses - Media Dependency on Selected Mediums

Table 20

Summary of Regression Statistics for Individual Media Dependencies of Respondents of Selected News Mediums - Final Models

Variable	*B*	*SE B*	β
Model 1			
Age	-.002	.613	-.030
Education level	-.048	.048	-.047
Ethnicity	-.028	.117	-.011
2008 income	-.035	.046	-.036
Years lived in community	.005	.004	.059
Hours spent in community group - leisure activities	-.010	.010	-.044
Hours spent in community group - youth programs	-.023	.013	-.084
Hours spent in community group - religious groups	-.023	.020	-.054
Degree of Threat	.101	.053	.089
Normal Television Use	.163	.051	.151**
Model 2			
Age	.003	.004	.037
Education level	-.030	.047	-.030
Ethnicity	.078	.119	.030
2008 income	-.003	.044	-.004
Years lived in community	.005	.004	.064
Hours spent in community group - leisure activities	-.005	.010	-.022
Hours spent in community group - youth programs	-.026	.012	-.097*

Hours spent in community group - religious groups	.013	.020	.033
Degree of Threat	.119	.051	.107*
Normal Radio Use	.108	.055	.093*
Model 3			
Age	-.002	.004	-.026
Education level	-.053	.043	-.059
Ethnicity	-.066	.104	-.029
2008 income	-.015	.041	-.018
Years lived in community	.008	.004	.108*
Hours spent in community group - leisure activities	-.008	.009	-.039
Hours spent in community group - youth programs	-.017	.012	-.064
Hours spent in community group - religious groups	-.023	.019	-.058
Degree of Threat	.092	.047	.091*
Normal Print Use	.176	.067	131**
Model 4			.
Age	-.003	.004	-.040
Education level	-.043	.045	-.045
Ethnicity	-.015	.110	-.006
2008 income	.019	.043	.021
Years lived in community	-.003	.004	-.039
Hours spent in community group - leisure activities	-.010	.010	-.047
Hours spent in community group - youth programs	-.013	.012	-.049
Hours spent in community group - religious groups	-.020	.019	-.049

Degree of Threat	.051	.049	.048
Normal Internet Use	.157	.046	.159**

Note. R^2 = .050 for Model 1; R^2 = .041 for Model 2 R^2 = .045 for Model 3; R^2 = .047 for Model 4; * p < .05; ** p < .01

VITA

J. Tanner Robertson

Candidate for the Degree of

Doctorate of Philosophy

Dissertation: MEDIA DEPENDENCY DURING A POTENTIAL AGRICULTURAL TERRORIST ATTACK ON THE U.S. FOOD AND FIBER SYSTEM

Major Field: Agricultural Education

Biographical:

Personal Data: Joseph Tanner Robertson was born March 6, 1981, in Petersburg, Texas. He is the son of Joe and Kathy Robertson.

Education: Bachelor of Arts in Mass Communications, West Texas A&M University , 2002; Master of Science in Agricultural Education, Texas Tech University, 2003; and Doctor of Philosophy in Agricultural Education, Oklahoma State University, 2009

Experience: Teaching Associate, Oklahoma State University Department of Agricultural Education, Communications, & Leadership, August 2008 - August 2009; Graduate Research Associate; Oklahoma State University Department of Agricultural Education, Communications, & Leadership, August 2006 - August 2008; Lead Advisor, Texas Tech University Health Sciences Center School of Allied Health Sciences, July, 2004 - August, 2006

Professional Memberships: North American Colleges and Teachers of Agriculture (NACTA), Member; American Association of Agricultural Education (AAAE), Member; Association for Communication Excellence in Agriculture, Natural Resources, and Life and Human Sciences (ACE), Member

Name: Joseph Tanner Robertson Date of Degree: July, 2009

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: MEDIA DEPENDENCY DURING A POTENTIAL AGRICULTURAL TERRORIST ATTACK ON THE U.S. FOOD AND FIBER SYSTEM

Pages in Study: 133 Candidate for the Degree of Doctor of Philosophy

Major Field: Agricultural Education

Scope and Method of Study:
This study sought to determine individuals' media dependency as it relates to a potential terrorist attack on the U.S. food and fiber system. The scope of this study was limited to former students of Oklahoma State University who voluntarily released their e-mail address to the alumni association. The method of research was a multiple regression study using measures of media dependency as dependent variables and measures of degree of perceived threat and knowledge of agriculture as independent variables.

Findings and Conclusions:
Demographic information indicated respondents were employed (67.3%), white (92.8%), and had at least a bachelor's degree (96.9%). Respondents spent about nine hours a week on the Internet and nine hours a week watching television for news information. Selected news medium dependencies were predicted best by normal media use by respondents. R-square values indicated the effects of normal media use on individual media dependencies were small (Cohen, 1988). However, with normal media use added to the model, normal media use was statistically significant in predicting media dependency for television ($\beta = .151$), radio ($\beta = .093$), Internet ($\beta = .159$) and print ($\beta = .131$). Degree of Threat was a statistically significant predictor of Total Media Dependency, Dependency for Social Understanding, and Dependency for Action Orientation. With Degree of Threat added to the model, R-square values indicated about 3% of the variance for Total Media Dependency was explained. Small effect sizes were found for Dependency for Social Understanding ($R^2 = .032$) and Dependency for Action Orientation ($R^2 = .023$) as well. A general understanding of the food and fiber system was not a significant predictor of Total Media Dependency. When Total Knowledge Scores were added to the model, no statistical significance was present.

ADVISER'S APPROVAL: Dwayne Cartmell