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By Lindsay K. Nobbe

Entitled
Participation in an Educational Dairy Farm Event Related to Consumers' Motivations & Dairy Production Beliefs

For the degree of Master of Science

Is approved by the final examining committee:

Neil A. Knobloch
Chair

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PARTICIPATION IN AN EDUCATIONAL DAIRY FARM EVENT RELATED TO CONSUMERS' MOTIVATIONS AND DAIRY PRODUCTION BELIEFS

A Thesis

Submitted to the Faculty

of

Purdue University

by

Lindsay Kay Nobbe

In Partial Fulfillment of the

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of

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West Lafayette, Indiana

For my family and friends whom gave me the strength to push through to the end.

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TABLE OF CONTENTS

Page

Page

Page

Page

LIST OF TABLES

Table Page

LIST OF FIGURES

LIST OF ABBREVIATIONS

CNFI – Child Nutrition and Fitness Initiative

FUTP60 – Fuel Up to Play 60

MPAM-R – Motives for Physical Activity Measure - Revised

MPSI – Milk Promotion Services of Indiana

USDA - United States Department of Agriculture

ABSTRACT

Nobbe, Lindsay Kay. M.S., Purdue University, May 2011. Participation in an Educational Dairy Farm Event Related to Consumers' Motivations and Dairy Production Beliefs. Major Professor: Neil Knobloch.

Consumers who participate in non-formal, educational, on-farm events are able to connect what they hear and see from others to what actually occurs in the food production system, allowing them to make more informed decisions. If organizations based in agriculture are able to develop programs tailored to consumers' motivations for attending non-formal, educational, on-farm events, then they would have greater opportunity to more effectively deliver messages to their respective target audiences. In addition, knowing consumers' beliefs regarding dairy industry practices pertaining to animal welfare, environmental care, and food safety would allow agriculture industry-supported organizations to better focus the topics of their messages for consumers. Lastly, if these organizations knew what sources of food purchasing information consumers used as well as who consumers trust for this information, then they also would be able to increase the efficiency and accuracy of their message delivery. All of these benefits would help to move toward a more informed society that is better equipped to make decisions that ultimately affect the agricultural industry.

Therefore, the purpose of this descriptive study was to explain and predict consumers' participation in a place-based learning experience on a dairy farm based on consumers' interest motivation to participate in a free educational dairy event, adult consumers' beliefs of the dairy industry, the channels of information that adult consumers use to inform their food choices, and the sources that they trust for the same information. The place-based learning experience was a three-hour event at an Indiana dairy farm where local consumers had the opportunity to enjoy a brunch meal, meet a local dairy farm family, and participate in a personal tour of the farm. There were 202 consumers who responded to the mailed questionnaire approximately six months after the event.

The study resulted in four major conclusions. First, participants and those who did not participate in the educational dairy farm event were similar in their beliefs of the dairy industry's animal welfare, environmental care, and food safety practices. Second, participants were more motivated to attend a free educational dairy farm event than those who did not participate. Third, nearly three of four consumers in an Indiana community would attend an educational event on a dairy farm if they: (1) were highly motivated to attend educational agricultural events because it is fun, interesting, and enjoyable, (2) were highly motivated to attend educational agricultural events out of desire to acquire new knowledge and meet a challenge, (3) were highly motivated to attend educational agricultural events out of desire to be nutritionally healthy, (4) were very familiar with agriculture or directly involved with it, (5) agreed or strongly agreed with the animal welfare practices that dairy farmers implement, and (6) resided in households that report consuming, on average, at least three gallons of fluid milk per week while at home. Fourth, participants were more frequently informed by family and/or friends and

educational events when making food purchasing decisions than those who did not participate.

The study's results may benefit agriculture industry-supported organizations to develop non-formal, educational events that are more appealing to their target audiences as well as market those events in a way that will entice more consumers to attend. In addition, those organizations will be able to more effectively and efficiently deliver their key messages to consumers. Future studies should focus on utilization of data collection methods beyond a questionnaire so that more qualitative information may be obtained, continuation of theory development because theory-based consumer motivations have not been used frequently in previous agricultural-based studies, and replication in other contexts, such as agritourism.

CHAPTER 1. INTRODUCTION

1.1. Introduction

Agricultural industry-supported organizations offer educational programs to help build consumer knowledge and confidence in food products and to improve the consumer diet (Indiana Beef Council, 2011; Indiana Pork, 2010; Milk Promotion Services of Indiana [MPSI], 2010b; United Soybean Board, 2011). With less than 2% of the American population being actively involved in agriculture (U.S. Environmental Protection Agency, 2009), consumers' confidence in the food supply is dwindling, which means that they are questioning the practices used to produce their food as well as the safety of the end product (Arkansas Foundation for Agriculture, 2006; Napier, Tucker, Henry, & Whaley, 2004). Furthermore, agricultural commodity organizations that make up the food industry find it necessary to educate consumers about the health benefits of consuming its food products as consumers shift their food preferences to convenient, sweetened or fat-enhanced foods. Americans are more obese today than they were 30 years ago. As such, 33% of Americans are overweight and 34% are obese (Centers for Disease Control and Prevention, 2009). This significant increase in the last 30 years is in part because of a greater emphasis on fatty and sweetened foods, an increasing cost for healthy foods, and a lack of confidence in the food supply (Jungheim & Moley, 2010).

The dairy industry is one of several agricultural sectors that make up the food system (U.S. Department of Labor, 2010-2011). Agricultural commodity organizations, such as Indiana Corn Marketing Council, Indiana Soybean Alliance, Indiana Beef Council, Indiana Pork, Milk Promotion Services of Indiana (MPSI) were in part organized to promote and advocate for the producers of various food commodities such as corn, soybeans, beef, pork, and dairy (Indiana Beef Council, 2011; Indiana Corn Marketing Council, 2011; Indiana Pork, 2010; Indiana Soybean Alliance, 2011; MPSI, 2010b). As an example, D. Osza, General Manager of Milk Promotion Services of Indiana, explained that the dairy industry conducts educational campaigns and programs to build consumer awareness and confidence in the food supply as well as to improve the diet of American consumers through education of the nutritional benefits of consuming dairy products (personal communication, January 14, 2011). Ultimately, the goal of some commodity organization, such as MPSI, is to increase consumer demand and consumption of a specific commodity, such as dairy products, through science-based education and promotions as well as to improve the image of the industry, including dairy farmers and the businesses that make up the milk supply chain (MPSI, 2010b). If this goal is attained, then the specific agricultural and food commodity organizations can help various agricultural and food sectors, such as the dairy industry, to be economically viable because of consumer demand. High consumer demand for food commodities helps to make farming profitable and to support job security within the industry along with farm subsidies (Buzby, 2001; Grunert, 2005; Zafiriou, Robbins, Karamchandani, & Ominsiki, 2003).

Moreover, consumers are becoming more sophisticated in their food preferences, which are influenced by their knowledge, beliefs, and values (Ellis & Tucker, 2009). For example, consumers are becoming more sensitive about how their food is produced and whether they perceive the management practices as environmentally friendly or socially responsible (Doerfert, Robertson, Akers, & Kistler, 2005; Wimberley et al., 2003). Consumer awareness and understanding of the food supply system play an increasingly important role in their purchases, which directly affect demand of food commodities and can affect the local, regional, and national economic conditions (Doerfert et al., 2005; Stenholm & Waggoner, 1992).

With the understanding that consumers' knowledge and values impact their beliefs and confidence, as well as influence their behaviors and decisions (Schwartz, 1992, 2005), MPSI sponsors educational programs to inform consumers about how dairy food products are produced. It was assumed that if consumers understand and believe that dairy farmers are producing safe food that is economically feasible, environmentally sustainable, and socially responsible, then they will support the dairy food system with favorable views and behaviors (Grunert, 2005; Yeung & Morris, 2001). Therefore, one such educational program hosted by MPSI is an annual greet, meet, and eat event at a local dairy farm known as Brunch on the Farm. Local consumers within a 40-mile radius of a dairy farm are invited to a brunch meal where they can meet a local dairy family and neighbors, and they get a personal tour of the dairy farm. The goal of this educational event is to help consumers gain knowledge and a better understanding of how milk is produced through a place-based learning experience (See p. 16 for definition). Although Brunch on the Farm has been perceived as a successful event based on anecdotal

evidence (i.e., informal comments and observations), little is known if this educational effort helps increase consumer awareness of the dairy industry, or if consumers' beliefs of the dairy industry are aligned with the production practices used at the placed-based learning event (D. Osza, personal communication, January 31, 2011).

1.2. Statement of the Problem

Dairy industry-supported organizations conduct educational opportunities to increase science-based consumer knowledge regarding its animal welfare, environmental care, and food safety practices to help improve consumer confidence in the dairy food supply. In addition, these educational programs are implemented to help consumers make informed choices when deciding whether or not to purchase dairy products as well as to teach consumers which type of product will best meet their nutritional needs and consumer preferences. While the dairy industry continually hosts programs with the goal of educating consumers regarding these topics, little is known about consumers' motives for attending place-based events, such as Brunch on the Farm, their beliefs of the dairy industry, which channels of information they use to make informed food decisions, and which sources of food information they trust. Moreover, little is known about consumers who choose to participate in industry-sponsored place-based learning events, such as Brunch on the Farm, in comparison to their neighbors who choose not to participate in these types of educational events.

1.3. Significance of the Study

This study is important because of three overarching reasons: 1) food safety and consumer health, 2) mixed messages, and 3) economic impact. Agricultural industry-supported organizations, such as MPSI, need to educate adult consumers on the animal welfare, environmental care, and food safety practices implemented by the dairy industry because consumers need to know how dairy products are produced as well as how the products may or may not be of benefit to them. Upon completion of such education, a society of consumers should exist who are able to make more informed consumer choices. In addition, adult consumers will more fully understand the impact of the decisions they make. As such, the significance of this study is explained in the following paragraphs.

1.3.1. Food Safety and Consumer Health

Consumers have growing concerns about modern food production practices in terms of health and safety (Frewer, Miles, & Marsh, 2002; Tucker, Whaley, & Sharp, 2005) and there is increasing skepticism among consumers regarding the origin of the food they purchase as well as how it was produced (Butler, 2002; Doerfert et al., 2005). While some reservations have also been documented about consuming dairy products in terms of nutrition and food safety, many studies have found that the nutritional benefits of their consumption outweigh the associated potential nutrition and food safety risks (Weaver, 2009). Nonetheless, it was found that food quality and safety are more

prominent issues today than they were in previous decades (Grunert, 2005). Furthermore, many consumers avoid certain foods in fear of potential risks and may even prevent a new food production practice from being implemented regardless if its benefits have been found to outweigh the risks (Frewer et al., 2002; Tucker et al., 2005).

While most studies have focused on consumer concerns regarding the food supply as a whole, it is uncertain whether all of the same concerns hold merit for dairy foods. Therefore, this study aimed to determine consumer beliefs of dairy farming and food safety practices that the industry uses. By better understanding such information dairy industry-sponsored organizations will be able to improve its educational practices. With improved educational practices, it will be able to more effectively deliver its message to consumers about the nutrition and safety of its products. Examples of information that may be conveyed to consumers through improved educational techniques include: regular consumption of dairy products is associated with lower blood pressure and a lower risk of stroke (Massey, 2001); regular consumption of dairy products have been found to reduce the risk of metabolic syndrome, insulin resistance syndrome, and some cancers (Weaver, 2009); consuming dairy has "positive effects on bone health, sports nutrition, digestive health, weight management" (Ohr, 2009, p. 57); and dairy products provide nine essential nutrients that are often limited in the average American's diet (Weaver, 2009). If consumers have increased knowledge of dairy food production and safety, then it is presumed that the demand for dairy products will also increase which meets one of the goals of MPSI, a dairy industry-supported organization.

1.3.2. Mixed Messages

Consumers gather their information from a variety of sources, including family and friends, medical professionals, educational events, advertisements, local and national television, newspapers, magazines, and social media (Powell, Hubbell, & Chapman, 2009). Each venue generally offers a different perspective on the topic being discussed thus leaving an array of mixed, contradictory, and confusing messages. For example, mass media is commonly the main source of agricultural information for consumers; however, it has also been found that this information is often inaccurate (Dimopoulos & Koulaidis, 2003; Logan, Zengjun, & Wilson, 2000; Malone, Boyd, & Bero, 2000; Norris & Phillips, 2003; Treise & Weigold, 2002; Vestal & Briers, 2000). This lack of accurate communication between consumers, industry, scientists, the media, and governmental officials makes it increasingly difficult for consumers to have a greater understanding of dairy production and dairy products, which could result in greater skepticism, emotionally charged decisions, or less confidence in the dairy food supply (Sobal & Maurer, 1995; Tucker, Whaley, & Sharp, 2006).

Not only has it been documented that media oftentimes inaccurately deliver educational messages, it has also been found that the basis of these messages are mixed between being science-based and emotional-based. For example, in recent years the dairy industry has received negative attention in regard to the animal welfare, environmental care, and food safety practices that it implements as portrayed by mass media, animal rights activist groups, and others causing public unease about its legal and ethical standards (Butler, 2002; Norris & Phillips, 2003; Pollan, 2006; Powell, Agnew, & McJunkin, 2009; Schlosser, 2002; Tucker et al., 2006; Vestal & Briers, 2000). Claims

based on emotions, values, and beliefs, rather than science can make it confusing for consumers to make decisions about their food choices.

Therefore, this study sought to identify consumers' preferences of information channels and how trustworthy they believe various information sources to be. If dairy industry-sponsored organizations knew this information, then they would be able to better focus their educational efforts on specific channels for nutrition and food safety information. Furthermore, if they knew which sources of nutrition and food safety information consumers trusted the most, then the dairy industry could consider those sources to produce its key messages. Moreover, by working more closely with specific information channels, it is thought that MPSI's information would be more accurately portrayed along with being able to clarify the basis (i.e., science or emotional) of messages to consumers. By having a more focused educational message delivery plan, it was presumed that the communication gap between consumers and the industry would be minimized (Doerfert et al., 2005). Ultimately, this should result in a society of consumers who are more informed about the safety and health attributes of dairy production and dairy products.

1.3.3. Economic Impact

"Few issues are of greater importance to the world than adequate food supplies, proper food use, and knowledge about the components of the ag industry" (Mawby, 1985, p. 7). However, although everyone is dependent on agriculture and is surrounded by it (Cardwell, 2005), many consumers do not have a clear understanding of the importance

of agriculture to the economy and to themselves (Oshel, Akers, Doerfert, Lawyer, & Wilson, 2009). For example, dairy products produced in Indiana in 2007 contributed $659,162,000 to the United States' economy, which was 1.9% of all agricultural contributions (United States Department of Agriculture, National Agricultural Statistic Services [USDA, NASS], 2009). In addition, the dairy industry offered 300 different career options with 2,000 milk cow operations in Indiana during that same year (USDA, NASS, 2009; Wisconsin Milk Marketing Board, 2005). Ultimately, the Indiana dairy industry employed approximately 3,750 of its residents in 2004 and paid them $107 million in total salaries (Mayen & McNamara, 2006). The same study also estimated that gross sales receipts for which the Indiana dairy industry was responsible in 2004 totaled $986.4 million through backward linkages (Mayen & McNamara, 2006). However, with numerous studies documenting a lack of agricultural literacy among the United States' population, it is probable that many consumers do not understand the magnitude of the dairy industry and the economic benefits that it provides to them (Oshel et al., 2009).

Abdalla and Lawton (2006) found that a positive, or at least neutral, opinion of dairy by consumers is critical to the retention and expansion of the industry. Therefore, this study determined why adult consumers did and did not attend educational events provided by the dairy industry, what their beliefs of the dairy industry were, which channels of information they used to inform their food choices, and how trustworthy they believed those sources of information to be. Knowing this information regarding consumers will allow for MPSI and other industry-sponsored organizations to more effectively educate them about the dairy industry's economic impact as well as about that the impact that their decisions have on the industry.

Furthermore, the findings from this study will enable entities, such as MPSI who alone spends over $3,100,000 annually on consumer education (MPSI, 2010a), to more efficiently spend their resources. In turn, they will more effectively attain their goal of managing and creating consumer trust in the dairy food supply as well as improving the diet of American consumers through education of the nutritional benefits of consuming dairy products (D. Osza, personal communication, January 14, 2011).

1.4. Purpose of the Study

The purpose of this study was to explain and predict consumers' participation in a place-based learning experience on a dairy farm based on consumers' interest motivation to participate in a free educational dairy event, adult consumers' beliefs of the dairy industry, the channels of information that adult consumers use to inform their food choices, and which sources of food information they trust.

1.5. Research Questions for the Study

The research questions for this study included the following:

1. What are the consumer information channel preferences of participants and nonparticipants of the Brunch on the Farm when making food purchasing decisions, to what degree do they trust food information sources, and how much dairy do their households consume (i.e., fluid milk and dairy product consumption)?

2. Were there significant differences between participants and nonparticipants of the Brunch on the Farm based on the following variables: 1) adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and 2) their beliefs (i.e., animal welfare, environmental care, and food safety practices) of the dairy industry?

3. What were the relationships between adult consumers' participation in the Brunch on the Farm and their motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

4. To what extent could participation in a free educational dairy event be predicted based on adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

1.6. Basic Assumptions

Assumptions made for this study include the following:

1. Participants completing the questionnaire would be the primary grocery buyer of the household, and would complete the questionnaire as the primary decision maker of food choices for the household.
2. Participants followed the directions for completing the questionnaire, and provided honest responses for all questionnaire items.
3. The study being associated with Purdue University and MPSI did not affect or bias the responses given by the participants.
4. The study was conducted objectively, and the researcher's biases were minimized.
5. The mailing list obtained from MPSI was accurate in that it only included households with at least one child age ten or under living within it.

1.7. Definitions of Terms

Adult Consumer – primary grocery buyer of the family

Agriculturally Literate Citizen – "… would have an understanding of the food and fiber systems [that] would include its history and its current economic, social, and environmental significance. In addition to having the information needed to make informed decisions about nutrition, health, and diet, [they] would also have the practical knowledge needed to care for their outdoor environment" (National Research Council, 1988, pp. 8-9).

Agriculture – the production of agricultural commodities including food, fiber, wood products, horticultural crops, plant and animal products; the financing, processing, marketing, and distribution of agricultural products; farm supply and service industries;

health, nutrition, and food consumption; the use and conservation of land and water resources; development and maintenance of recreational resources; and related economic, sociological, political, environmental, and cultural characteristics of the food and fiber system (National Research Council, 1988).

Belief – what is experienced when a value has been activated and filled with feeling (Schwartz, 1987)

Behavior – the action or reaction that occurs due to the activation of a value (Schwartz, 1987)

Brunch on the Farm – a free educational dairy event sponsored by MPSI (See Chapter 3, p. 66 for additional details)

Channel – the method by which a message is delivered from the source to the consumer (O'Keefe, Boyd, & Brown, 1998)

Center for Food Integrity – an organization whose mission is "to build consumer trust and confidence in today's food system by sharing accurate, balanced information, correcting misinformation, modeling best practices and engaging stakeholders to address issues that are important to consumers" (Center for Food Integrity, 2011)

Dairy Farm – an operation run on an area of land that is concerned with raising dairy cattle and the production of milk

Dairy Production – the act of operating a dairy farm

Dairy Products – food items such as fluid milk, cheese, ice cream, yogurt, real butter, sour cream, cottage cheese, and whipped cream that are made from the fluid milk of dairy cows

Extrinsic motivation – behaviors that are performed for some other reward, such as money, praise, or grades, besides the satisfaction of participating in the activity (Deci, 1992)

Farm – an operation run on an area of land devoted to raising domestic livestock

Fuel Up to Play 60 – a program sponsored by the National Dairy Council and the National Football League (NFL) to encourage youth to eat healthily and partake in more physical activities (National Football League, 2011)

Interest – the state of having one's attention drawn to something; the root of motivation (Collins & O'Brien, 2003)

Intrinsic motivation – behaviors that are freely conducted for the personal reward of enjoying the activity itself (Deci, 1975)

Limited dairy consumption – consistently consuming significantly less than the recommended three servings of dairy daily (M. Plummer, personal communication, April 12, 2010; U.S. Department of Agriculture [USDA], 2011)

Motivation – a powerful force that drives learning (Collins & O'Brien, 2003); actively engaged in the learning process (Stipek, 1996)

Negative view – having an unfavorable opinion of the dairy industry or judging it in an unfavorable manner

Place-based learning – learning that occurs when one is "immerse[d] in local heritage, culture, ecology, landscapes, opportunities, and experiences as a foundation for the study of language arts, mathematics, social studies, science, and other subjects" (The Place-based Education Evaluation Collaborative, 2010).

Positive view – having a favorable opinion of the dairy industry or judging it in a favorable manner

Primary grocery buyer – the individual in a household who makes a majority of the decisions in regards to what food is purchased for the family to consume

Source – an individual or organization that develops a message to be transmitted to the receiver through a channel (O'Keefe et al., 1998)

Value – what is important to an individual (i.e., achievement, tradition, power) (Schwartz, 1992); what contributes to action if it is relevant in a context and acted upon (Schwartz, 1992, 1996)

1.8. Limitations of the Study

It was anticipated that the study's results would reveal significant mean differences in adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to attend the Brunch on the Farm and their beliefs of the dairy industry (e.g., animal welfare, environmental care, and food safety practices) between the group that attended and the group that did not attend the free educational dairy event, thus implying a relationship between the independent and dependent

variables and allowing a prediction to be made about adult consumers who would and would not attend a free educational dairy event. However, it was possible that significant mean differences between the variables would not be revealed due to the following issues that may arise throughout the study.

The location of the study was very specific; therefore, it may not be representative of other areas in Indiana or the United States. However, to ensure that the results would be generalizable to the target population rather than to the sample alone, a simple random sample of the study population was chosen. Furthermore, procedures were taken to ensure that those who responded to the study were not different than those who did respond.

A second limitation of the study was that some of the potential respondents may have been too busy to participate in the study. In addition, some potential respondents may have chosen to not answer the questionnaire because it was associated with dairy farming. On the other hand, some respondents may have chosen to answer the questionnaire because it was associated with dairy farming. Moreover, some respondents may have chosen to participate in the study because they knew the owners of the dairy farm where the Brunch on the Farm was held.

The letter that was sent to announce the study to potential respondents stated that they were being contacted for the study because they had been invited via postcard invitation to attend the Brunch on the Farm. However, some potential respondents may not have completed the questionnaire due to not realizing that they had been invited to the Brunch on the Farm causing them to believe that they should not be included in the study. One reason for not realizing that they were invited may include, but was not

limited to, thinking that the postcard invitation was junk mail and throwing it away. To help prevent this error from occurring, the questionnaire instructed potential respondents to complete it even if they did not recall being invited to the Brunch on the Farm.

Fourth, it was possible that someone other than the primary grocery buyer of the household completed the questionnaire for those who did participate in the study which was a data reliability threat. Although instructions on the front of the questionnaire stated that only the primary grocery buyer for the household should complete it, there was no way to control for it as they were completed in the home without an overseer.

Lastly, an item assessing the study participant's level of education was intended to be a part of the instrument that was developed to collect data to answer the research questions. However, during printing of the instrument two of the levels of education responses were removed. Therefore, this item was omitted from data analysis.

CHAPTER 2. REVIEW OF LITERATURE

2.1. Purpose of the Study

The purpose of this study was to explain and predict consumers' participation in a place-based learning experience on a dairy farm based on consumers' interest motivation to participate in a free educational dairy event, adult consumers' beliefs of the dairy industry, the channels of information that adult consumers use to inform their food choices, and which sources of food information they trust.

2.2. Research Questions for the Study

The research questions for this study included the following:

1. What are the consumer information channel preferences of participants and nonparticipants of the Brunch on the Farm when making food purchasing decisions, to what degree do they trust food information sources, and how much dairy do their households consume (i.e., fluid milk and dairy product consumption)?

2. Were there significant differences between participants and nonparticipants of the Brunch on the Farm based on the following variables: 1) adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and 2) their beliefs (i.e., animal welfare, environmental care, and food safety practices) of the dairy industry?

3. What were the relationships between adult consumers' participation in the Brunch on the Farm and their motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

4. To what extent could participation in a free educational dairy event be predicted based on adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

2.3. Introduction

All industries, including agricultural industries, educate consumers about their products and production practices for a variety of reasons, such as to help build consumer

knowledge and confidence in its products (Indiana Beef Council, 2011; Indiana Pork, 2010; MPSI, 2010b, United Soybean Board, 2011). Many agricultural industry-supported organizations, especially those of the food industry, educate consumers with the overall intent to increase the sale and consumption of their products. One such agricultural industry-supported organization is MPSI, which hosts an annual free educational dairy event, Brunch on the Farm, as one venue to educate consumers about food production and animal care, food processing and safety, and environmental stewardship. Although Brunch on the Farm has been conducted several times based on feedback from participants, no research has been conducted specifically on this event to determine if participants' motives to attend a farm-based educational event and their beliefs of dairy production were different from their neighbors who did not attend the event. As such, self-determination theory (Deci & Ryan, 1992) was chosen to identify consumers' motivations that inform why they would be interested in learning more about dairy foods and how milk is produced. Moreover, basic human values theory (Schwartz, 1992, 2005) was chosen to identify consumers' beliefs of the dairy industry because people are more likely to invest time, energy, and resources into something they view favorably.

2.4. Conceptual Framework

The conceptual framework of this study was developed based on the key constructs of the self-determination theory in terms of consumer motivations to attend a free educational dairy event (i.e., Brunch on the Farm) and the basic human values theory

which considered consumer beliefs of the dairy industry. The dependent variable for the study was an adult consumer's attendance to the 2010 Brunch on the Farm hosted by MPSI. The independent variables for the study were consumer motivations to attend the Brunch on the Farm and consumer beliefs of the dairy industry.

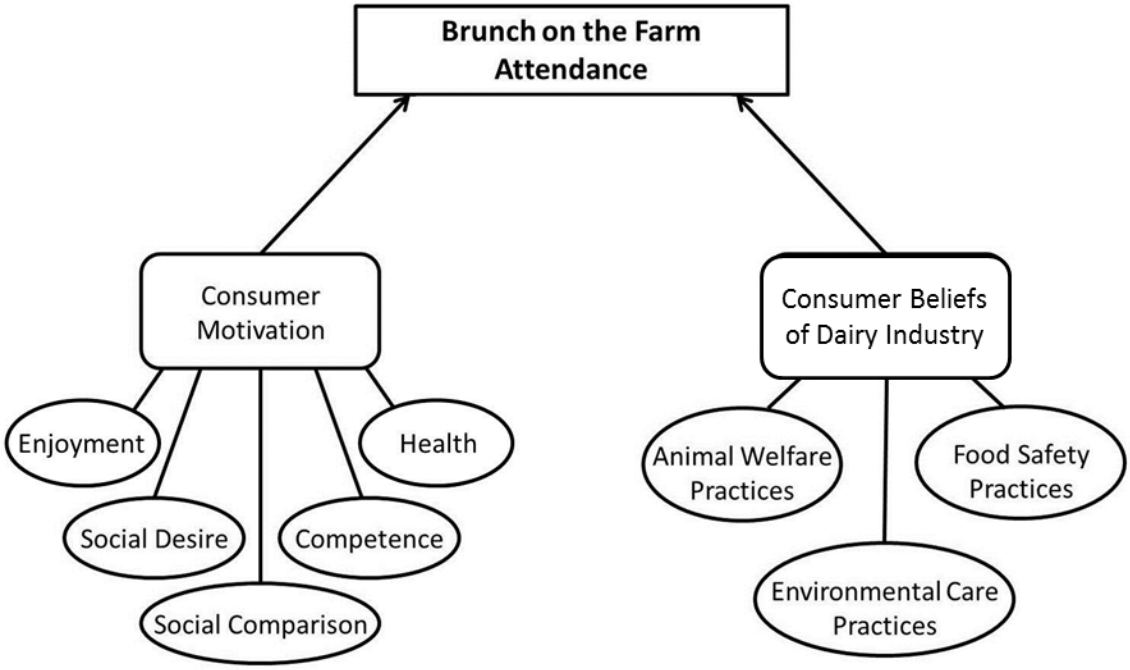

Figure 2.1. Conceptual diagram of the study's domains and variables.

2.4.1. Brunch on the Farm

The Brunch on the Farm, which the study participants may or may not have attended, was designed as an educational farm tour thus allowing it to be an agritourism activity. According to the Dairy Business Innovation Center (2006), "Agritourism is the experience of visiting a farm or other agricultural enterprise for education, recreation,

entertainment or for engaging in activities of the farm or enterprise" (p. 1). The Brunch on the Farm satisfied these characteristics because consumers were invited to visit a local dairy farm to learn about modern dairy production practices and dairy nutrition (e.g., education), listen to a local radio station play music on-site (e.g., entertainment), and participate in activities that challenged their thinking regarding dairy production and overall human nutrition (M. Plummer, personal communication, April 12, 2010). In addition, agritourism opportunities may also incorporate place-based learning experiences as did the Brunch on the Farm. The Place-based Education Evaluation Collaborative states that place-based learning occurs when one is "immerse[d] in local heritage, culture, ecology, landscapes, opportunities, and experiences as a foundation for the study of language arts, mathematics, social studies, science, and other subjects" (2010). The Brunch on the Farm fulfilled this set of criteria in that consumers visited a local dairy farm where they were surrounded by the everyday happenings and landscape of a working dairy operation. Furthermore, participants were given the opportunity to ask questions and experience dairy through multiple senses: sound, sight, taste, touch, and smell. Offering place-based learning activities help meet the goals of the Brunch on the Farm by providing engaging, multi-sensory activities through which to educate consumers on modern dairy production practices and dairy nutrition.

2.4.2. Consumer Motivations

The domain of consumer motivations to attend a free educational dairy event (i.e., Brunch on the Farm) consisted of five variables: 1) enjoyment, 2) social desire, 3) social

comparison, 4) competence, and 5) health. These five variables were adapted from the Motives for Physical Activity Measure-Revised (MPAM-R) scale of the self-determination theory (See Table 2.1). While the MPAM-R scale was intended to measure an individual's motivations for enrolling in physical activities (University of Rochester, 2008), the researcher found it to be easily modified to measure an individual's motivations for attending an educational dairy event because of the health-oriented information that is used to educate consumers. Therefore, the five variables were adapted to fit the educational dairy event and are explained in the following paragraphs.

Table 2.1. Original Variables from the Motives for Physical Activity Measure-Revised (MPAM-R) Questionnaire and the Current Variables for this Study Along with Their Definitions (University of Rochester, 2008)

Original Variable	Current Variable	Current Definition
Enjoyment	Enjoyment	An individual attends an educational dairy event because it is fun, interesting, and enjoyable.
Social	Social Desire	An individual attends an educational dairy event out of the desire to be with friends and family as well as to meet new people.
Appearance	Social Comparison	An individual attends an educational dairy event out of the desire to be looked upon favorably by others, including their peers.
Competence/Challenge	Competence	An individual attends an educational dairy event out of the desire to acquire new knowledge and meet a challenge.
Fitness	Health	An individual attends an educational dairy event out of the desire to be nutritionally healthy.

The first variable within the scale was originally enjoyment and it remained enjoyment for the current study because research has demonstrated the importance of participating in interesting and enjoyable activities simply for the fun of it (Arai, Griffin, Miatello, & Greig; 2008; Baker & Palmer, 2006; Kim & Heo, 2009; Patterson, 2000; Siegenthaler & O'Dell, 2003). Doing so provides significant benefits to individuals' personal and social lives (Kim & Heo, 2009). Experiencing the feeling of enjoyment is

important to consumers because it may allow them to relieve stress, increase their self-confidence, and even improve their self-esteem (Arai et al., 2008; Patterson, 2000; Siegenthaler & O'Dell, 2003). Therefore, it was assumed that if an individual found farm tours, non-formal educational opportunities, agriculture, or the dairy industry to be fun, interesting, or enjoyable, and recognized the potential of then participating in the event, then they would be more likely to attend the Brunch on the Farm.

The next variable within the scale was originally social; however, for the current study it was modified it to be social desire. Social desire was used because it has been found that an improved self-concept, deeper life worth, and significant friendships can be developed through participating socially with friends, family, and new people (Barletta & Loy, 2006; Specht, King, Brown, & Foris, 2002). Furthermore, consumers' social networks with those who are from different fields of expertise and communities can be extended through participation in events such as the Brunch on the Farm (Bandura, 1986; Brollier, Shepherd, & Markley, 1994). Therefore, social desire was considered a relevant variable because consumers who are interested in meeting new people, spending time with those they already know, or building their social network would be inclined to attend the Brunch on the Farm.

The third variable within the original scale was appearance; however, it was modified to be social comparison. Social comparison was used because individuals have a natural desire to socially compare themselves with others whether or not they are already acquainted (Miller & Prentice, 1996). This desire is driven by need for self-knowledge which helps to direct future behaviors and decisions and the most common way to obtain self-knowledge is to self-other or socially compare (Festinger, 1954; Miller

& Prentice, 1996; Mussweiler, 2003b, 2003a). Therefore, it was assumed that consumers who possess a stronger need for social comparison would be more likely to attend the Brunch on the Farm.

The fourth variable within the original scale was competence or challenge; however, it was modified to only be competence. Competence was chosen because it has been found that individuals' behaviors are driven by the need to have an effect on their interactions with the environment (Woodworth, 1918, 1958; Deci, 1975). White (1959) added that competence is the result of exploring, learning, and adapting. In the current study, the environments for which the consumers would have an effect were their knowledge of the dairy industry practices or agriculture and their knowledge of dairy nutrition. Gaining this knowledge would help them to better meet the challenge of determining which food products they should purchase. Overcoming the food purchasing challenge allows consumers to experience the feeling of competence and satisfaction (White, 1959). Furthermore, in 1908, McDougall suggested that within every individual is a natural tendency of curiosity. Thus, it was proposed that every individual experienced at least some degree of curiosity about the Brunch on the Farm when they received their postcard invitation to the event. Whether or not consumers acted upon the curiosity and need for competence was determined by the current study.

The last variable within this scale was originally fitness; however, it was modified to be health. Health was chosen because personal health impacts each person's daily life and it is an area in which most consumers have at least some concern (Moorman & Matulich, 1993). While minimal research has been conducted exploring consumer health behaviors (Cole & Gaeth, 1990; Friedman & Churchill, 1987; Russo, Staelin, Nolan,

Russell, & Metcalf, 1986), great focus has been placed on areas such as consumer beliefs regarding health (Oliver & Berger, 1979; Smith & Scammon, 1986). Therefore, one assumption of the study was that those with greater concern for their health, especially regarding dairy food safety or environmental issues caused by dairy farms, would be more likely to attend the Brunch on the Farm than those with fewer health concerns in those areas. In this situation, attending the Brunch on the Farm would have been to obtain information regarding health impacts of the dairy industry. Another assumption of the study was that any consumer greatly concerned about their health would attend the Brunch on the Farm for the same reason of obtaining information regarding health impacts of the dairy industry.

2.4.3. Consumer Beliefs of the Dairy Industry

The domain of consumer beliefs of the dairy industry contained three variables: (1) animal welfare practices, (2) environmental care practices, and (3) food safety practices. The three variables within the domain of consumer beliefs of the dairy industry were determined based upon results of "Food from Our Changing World: What Do You Think?" questionnaire developed and used by the Center for Urban Affairs and Community Services at North Carolina State University in 2001 (Wimberley et al., 2003) along with findings from the focus group interviews conducted by The Integer Group (personal communication, December 19, 2009). Furthermore, additional studies found these topics to be of greatest importance to consumers concerning the dairy industry or agriculture as a whole (Food Systems Insider, 2010; Truitt, 2010; Tucker et al., 2006).

More specifically, the first variable, beliefs of animal welfare practices, was chosen because consumers are becoming more aware of farm animal welfare issues due to animal advocacy groups (i.e., Humane Society of the United States (HSUS), Farm Sanctuary, and People for the Ethical Treatment of Animals (PETA)) (PETA, 2007; Prickett, Bailey Norwood, & Lusk, n.d.; Sarasohn, 2006). Furthermore, Charlie Arnot, CEO of the Center for Food Integrity, reported that good animal welfare practices were of importance to Indiana consumers, in particular (Truitt, 2010). Additional studies also stated that consumers want to know that farm animals are receiving appropriate care (Food Systems Insider, 2010; Mayfield, Bennett, Tranter, & Wooldridge, 2007; Whittmore, 1995). Animal welfare is important to consumers because most of them, including those that consume animal products, do not want the animals to suffer (Prickett et al., n.d.). This was reiterated by another study which reported that approximately one-third of Americans hold the belief that animals have a soul (Bailey Norwood, 2010). Animal welfare is so important to consumers that the same study found that over half of Americans already have or will vote for laws that protect animal rights.

The next variable, beliefs of environmental care practices, was chosen because a majority of consumers feel that all farmers are responsible for protecting the land, air, and water in which everyone lives (Wimberley et al., 2003). Environmental care practices are important to consumers because the condition of the environment in which they and their families live affects their own health (Dreher, 1998). Americans want their families to be protected, and a polluted environment may prevent that expectation from being realized (Dreher, 1998; Stranahan, 1990; Winner, 1996). Thus, three potential effects of viewing the dairy industry as having poor environmental care practices were developed because

they can inform adult consumers' attendance to the Brunch on the Farm. First, a consumer may have chosen to not attend the event as they do not want to be seen by others as one to support such practices. Second, a consumer may have chosen to attend the event to personally learn more about such practices. Third, a consumer may have chosen to attend the event to express their opinion about the dairy industry's current environmental care practices. In any case, understanding these consumer beliefs should help indicate whether or not an individual would attend the Brunch on the Farm.

The last variable, beliefs of food safety practices, was chosen because over 50% of Americans are concerned that their food is not safe due to farming practices (Wimberley et al., 2003). It was suggested that much of this concern is due to a lack of communication between consumers, the industry, scientists, the media, and the government (Sobal & Maurer, 1995); however, regardless of the disconnect, consumer beliefs of dairy product food safety need to be further explored. Charlie Arnot, CEO of the Center for Integrity, stated that consumers feel that farmers should be held responsible for ensuring that the products leaving their hands is safe (Truitt, 2010). Therefore, it can be said that consumers' beliefs of dairy product food safety are an important issue because consumer confidence in the food supply is critical to the well-being of the food industry and dairy farming (Stenholm & Waggoner, 1992). Because it is evident that consumers are very concerned with food safety, it was assumed that any consumer would be motivated to attend the Brunch on the Farm to learn more about the dairy industry's food safety practices; however, the present study determined the accuracy of this assumption.

Once compiled, the varying degrees to which a consumer "agreed" or "disagreed" with the animal welfare, environmental care, and food safety practices of the dairy industry permitted the researcher to make an assumption of how favorably, unfavorably, or neutrally a consumer viewed the dairy industry as a whole. The estimated degree to which a consumer favorably, unfavorably, or neutrally viewed the dairy industry was assumed to be an indicator of the probability that an individual would attend the Brunch on the Farm.

2.5. Influential Factors Not Included in the Conceptual Framework

Consumers decide to attend educational farm events (i.e., Brunch on the Farm) based on various factors which are not included in the conceptual framework. For example, the literature supports personal factors such as education and income. Further, the researcher was interested in the information channels consumers use when making food purchasing decisions, how trustworthy they feel these information sources to be, and how much dairy the study participants consumed.

Consumer information channel preferences when informing food purchasing decisions was a factor included in the study because the researcher felt that it may provide insightful information regarding consumer attendance to an educational dairy event. It was assumed that if a consumer did or did not typically use educational events as a source for informing their food purchasing decisions, then the likelihood of them attending the Brunch on the Farm would increase or decrease, respectively. However, these factors were assumed to be secondary and descriptive variables regarding

consumers' participation to attend the Brunch on the Farm, rather than the primary variables of consumers' motivation and dairy production beliefs, which were assumed to explain their attendance to the Brunch on the Farm event. Moreover, the researcher considered the channels and sources of information to be valuable in terms dairy industry-supported organizations being able to better reach its target audience for future education.

2.6. Theoretical Framework

Self-determination theory developed by Deci and Ryan guided the interest motivation domain of the study (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000) and consists of five individual variables: fitness, social, competence/challenge, appearance, and enjoyment (University of Rochester, 2008), most of which were slightly modified by the researcher. This theory was chosen because each of the individual variables is critical when one determines in which events or activities he or she will invest their time. Furthermore, the domain of consumer beliefs of the dairy industry was guided by the basic human values theory developed by Schwartz (1992, 2005). This theory was chosen because the researcher assumed that if someone favorably views an ideal, then they are more likely to invest in it. Lastly, the consumer information source preferences when informing food purchasing decisions was assessed as demographic data; therefore, it was not guided by theory.

2.6.1. Self-Determination Theory

The first record of an intrinsic motivation theory occurred in 1918 (Woodworth, 1918). In 1975, the self-determination theory was first used, but in later years Dr. Edward Deci, Dr. Richard Ryan, and Dr. J. P. Connell revised the theory with its latest developments occurring in 2000 (Deci & Ryan, 1985; Ryan & Connell, 1989; Ryan, Connell, & Deci, 1985; Ryan & Deci, 2000). The self-determination theory assumes that individuals are active and that they naturally strive for self-growth, mastery of challenges, and integration of new experiences (Deci & Ryan, 1985; Ryan & Deci, 2000). However, while it is natural for individuals to strive for these ideals, they can be encouraged or depressed by the social context in which one exists (Deci & Ryan, 1991). Thus, the ideals toward which an individual strives are determined by the intrinsic and extrinsic motivations that one experiences (Deci & Ryan, 1991). The self-determination theory balances these dynamics to indicate the motivations of an individual's behaviors.

Although the self-determination theory emphasizes the significance of intrinsic motivation in guiding human behavior, it also encompasses extrinsic motivation. Both intrinsic and extrinsic motivations are closely related to personal or individual interest and situational interest (Renninger, Hidi, & Krapp, 1992). Situational interest then includes social comparison and social motivation (Renninger et al., 1992). Moreover, social motivation includes the "coaction effect" (i.e., performance motivated as a result of others performing the same action) and the "audience effect" (i.e., acting in a specific manner due the presence of observers) (Triplett, 1898; Zajonc, 1965).

Furthermore, numerous scales have been identified for the self-determination theory, thus it was possible to select one that was closely related to this study. Each scale assesses motivations for a given activity, and the Motives for Physical Activity Measure-Revised (MPAM-R) scale, introduced and validated by Ryan, Lepes, Rubio, & Sheldon (1997), was chosen and adapted for this study. The original scale measured the following five motives: fitness (i.e., desire to be physically healthy), appearance (i.e., desire to be physically attractive), competence/challenge (i.e., desire to improve, meet a challenge, or acquire new skills), social (i.e., desire to be with friends and meet new people), and enjoyment (i.e., desire to participate because it is fun, interesting, stimulating, and enjoyable) (Frederick & Ryan, 1993; Ryan et al., 1997; University of Rochester, 1998). The adapted scale for the study measured the following five motives: health, social comparison, competence, social desire, and enjoyment. The self-determination theory was selected because of the relevance of its scales as well as the depth and breadth of its motives to determine why consumers would or would not participate in a given activity, such as a free educational dairy event.

Self-determination theory has mainly been used in the areas of education, psychotherapy, work, and sports (Deci & Ryan, 1985). The two areas in closest relation to the current study are education and sports. In the area of education, a bulk of the initial research focused on school-aged children and in a formal classroom learning environment (DeCharms, 1976; Deci, Nezlek, & Sheinman, 1981; Grolnick & Ryan, 1989). The focus of such studies was respectively the following: children's views of the classroom in effectively helping them to self-determine rather than be controlled;

determining children's desire for challenge, curiosity, and competence; and the effect of rewards (e.g., grades) on children's intrinsic motivation to self-determine.

As the theory became more widely accepted, its application became broader in the area of education. Recent self-determination research in the area of education has focused on two subjects: physical education and academic motivation. Significant studies have focused its application on physical education to explore how it can inform the field as well as the motivational strategies of physical education teachers (Koka & Hagger, 2010; Ntoumanis & Standage, 2008; Sun & Chen, 2010). Additional studies were found that have used the self-determination theory to help understand motives for educational outcomes and academic success; however, these studies remained focused on children and adolescents (Guay, Ratelle, Roy, & Litalien, 2010; Vansteenkiste, Smeets, Soenens, Matos, & Deci, 2010). As previously noted, a majority of self-determination research does not focus on adults, but a slight shift has been made. For example, one study used the theory to understand the motivations behind physical education teachers choosing their field (Spittle, Jackson, & Casey, 2009). These studies provided a glimpse at the current trends in self-determination research. However, the present study helped expand the body of knowledge by applying the social-determination theory in a non-formal, place-based, educational setting known as the Brunch on the Farm, which is similar to a traditional farm tour. Thus, it did not occur in a classroom environment nor was the focus of the study on children. Rather, the study focused on adults, whose learning is based on five assumptions: 1) Experiencing needs and interests motivate adults to learn; 2) Learning within adults is centered on life; 3) Adult learning's richest

source is experience; 4) Self-direction guides adult learning; and 5) As adults grow older their differences increase (Knowles, 1998).

Furthermore, a vast amount of self-determination research has focused on sports. Early and recent studies using this theory in the area of sports focused on why people begin sports engagement and why they remain involved in sports (Wankel & Kreisel, 1982; Wankel & Pabich, 1913; Wilson, Rodgers, & Blanchard, 2003; Zahariadis, Tsorbatzoudis, & Alexandris, 2006). Interestingly, the findings only differ slightly today compared to 30 years ago. For example, it remains accurate that individuals participate in sports due to skill improvement, personal accomplishment, excitement, competence, and challenge (Alderman & Wood, 1976; Spray, Wang, Biddle, & Chatzisarantis, 2006; Wankel & Kreisel, 1982; Wankel & Pabich, 1982; Wilson, Mack, & Grattan, 2008).

The current study attempted to build the body of knowledge by applying the self-determination theory to understanding the motivations of adult consumers to attend an educational dairy event. To do so, an adapted version of the MPAM-R self-determination theory scale was used which also helped other researchers by discovering if the MPAM-R scale, when slightly modified, could successfully be used in alternate contexts.

2.6.2. Theory of Basic Human Values

While value theories were first conceived in the 1950's and 1960's (Kohn, 1969; Parsons, 1951), the basic human values theory recently made its debut (Schwartz, 1992,

2005). The basic human values theory describes the characteristics of values that all individuals share and their interaction with one another (Schwartz, 1996; Schwartz, Sagiv, & Boehnke, 2000). The theory highlights that although all people share these basic human values, they still differ significantly due to the varying degrees to which they hold each value. According to the basic human value theory, all values are synonymous to beliefs, refer to desirable goals, transform actions into situations, are the standards by which actions are determined and judged, and are prioritized (Allport, 1961; Feather, 1995; Inglehart, 1997; Kluckhohn, 1951; Kohn, 1969; Morris, 1956; Rokeach, 1973; Schwartz, 1992, 2005; Schwartz & Bilsky, 1987). Moreover, the context of specific values helps humans to determine upon which values they will act (Schwartz 1992, 1996).

Although all values have similar characteristics, they are all very different because each one exemplifies a different goal. Therefore, the basic human values theory identifies 10 possible value types based on their goal-orientation (See Table 2.2). Bardi and Schwartz (2003) reiterated these 10 value types in their study.

Table 2.2. Possible Value Types as Described by the Basic Human Values Theory

Value Type	Description
Self-determination	Choosing to do something because of one's won intrinsic and extrinsic motivations (Ryan et al., 1985)
Stimulation	Comparable to challenge as defined by Deci (1975)
Hedonism	Comparable to enjoyment as defined by the self-determination theory (University of Rochester, 2008)
Achievement	Comparable to competence as defined by the self-determination theory (Ryan et al., 1985)
Power	Refers to having prestige or dominance over others (Schwartz, 1996)
Security	Refers to experiencing safety and stability in society, relationships, and self (Schwartz, 1996)
Conformity	Refers to refraining from action that would disrupt security (Schwartz, 1996)
Tradition	Includes respect and abidance of cultural or religious norms (Schwartz, 1996)
Benevolence	Refers to improving the lives of those individuals who impact one's own life (Schwartz, 1996)
Universalism	Refers to appreciating or at least tolerating all individuals (Schwartz, 1996)

As previously mentioned, one's actions can be predicted by his or her values when being informed by the basic human values theory. In order for values to translate into behaviors they must first be activated even if the value was not consciously thought of by the individual (Verplanken & Holland, 2002). Similarly, those values that are of higher priority tend to be translated into action more often than those of lower priority (Bardi, 2000; Schwartz, 1996; Verplanken & Holland, 2002). However, it is not likely that value, even when activated, will be translated into an action unless the individual feels that they can successfully complete it (Feather, 1995). If an individual's value has high priority, it is activated, and he or she feel confident in completing the action that it suggests, then it is probable that person will plan for the behavior to occur (Gollwitzer, 1996).

The basic human values theory informed the study in terms of consumers' beliefs of the dairy industry's animal welfare, environmental care, and food safety practices. Furthermore, the theory describes how various values may interact with one another and how values can be translated into actions. Therefore, it guided the researcher in determining that consumers' beliefs of the dairy industry, which were informed by their own values, could ultimately be transformed in behaviors (Schwartz et al., 2000). The behavior of concern to the researcher was whether or not consumers attended the 2010 Brunch on the Farm. Minimal research was able to be found on the use of the basic human values theory and the present study added to the general body of knowledge concerning its use and that constructs in which it may be applied.

2.7. Review of Literature

2.7.1. Motivation to Attend Educational Dairy Farm Events

Although no studies were found discussing consumer motivations to attend educational dairy events, consumer motivations for attending agritourist opportunities, which involve place-based education, were reviewed. Oh and Shih (2002, p. 577) defined agritourism as "a nature-based tourism that has been promoted as an environmentally safe way for rural communities to generate income from natural resources" and as "a business conducted by a farmer for the enjoyment and education of the public to promote the products of the farm and thereby generate additional farm income." Although agricultural interest groups do not conduct farm-based educational events as a business, studies on agritourism were reviewed because of the similarity in purpose for education, enjoyment, and promotion of products. Although substantial research has been conducted on the economic benefits of agritourism for farms and the multitude of agritourist opportunities that exist (Barbieri & Tew, 2009; Bernardo, Valentin, & Leatherman, 2004; Caballe, 1999; Clarke, 1999; Hsu, 2005; Ilbery, Bowler, Clark, Crockett, & Shaw, 1998; Jensen, Lindborg, English, & Menard, 2006; Leeds & Barrett, 2004; Lopez & Larkin, 2004), minimal research has been conducted on consumer motivations to participate in agritourism (Oh & Shih, 2002; Rilla, 2007). Another study suggested that this lack of motivational research may be because there is not a common definition for agritourism, which has prohibited a theoretical framework from being developed on the subject (Oppermann, 1996; Phillip, Hunter, & Blackstock, 2010).

Nonetheless, the agritourism industry could be more successful if it knew what drove people to their business (Srikatanyoo, Natthawut, Campiranon, & Kom, 2010; The Food and Fertilizer Technology Center, 2007). The lack of information regarding agritourist profiles further hinders the success of agritourism (Hsu, 2005).

One study found that the average agritourist has some college education, and average family income of $50,000, and is in their early 40's (Barry & Hellerstein, 2004). In comparison, another study found that the average agritourist has more education and a greater household income, is younger, and has more children than those that do not participate in agritourism (Carpio, Wohlgenant, & Boonsaeng, 2006). Yet another study found that senior citizens and young families are considered to be the average agritourist (Barbieri & Tew, 2009). In addition to demographic information, such as that listed above, few studies have researched consumer motivations for participating in agritourism and none reviewed by the researcher did so with a theoretical framework. Multiple studies have agreed that experiencing agriculture, participating in adventure and the quality of life, and relaxing were all agritourist motivations (Caballe, 1999; Carpio et al., 2006; Ou & Shih, 2002; Pan & Ryan, 2007; Ramsey & Schaumleffel, 2006; 26; Randall & Gustke, 2005). Miller (2006) found that people participate in agritourism for leisure enjoyment. A California study found that buying fresh or homemade products, buying from a farmer, enjoying nature, and relaxing were motivations to participate in agritourism (Jolly & Reynolds, 2005). Moreover, a national study found enjoying rural scenery, visiting family and friends, and learning about food production to be the greatest agritourist motivations (Barry & Hellerstein, 2004).

By participating in farm tours, consumers are able to connect what they hear and see from others to what actually occurs, allowing them to make more informed decisions (Harper, 2004; Watson, Dawes, Mathieson, & Shanableh, 1998). However, more research needs to be conducted regarding consumer motivations to participate in agritourism or an educational farm event, and the relationships of beliefs as informed by theory (The Food and Fertilizer Technology Center, 2007; Opperman, 1996; Phillip et al., 2010; Srikatanyoo et al., 2010).

2.7.2. Dairy Industry Beliefs

For this study, the researcher was particularly interested in consumers' beliefs of the dairy industry's production practices, focusing on animal welfare, environmental care, and food safety. A recent study conducted by a collaboration of Indiana commodity organizations identified consumers' greatest concerns, which were based on agricultural perceptions. Three focus groups were conducted, and the majority of the participating mothers shared that they were most concerned about food safety, animal care, and environmental practices as they thought about the agricultural industry (The Integer Group, personal communication, December 19, 2009). It should be noted that these focus groups consisted of three categories of mothers: those who attended the 2009 Indiana State Fair, those from the area surrounding Fort Wayne and lived in a more rural community, and those that preferred organic products and resided in the Indianapolis area. Furthermore, the study was conducted on consumers' overall perceptions of agriculture and perceived food risks as has other substantial research (Ellis & Tucker,

2009; The Integer Group, personal communication, December 19, 2009). However, the researcher was unable to locate significant studies that focused primarily on the dairy industry or dairy products as a whole as did the present study.

2.7.2.1. Environmental Care

Jones et al. (n.d.) conducted the most prominent study found by the researcher on consumers' beliefs of agriculture and the environment regarding four types of farms. The study assessed neighbor complaints about different farm types (i.e., dairy, swine, poultry, and beef), and it was found that odor contributed to over half of the complaints and flies were responsible for about one-fifth of the complaints. Similar findings were reported by Safley (1994) who found that the primary complaint from farm neighbors was odor. Jones et al. (n.d.) also suggested that the distance of residence to a farm was positively correlated to the likelihood of having a complaint about that farm type with those living nearer to the farm having more complaints than those living further away. This was reiterated by Safley (1994), who suggested that the closer neighbors lived to a farm, the more likely they would complain about odor and flies. Water and soil contamination were of greater complaints for dairy farms than any other farm type. A study of Scottish consumers also found pesticide use in animal farming to be of significant concern (Whittmore, 1995). Another study found that knowing how farmers protect the water and how farming practices are sustainable were of greatest importance (Food Systems Insider, 2010). Overall, the greatest complaints for dairy farms were bacterial contamination followed by water- and soil-related complaints as well as pesticide residues in the end

product (Jones et al., n.d.). The least amount of complaints for dairy farms was noise issues (Jones et al., n.d.). While Jones et al. (n.d.) found significant results in terms of consumers' beliefs of dairy production practices in terms of the environment, they did not focus on consumer beliefs of animal welfare. Moreover, Jones et al. (n.d.) only looked at negative beliefs and did not determine if consumers had positive beliefs about the industry. Abdalla and Lawton (2006) also suggested in their study that farmers of large animal operations were more likely to be viewed negatively by consumers than crop farmers or animal farmers of smaller scale regarding the environment. Water contamination was also found to be a concern in multiple studies (Tucker et al., 2006; Goss & Barry, 1995; Hamlett & Epp, 1994; Molnar & Duffy, 1985).

2.7.2.2. Animal Welfare

Few studies were located by the researcher regarding consumer beliefs of animal welfare practices on dairy farms, and most studies referenced swine, laying hens, broilers, and veal cattle (Carruthers, 1991; Center for Food Economics Research, 2001). Additionally, instead of consumer beliefs of animal welfare practices being the focus of research, most of the research studied actual animal care practices in the United States and abroad (Center for Food Economics Research, 2001; Prickett et al., n.d.). Animal welfare on farms is an issue of importance to Indiana consumers as reported by Charlie Arnot, CEO of the Center for Food Integrity, but he also noted that most consumers do not understand good animal welfare practices (Lagerkvist & Hess, 2010; Truitt, 2010). A second study reported that animal welfare was viewed by consumers as a much less

pertinent issue than food safety and the environment (Bailey Norwood, 2010). In general, most Americans do not care if animals experience happiness, but rather they do not want them to suffer (Bailey Norwood, 2010; Center for Food Economics Research, 2001; Prickett et al., n.d.). Regardless of animal welfare's position on the priority list of concerns, consumers believe farmers are responsible for proper animal treatment (Bailey Norwood, 2010; Truitt, 2010). Moreover, a study conducted by the Center for Food Integrity found that consumers consider worker treatment to be less important than animal treatment on farms (Bennett, 2008).

In addition, consumers were concerned about animals' living conditions (Whittmore, 1995). Furthermore, consumers were concerned with hormone use in animals, but it was not clear whether that was due to animal welfare or food safety issues (Jones et al., n.d.; Powell & Leiss, 1997; Whittmore, 1995). In contrast, another study found that farmers were generally viewed positively overall by consumers (Food Systems Insider, 2010). Clearly, consumers vary in their beliefs of agriculture, which warrants further studies need to be conducted across different locations, types of agriculture, and perceptions of concerns.

Similarly, multiple studies have documented that consumers were willing to pay more for food products if it meant that animals would receive better care (Market Directions, 2006; Rauch & Sharp, 2005; Wilson, 2008). However, other studies have revealed that while consumers say they are willing to pay more for increased animal welfare, their actions speak differently when at the grocery store (Center for Food Economics Research, 2001; Lagerkvist & Hess, 2010). Harper and Henson (2001) denote that this inconsistency between words and actions should not be ignored because

many consumers feel they cannot effectively sort through the animal welfare information to make informed purchasing decisions nor do they feel as though they have the power to change animal welfare practices as individuals. While Lagerkvist and Hess (2010) suggested that consumers receive too much information regarding animal welfare, 68% of participants in a study conducted by Demeter Communications agreed or strongly agreed that they wanted to know more about the "ways they [farmers] ensured animal care" (Food Systems Insider, 2010), and this was reiterated by Mayfield et al. (2007) and Harper and Henson (2001).

Although existing studies provided some insight, more research should be conducted on consumer beliefs of industry specific animal welfare in the United States (Center for Food Economics Research, 2001). Therefore, the current study examined consumer beliefs of the dairy industry's animal welfare practices.

2.7.2.3. Food Safety

Although several studies have looked at consumers' beliefs of food safety or food risks, none specifically focused on dairy products. Two particular studies were most instructive. The first study was conducted by Jones et al. (n.d.) who assessed neighbors' perceptions of animal agriculture. Results of this study disclosed that bacterial contamination and pesticide residues in food products were of noteworthy concern to consumers. Similar findings were reported in several other studies with regard to bacterial contamination (Bryan, 1989; Chipman, Kendall, Slater, & Auld, 1996; Food Marketing Institute, 2002; McIntosh, Acuff, Christensen, & Hale, 1994; Sachs, Blair, &

Richter, 1987; Whaley & Doerfert, 2003) and pesticide residues (Stucker & Parhan, 1984; Tucker et al., 2006). More importantly, Jones et al. (n.d.) found that out of the four product types (e.g., dairy, pork, poultry, and beef) studied, dairy was one of the two types that received the most concerns about bacterial contamination in food products. Furthermore, consumers were more concerned about pesticide residues on dairy products than any of the three other product types. Stucker and Parhan (1984) reported similar findings stating that chemical residues in food products from animals were becoming a more prominent concern for consumers, in general.

The second related study evaluated consumer perceptions of food production. Food Systems Insider (2010) found that consumers wanted to learn about the use of chemicals and pesticides during production and the effects that each may have in the end product when they were asked what was most important for them to learn regarding how food is produced. Learning more about medications and antibiotics used during production and the effects that they, too, may have on the food product was important to 10% of the study's consumers (Food Systems Insider, 2010). Consumers overwhelmingly agreed or strongly agreed that they wanted more information about "measures used to produce safe food" when asked what they would "like to know from farmers about food production that you [they] currently do not know?" (Food Systems Insider, 2010). Lastly, 61% of study respondents agreed that "measures they [farmers] take to protect the water" was an area for which they wanted to know more. Protecting water was reiterated in other studies that expressed contamination of drinking water was of high concern (Goss & Barry, 1995; Hamlett & Epp, 1994; Molnar & Duffy, 1985; Tucker et al., 2006). The following is a statement that was made by a consumer to

farmers during the data collection phase of the Food Systems Insider (2010, p. 2) study: "I want to know exactly what chemicals, antibiotics, and fertilizers are used, for how long, why, and what the effects are on humans." Again, this information was pertinent to understanding consumer beliefs of agriculture as a whole, but the Food Systems Insider (2010) study did not investigate consumer beliefs toward the dairy industry specifically as did the present study.

Additional studies found that consumer demographics can significantly influence concerns about food safety. Napier et al. (2004) expected individuals who were raised on or near a farm to have greater trust in food safety because of their assumed familiarity with food production compared to those who were raised further away from a farm. Tomazic, Katz, and Harris (2002) reported similar findings in their study. Consumers' sex, age, and ethnicity may affect their perceptions of food products, as well as agriculture as a whole (Ellis & Tucker, 2009). For example, males were less likely than females to find importance in food safety and they were less likely to be concerned with potential food safety risks (Dosman, Adamowics, & Hrudey, 2001; Grobe, Douthitt, & Zepeda, 1999; Kirk, Greenwood, Cade, & Pearman, 2002; Knight & Warland, 2005; Lin, 1995; Miles, Brennan, Kuznesof, Ness, & Ritson, 2004; Moon & Balasubramanian, 2004; Nayga, 1996; Roseman, Kurzynske, & Tietyen, 2005; Worsfold, 2006). Also, numerous studies found education to be the next best indicator of perceived food safety concerns with those individuals possessing more education having fewer concerns (Aakkula, Peltola, Maijala, & Siikamaki, 2005; Dosman et al., 2001; Knight & Warland, 2005; Nayga, 1996; Rimal, Fletcher, McWatters, Misra, & Deodher, 2001; Tucker et al., 2006; Williams & Hammitt, 2001). Similarly, those households with lower income

levels usually reported greater levels of food safety concern (Dosman et al., 2001; Miles et al., 2004; Nayga, 1996).

Although a great deal is known about the types of individuals who are most likely to be concerned with food safety, few studies have analyzed consumers' specific concerns regarding the dairy industry. Potential food safety concerns for dairy products include veterinary drug residues, food additives, pathogens, environmental toxins, and unconventional agents (Buzby, 2001). Studies should be conducted to inform the dairy industry to better understand consumers' concerns about food safety.

2.7.2.4. Food Purchasing Information

Although not the primary focus of the study, understanding consumers' preferences of sources and channels was considered as important for agricultural communicators to more effectively deliver one's message to its target audience (Israel, 1991; Vergot, Israel, & Mayo, 2005). Mass media is frequently the main channel of agricultural information for consumers, even though this information is commonly communicated with inaccurate statements and assumptions (Dimopoulos & Koulaidis, 2003; Logan et al., 2000; Malone, et al., 2000; Norris & Phillips, 2003; Oshel et al., 2009; Treise & Weigold, 2002; Vestal & Briers, 2000). News reporters often lack a scientific and mathematical background, which may contribute to inaccurately communicated information (Ankney, Heilman, & Kolff, 1996). Mass media has an effect on consumers' daily decisions (Althaus & Tewksbury, 2002; Cassels et al., 2003; Nelkin, 1995), which is significant because consumers' preferred channel of food safety

information tends to be mass media (Borra, Earl, & Hogan, 1998; Fisher & Chen, 1996; McIntosh et al., 1994; Pisano & Woods, 2002, Wargel, 2010). Moreover, consumers who rely heavily on mass media tend to perceive more food risks than those who rely on other sources (Tucker et al., 2006). Wimberley et al. (2003) found that 82% of their study respondents trusted the USDA, 75% trusted the Food and Drug Administration (FDA), 72% trusted the Environmental Protection Agency (EPA), 70% trusted farmers, and 57% trusted university professors for food safety information. The same study found that two-thirds of the respondents mistrusted elected officials, celebrities, and business executives for food safety information. Furthermore, Lobb, Mazzocchi, and Traill (2002) found that consumers who trusted government agencies and authorities more than mass media regarding food safety information also had lower levels of perceived risk about food being unsafe.

Although mass media appears to be the most frequently used channel of food safety information, O'Keefe et al. (1998) found that the topic of interest helps depict consumers' preferences of information sources and channels. Moreover, multiple studies suggest that older consumers turn to "traditional" channels (i.e., television, newspaper) for information more often than young consumers (Howell & Habron, 2004; O'Keefe et al., 1998; Tucker & Napier, 2002; Vergo, Israel, & Mayo, 2005). Understanding consumers' source and channel preferences allows for increased success rates of reaching them with the intended information (Israel & Wilson, 2006). However, the variability of consumers' preferences of food purchasing information sources and channels supports the need for further study on how consumers' make food purchasing decisions.

2.8. Summary

Few studies have documented what consumers think about how dairy products are produced. A multitude of studies have examined consumer perceptions between organically and conventionally produced dairy products as well as agriculture as a whole, but these studies have either not focused on dairy or the dairy industry as one entity (Beus & Dunlap, 1990, 1991; Ellis & Tucker, 2009; Food Systems Insider, 2010; Center for Food Economics Research, 2001; The Integer Group, personal communication, December 19, 2009; Jones et al., n.d.). Moreover, minimal research has been completed to determine if consumers who go to on-farm educational events, such as the Brunch on the Farm, have confidence in the information that they learn during those opportunities or if they are more likely to consider another source to make an informed food purchasing decision (Israel & Wilson, 2006; O'Keefe et al., 1998). Therefore, this study was informed by the self-determination theory and the basic human values theory to investigate motivations and dairy production beliefs. In doing so, this study revealed important information to address the gaps that exist in the current knowledge base which may help dairy industry professionals to develop more effective programs and tools to educate consumers (Jones et al., n.d.).

CHAPTER 3. METHODOLOGY

3.1. Purpose of the Study

The purpose of this study was to explain and predict consumers' participation in a place-based learning experience on a dairy farm based on consumers' interest motivation to participate in a free educational dairy event, adult consumers' beliefs of the dairy industry, the channels of information that adult consumers use to inform their food choices, and which sources of food information they trust.

3.2. Research Questions for the Study

The research questions for this study included the following:

1. What are the consumer information channel preferences of participants and nonparticipants of the Brunch on the Farm when making food purchasing decisions, to what degree do they trust food information sources, and how much dairy do their households consume (i.e., fluid milk and dairy product consumption)?

2. Were there significant differences between participants and nonparticipants of the Brunch on the Farm based on the following variables: 1) adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and 2) their beliefs (i.e., animal welfare, environmental care, and food safety practices) of the dairy industry?

3. What were the relationships between adult consumers' participation in the Brunch on the Farm and their motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

4. To what extent could participation in a free educational dairy event be predicted based on adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

3.3. Research Design

The researcher sought to explain and predict relationships between adult consumers' interest motivation to participate in a free educational dairy event, their

beliefs of the dairy industry, the channels of information that they use to inform their food choices, how trustworthy they feel sources of food purchasing information are, and their decisions to participate in a free educational dairy event. As such the researcher aimed to determine to what extent these independent variables can predict adult consumers' participation in the free educational dairy event. Purdue University's Internal Review Board approved the study on July 8, 2010 (Appendix A., p. 149).

The researcher was informed by the positivist paradigm in that she felt it was possible to address the research questions by strictly implementing quantitative research methods as supported by a conceptual and theoretical framework. Positivist researchers implement research strategies that help to establish internal and external validity permitting the study results to be generalizable to the larger population being studied (Denzin & Lincoln, 2005). Furthermore, an ex post facto method was used for this study because the researcher was not able to select, control, and manipulate the variables needed to study a cause-effect relationship directly (Isaac & Michael, 1995).

> Kerlinger (1964) defined ex post facto research as that research in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. The researcher then studies the independent variables in retrospect for their possible relations to, and effects on, the dependent variable or variables. (p. 360)

The ex-post facto research method provided a means of establishing relationships between events and circumstances by allowing the researcher to compare characteristics associated with an effect (Lord, 1973). These comparisons are made by a researcher who studies a real situation where participants are going about their daily lives without having an intervention forced upon them. After studying the particular situation, the researcher

notes any similarities and differences between the groups and describes what appears to be contributing to the effect occurring in one group versus another (Van Dalen, 1962). In this study, the researcher collected information through the use of a questionnaire from two groups: those who attended the free educational dairy event (i.e., Brunch on the Farm) and those who did not attend the Brunch on the Farm. Both groups consisted of individuals who were invited via a postcard announcement to the event.

While the variables are not able to be controlled for in the ex post facto research method, it still produces beneficial information in determining if relationships exist between specific causes and effects (Isaac & Michael, 1995). Questionnaires were used to collect the data due to the size of the population and the resources available.

3.4. Participants

The participants for this study were randomly selected from 1,201 households that MPSI invited via a postcard announcement to attend the 2010 Brunch on the Farm. MPSI invited households that were within a 40-mile radius of the event's host dairy farm and that had at least one child, age 10 or under, in the family, according to their records. However, not all households within the 40-mile radius were chosen because MPSI placed a cap of 1,201 on the number of invitations. Therefore, households were chosen based on the above criteria with those in closest proximity to the host dairy farm being selected first, until 1,201 households were chosen. The 40-mile radius was chosen by MPSI because of the listenership reach of its radio partner for the Brunch on the Farm advertising (D. Osza, personal communication, January 31, 2011). Families with at least

one child, age 10 or under, were chosen because this demographic criterion has been used for the Child Nutrition and Fitness Initiative (CNFI) and Fuel Up to Play 60 (FUTP60) programs. Families with at least one child age 10 or under was established was also established as a criterion when selecting households to invite to the Brunch on the Farm because this age group is at the highest risk for limited dairy consumption (M. Plummer, personal communication, April 12, 2010). MPSI also focuses on this age range because, in Indiana, agriculture is generally taught in fourth grade classrooms and it seeks to educate youth about dairy production practices (D. Osza, personal communication, January, 14, 2011). While households were actually invited to the Brunch on the Farm, this study analyzed results based on responses from the primary grocery buyers of those households.

There were 565 households randomly selected from the 1,201 households invited to the Brunch on the Farm via postcard invitation by MPSI using simple random sampling. A ±3% margin of error, 95% confidence level, and 50% response distribution were used based on Dillman, Smyth, and Christian's (2009) recommendations. Random sampling was also used instead of a census of the population due to cost-effectiveness.

The sample was chosen only to generalize the results to the target population that it specifically represented, not to different populations. In addition, the findings may be generalizable to those who will be invited to future Brunch on the Farms so long as the event does not differ significantly from what it was in June 2010 and the households are invited based on the same criteria.

For this particular study, all population demographic information was obtained from the U.S. Census Bureau (2010), and the nearest large city to the host dairy farm was

approximately 50 miles away with a population of approximately 781,900 and the nearest medium city was about 30 miles away from the host dairy farm with a population of about 39,100. However, from the households that were invited to the Brunch on the Farm, the largest city included had a population of about 17,800 with 754 of the 1,201 addresses coming from that city. About 99% of this city's population was white, less than .02% was black or African American, and the remaining population was of other or mixed races. The largest industry of the largest city that was included in the population was manufacturing with 24.6% of its population holding jobs in the field. Agriculture, forestry, fishing and hunting, and mining, as one census category, was the smallest industry with only 0.6% of its population holding jobs in that field. The median household income for the largest included city was $30,688, and the average household size was 2.32.

The smallest town included had a population of slightly less than 200 with only 7 of the 1,201 addresses coming from that town. All residents in this town were white, with an average household size of 2.45 and a median household income of $39,250. Its largest industry was manufacturing with 32.3% of its population holding jobs in that field. It had three industries with none of the population holding jobs in those fields, including agriculture, forestry, fishing and hunting, and mining.

Table 3.1. Demographics of the Largest City and Smallest Town of Which Households Were Invited to the 2010 Brunch on the Farm (U.S. Census Bureau, 2010)

	Largest City/Town	Smallest City/Town
Population	17,800	<200
# of Households Invited	754	7
Race Percentage: White	99%	100%
Race Percentage: Black or African American	<.02%	0.0%
Largest Industry	Manufacturing (24.6%)	Manufacturing (32.3%)
Smallest Industry	Agriculture, forestry, fishing & hunting, and mining (0.6%)	Agriculture, forestry, fishing & hunting, and mining (0.0%)
Median Household Income	$30,688	$39,250
Average Household Size	2.32	2.45

The town near which the host dairy farm was located had 151 households and a population of approximately 400 of which more than 99% were white. The remaining population was of two or more races. The average household size in this town was 2.62 and the median household income was $37,841. Manufacturing was its largest industry with 33.9% of the population holding jobs in that field, and none of its population held a job in information. Its second smallest industry was agriculture, forestry, fishing and hunting, and mining with 1.7% of its population holding a job in one of those fields.

Overall, the area of the 40-mile radius surrounding the host dairy farm was not urban because the largest city had a population of approximately 17,800 rather than the minimum of 50,000 to classified as urban (U.S. Census Bureau, 2010). Instead it was considered a micro-politan area as it "embodied a widely shared residential preference for a small town lifestyle – the ideal compromise between large urban and completely rural settings" (USDA, 2006). Its urban influence was rated as a three which meant that it was a micro area adjacent to a large metro area (USDA, 2006). There were 92 counties in the United States rated as a three for urban influence in 2003, which was about 3.0% of the total counties and 1.8% of the United States population (USDA, 2006).

Ultimately, the county where the 2010 Brunch on the Farm was located consisted of small cities and towns in a rural landscape; however, it was not heavily based on agriculture. It was a manufacturing dependent county in that it manufacturing accounted for an annual average of at least 25% of the county's total earnings (USDA, 2006). Furthermore, it was not a county low on education or employment, and similarly, it was not a poverty stricken county (USDA, 2006).

Table 3.2. Demographics of the Town Near Which the Host Dairy Farm Was Located (U.S. Census Bureau)

	Host Dairy Farm Town
Population	~400
Race Percentage: White	>99%
Race Percentage: 2 or more races	<.01%
Largest Industry	Manufacturing (33.9%)
Smallest Industry	Information (0.0%)
Median Household Income	$37,841
Average Household Size	2.62

3.5. Self-selected Intervention

While participants of this study were not randomly assigned to an intervention, they self-selected to experience a naturally occurring educational opportunity. The educational opportunity was the 2010 MPSI Brunch on the Farm hosted by an east-central Indiana conventional dairy farm during the month of June. It was the fifth Brunch on the Farm that MPSI had sponsored since 2008 when the first Brunch on the Farm occurred (M. Plummer, personal communication, April 12, 2010). The Brunch on the Farm event is held during the month of June because June is recognized as Dairy Month in Indiana and across the United States. The public were invited to the Brunch on the Farm via four mechanisms, including postcard announcements, radio advertisements,

social media, and word of mouth. The Brunch on the Farm was free to the public, provided a meal to all participants, and allowed them to participate in a structured tour of the host dairy farm.

When participants arrived at the host dairy farm, they registered with representatives from MPSI. Then, they were able to participate in the following free activities at their leisure: enjoy a meal provided by MPSI; partake in a tour of the host dairy farm; interact with the dairy farm hosts, MPSI staff, a veterinarian, a nutritionist, and/or other participants; view displays of veterinary information and of the Fuel Up to Play 60 program; buy goods from a local FFA chapter bake sale; and learn from other representatives present at the Brunch on the Farm. Structured tours of the host dairy farm began approximately every 30 minutes or as requested by participants, lasted approximately 45 minutes, and were led by an employee of the host dairy farm. Each tour consisted of essentially the same sights and information, beginning in the free stall barn, moving through the calving pen, and ending in the milking parlor. During the tours, participants were encouraged to ask questions and be active contributors to the educational experience.

Participants were able to participate in as many or as few of the above activities as they chose and for as long as they desired. However, the Brunch on the Farm was a three hour event beginning at 9:00 a.m. and ending at 12:00 p.m. During this timeframe, approximately 150 individuals attended the Brunch on the Farm and participated in unique combinations of the aforementioned activities. It is important to note that participation in the Brunch on the Farm was less than previous years, most likely due to the weather conditions as it was raining heavily the day of the event. In 2009,

approximately 500 individuals attended the Brunch on the Farm (M. Nicholson, personal communication, February 3, 2011) and approximately 250 guests attended each of the three 2008 Brunch on the Farm events (D. Osza, personal communication, February 4, 2011).

3.6. Instrumentation

Both categorical and quantitative data were collected via a questionnaire which measured responses for eight total independent variables from two separate domains and one dependent variable. The independent variables included motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to attend a free educational dairy event (i.e., Brunch on the Farm) and beliefs (i.e., animal welfare, environmental care, and food safety practices) of the dairy industry. The questionnaire also measured responses to demographic items such as consumers' use of information channels to make food purchasing decisions and the level of trust that consumers have in food purchasing information sources. The dependent variable was attendance to the 2010 Brunch on the Farm.

The questionnaire had four sections with a total of 88 items. Part 1 of the questionnaire was adapted from Deci and Ryan's Motives for Physical Activity Measure – Revised (MPAM-R) questionnaire which was informed by the self-determination theory (University of Rochester, 2008). Part 2 of the questionnaire was adapted from the "Food from Our Changing World: What Do You Think?" questionnaire developed and used by the Center for Urban Affairs and Community Services at North Carolina State

University in 2001 (Wimberley et al., 2003). Also included in Part 2 of the instrument were three statements from the focus group interviews conducted by The Integer Group (personal communication, December 19, 2009). Parts 3 and 4 of the questionnaire were developed by the researcher to obtain demographic information from the study participants. The complete instrument can be found in Appendix B (p. 150). Content validity of the instrument was established by a panel of experts who reviewed it to determine if the intended variables were measured. A complete list of the panel of experts can be found in Appendix C (p. 161). Recommendations were made by the panel of experts and appropriate modifications were made to the instrument. Face validity was established by conducting a field test of the instrument to determine if it was understandable by the intended audience and if it was operationalized to measure the appropriate constructs. The field test was completed by 30 adult consumers who were similar to those in the target audience, but were not in the sample. Although the actual questionnaire was completed via hard copy by the study participants, the field test was completed via Qualtrics, an online survey tool. Time constraints did not allow for the same format to be used for both the field test and the actual test, but this was justified by Dillman et al. (2009). Dillman et al. (2009) stated that using multiple means to contact potential participants is appropriate and actually encouraged because it will help increase the response rate. Upon completion of the field test appropriate alterations of the instrument were completed.

Reliability of the instrument was established by calculating the Cronbach's alpha coefficient for each metric variable. Part 1 measured the domain of motivation to attend free educational agricultural events. To measure this domain, five variables were

measured: health ($\alpha = 0.96$), social comparison ($\alpha = 0.89$), competence ($\alpha = 0.90$), social desire ($\alpha = 0.76$), and enjoyment ($\alpha = 0.89$). A Cronbach's alpha coefficient reliability of .90 or greater is excellent, .80 or greater is good, .70 or greater is acceptable, and less than .70 is questionable (George & Mallery, 2003). Part 2 measured the domain of consumers' beliefs of the whole dairy industry by measuring their beliefs of three variables: the animal welfare dairy producers provide ($\alpha = 0.77$), how well dairy producers care for the environment ($\alpha = 0.83$), and the food safety practices employed by the dairy industry ($\alpha = 0.83$).

Part 1 of the questionnaire assessed study participants' motivations (i.e., health, social comparison, competence, social desire, and enjoyment) to attend the Brunch on the Farm or a similar event. There were 20 items in this section measured on a summated 5-point rating scale (i.e., not at all = 1, slightly = 2, somewhat = 3, mostly = 4, and always = 5). In Part 1, participants were asked "To what extent are the following true of you in explaining why you attend free educational dairy events, such as the Brunch on the Farm or similar events?" Examples of this section's items included statements such as, "Because I want to know if my family and I are consuming healthy food products," "Because it is fun attending educational farm tours," and "Because I like engaging in activities that challenge my thinking and/or beliefs."

Part 2 of the questionnaire assessed study participants' beliefs (i.e., animal welfare, environmental care, and food safety practices) of the dairy industry. There were 20 items in this section measured on a summated 4-point rating scale (i.e., strongly disagree = 1, disagree = 2, agree = 3, and strongly agree = 4). In Part 2, participants were asked "To what extent do you agree or disagree with each?" Examples of this section's

items included statements such as, “Most dairy farmers are not careful about the disposal of waste water,” “Even if used as directed, antibiotics and hormones are a threat to humans,” and “Dairy farms provide clean and sanitary living quarters for their animals.”

Parts 3 and 4 of the questionnaire assessed demographics of the study participants. In Part 3 there were two subsections with 13 individual items in each. The first subsection of Part 3 asked information regarding the channels of information that study respondents used to inform their food choices. A summated 3-point rating scale (i.e., never = 1, sometimes = 2, and always = 3) was used for the first subsection of Part 3, and participants were asked “How often do you use each of the following to inform your food purchasing decisions?” Examples of the sources included, family and/or friends, medical professionals, educational events, and talk shows. The second subsection of Part 3 asked information regarding the trustworthiness of sources that provide food safety and nutrition information. A summated 5-point rating scale (i.e., not at all = 1, slightly = 2, somewhat = 3, mostly = 4, and always = 5) was used, and participants were asked “How trustworthy are each of the following when providing food safety and nutrition information?” Examples of the sources included farmers, celebrities, elected officials, and the FDA.

Part 4 of the questionnaire assessed additional demographics of the study participants, such as household dairy consumption and other general demographic information. There were 22 items in this section measured on various scales. Examples of this section’s items included, “On average, how many gallons of fluid milk (from cows) does your household drink each week at home?” “How familiar are you with agriculture?” “Did you attend the Brunch on the Farm on June 12, 2010… in Indiana?”

and “If it had not been raining the day of the Brunch on the Farm event, would have you attended?” Lastly, one open-ended item was presented at end of the questionnaire so that participants could share any additional comments that they may have had.

3.7. Data Collection

The mailing list for the data collection was obtained from MPSI as it was the same list that used to send postcard announcements to households inviting them to attend its free educational dairy event entitled Brunch on the Farm. After obtaining the list, each household was randomly assigned an identifier number. The particular identifying system that was used consisted of the household’s zip code plus three additional digits. Then, from the list of 1,201 households, 565 were selected using simple random sampling procedures to participate in the study. Throughout the duration of the data collection, the participant information was maintained using Microsoft Excel.

The data were collected using a modification of the procedures explained by Dillman et al. (2009). There were a total of four mailings, rather than five as is generally recommended, because the researcher estimated that the expenses associated with the fifth mailing outweighed potential benefits of additional respondents. The first mailing consisted of a pre-notice letter sent to each of the 565 households in the population sample. It was printed in black and white on the researcher’s affiliated university’s bond paper which included their affiliated department’s letterhead, signed personally by the researcher using a blue-ink, ballpoint pen, and can be found in Appendix D (p. 162). The letters were mailed in a U.S. Postal Service (USPS) standard business envelope via first-

class mail three months after the free educational dairy event (i.e., Brunch on the Farm) occurred. Using labels affixed to the envelopes, the letters were addressed to each of the chosen households. Return addresses were printed on the envelopes with the researcher's address and color logo of their affiliated university. The salutation of the pre-notice letter used the same title as the first line of the label to address the participants.

The first mailing yielded 22 undeliverable envelopes: 15 were not deliverable as addressed, no such number could be found for two of them, the resident moved and did not leave an address for two of them, two were not deliverable for an unknown reason, and 1 was left unclaimed. Attempts were made to correct these errors by researching the participants' information via the Internet and by contacting a local USPS office. Pre-notice letters were then resent to those households for which corrections were found. Then, pre-notice letters were resent to those households. For any household whose address issue could not be resolved, a replacement household was chosen from the remaining 636 households on the mailing list using simple random sampling. Pre-notice letters were then mailed to these households as well.

The second mailing included a cover letter explaining the study and the need for participation in greater detail, a questionnaire, a stamped and addressed return envelope, and a $1.00 bill as an incentive. The last page of the questionnaire also mentioned that those who returned a completed questionnaire would have their address entered into a drawing for a $100.00 gift card to the grocery store of their choice. This round of mailings was sent four days after the initial mailing and consisted of 565 envelopes addressed to the chosen households using labels. Each envelope, which was a white, #10 envelope, also had a return address printed on it with the researcher's address and color

logo of their affiliated university. A copy of the cover letter which was also printed in black and white on the researcher's affiliated university's bond paper which included their affiliated department's letterhead and signed personally by researcher using a blue-ink, ballpoint pen can be found in Appendix E (p. 163). Again, the salutation of the cover letter used the same title as the first line of the label to address the participants. To keep record of which participants had returned a completed questionnaire, household identifier numbers were included on the questionnaire. Then, each returned and completed questionnaire was properly recorded using Microsoft Excel. The enclosed return envelopes were stamped using business-reply mailing procedures. In addition, the stamped return envelopes had the researcher's address pre-printed on them. Lastly, the $1.00 incentive was placed inside of the questionnaire with the top half of it remaining visible so that it was not missed when removing the contents of the envelope.

The second mailing yielded a return of five undeliverable envelopes: three had unknown addresses and two were not deliverable as addressed. Attempts were made to correct these errors by researching the participants' information via the Internet and by contacting a local USPS office. Then, a cover letter, questionnaire, stamped and addressed return envelope, and $1.00 incentive were resent to those households. For any household whose address issue could not be resolved, a replacement household was chosen from the remaining 614 households on the mailing list using simple random sampling. A cover letter, questionnaire, stamped and addressed return envelope, and $1.00 incentive were then mailed to these households as well.

A postcard thank you/reminder was mailed seven days after the second mailing to all households in the sample for whom the researcher had not yet received a completed

questionnaire. The total for recipients for this mailing was 555. A copy of the postcard can be found in Appendix F (p. 164), and they were addressed to the households using the same procedures as the previous mailings. In addition, the same return address labels were used as before. The salutation of the postcard used the same title as the first line of the label to address the participants, and the note was also signed personally by the researcher using a blue-ink, ballpoint pen. After the postcards were mailed, none of the previously sent envelopes were returned as undeliverable.

A follow-up letter was sent 16 days after the postcards were mailed to the 427 households who had not yet returned a completed questionnaire. Along with the follow-up letter, which can be found in Appendix G (p. 165), a replacement questionnaire as well as a stamped and addressed envelope was included. Again, the last page of the questionnaire also mentioned that those who returned a completed questionnaire would have their address entered into a drawing for a $100.00 gift card to the grocery store of their choice. Note that this this mailing did not include the $1.00 incentive. The same procedures used during the second mailing were used for this mailing.

As is recommended by Dillman et al. (2009) a fifth mailing was not implemented because the researcher estimated that the associated costs outweighed its benefits of possibly more respondents. The researcher had limited funding for this project, and, therefore, could not monetarily afford to send this additional mailing. Furthermore, the response rate from the fourth mailing was small enough that it was not expected for a fifth mailing to increase the return rate by large numbers. Consequently, the researcher received a total of 211 returned questionnaires with 203 of them being usable for analysis. This resulted in a 37% response rate of for returned questionnaires with 96% of

those being completed correctly and including responses to at least the majority of Part 1 or Part 2 and Parts 3 and 4 of the questionnaire. Therefore, the response rate was 36% for the usable returned questionnaires.

Tables 3.3 – 3.6 describe the demographics of the respondents and households that completed and returned a usable questionnaire. To view comparisons of participants and those that did not participate see Appendix H (p.166).

Table 3.3. Number and Frequency of Respondents' Gender and Race

	Gender (N = 201)		Race (N = 201)	
	Male	Female	White	Non-White
Number (n	76	125	197	4
Percentage (%)	37.8	62.2	98.0	2.0

Table 3.4. Number and Frequency of Respondents' Marital Status

	Marital Status (N = 200)			
	Married	Single	Living Together	Divorced
Number (n)	152	12	13	23
Percentage (%)	74.9	5.9	6.4	11.3

Table 3.5. Number and Frequency of Respondents' Age and Households with at Least One Child Age 10 Years or Younger Living Within It

	Age of Respondent (in years) (N = 194)						Households with Child Age ≤10 Years (N = 171)
	20-29	30 - 39	40 - 49	50 - 59	60-69	70- 79	
Number (n)	16	61	66	36	8	7	116
Percentage (%)	8.2	31.4	34.0	18.6	4.1	3.6	67.8

Table 3.6. Number and Frequency of Respondents' Average Annual Household Income

	Average Annual Household Income (N = 199)	
	Number (n)	Percentage (%)
< $25,000	34	16.7
$25,000 - $49,999	56	27.6
$50,000 - $74,999	42	20.7
$75,000 - $99,999	32	15.8
≥ $100,000	20	9.9
Prefer not to answer	15	7.4

Post hoc reliability of the instrument was calculated for each metric variable using the Cronbach's alpha coefficient. Part 1 measured the domain of motivation to attend free educational agricultural events and included five variables: health ($\alpha = 0.92$), social comparison ($\alpha = 0.75$), competence ($\alpha = 0.89$), social desire ($\alpha = 0.72$), and enjoyment ($\alpha = 0.85$). A Cronbach's alpha coefficient reliability of .90 or greater is excellent, .80 or greater is good, .70 or greater is acceptable, and less than .70 is questionable (George & Mallery, 2003). Part 2 measured the domain of consumers' beliefs of the whole dairy industry and included three variables: beliefs of the animal welfare dairy producers provide ($\alpha = 0.68$), beliefs of how well dairy producers care for the environment ($\alpha = 0.77$), and beliefs of the food safety practices employed by the dairy industry ($\alpha = 0.65$). Because a Cronbach's alpha coefficient of less than .70 is questionable, it was checked to determine if removing any of the items for animal welfare or food safety would increase their respective reliabilities. No solutions were found to increase the Cronbach's alpha coefficient for animal welfare, so it is reported as a limitation in the "Limitations" section of this chapter. However, it was found that by removing the sixth item of Part 2, "Family-owned dairy farms produce higher quality and safer food products than those that are not family-owned," increased the food safety reliability to .74. Therefore, this item was removed for all further analyses.

3.8. Validity Threats

First, coverage error was a potential threat to validity because not all of the addresses obtained for the questionnaire mailings were accurate. Approximately 3% of

the addresses were returned as undeliverable. However, to control for this, a replacement address was randomly selected from the remaining addresses for each address that was inaccurate.

Second, measurement validity or being sure that the questionnaire collected the appropriate data to accurately address the research questions was another possible threat. To control for the measurement validity threat, a pilot test and field test were conducted. The pilot test established face validity of the instrument and the field test established content validity. Also, allowing theories to guide the research process increased the construct validity of the study. All of the above methods helped to increase the instrument's measurement validity thus it was not regarded as a significant threat. Furthermore, it should be noted that when study respondents selected the same response for all items in a section of the questionnaire that section was deemed incomplete and not included in the analysis.

It is also suggested that researchers should include negatively worded items when conducting a discriminant analysis. However, Part 2 of the instrument was the only section that included negatively worded items. Therefore, consumers choosing "socially desirable responses" were a potential threat to internal validity in Part 1 of the questionnaire.

Fourth, the day of the free educational dairy event was accompanied by heavy rainfall. Therefore, the rain was a threat to participate because it prevented some of those who were invited via postcard invitation to the event from attending. In previous years approximately 300 people were in attendance. However, this year approximately 150 people participated in the event. Thus, with lower numbers of event participation, it was

possible that data analysis may not have found a significant difference between those who did and did not attend the free educational dairy event. This was taken into account by adding the following question to the questionnaire, "If it had not been raining the day of the Brunch on the Farm event, would have you attended?" By doing so, the researcher was able to combine planned behavior with actual behavior resulting in a larger *N* for both participants and nonparticipants. The researcher assumed the respondents were being truthful and honest regarding their intentions to attend after the event.

While entering data, it was discovered that the mailing list included addresses of households in which no children age 10 years or younger lived. This may have been due to individuals moving or to simply having an outdated mailing list. However, this was not seen as major threat as there was no reason to believe that responses would vary between those who did have at least one child age 10 or under living within the household and those that did not, and young children was not an important selection criterion for the study.

Non-response bias was controlled because possible participants may not have had the desire or felt the need to complete the questionnaire that was mailed to them. However, the researcher closely followed tested the procedures for conducting mail surveys to limit the likelihood of this occurring (Dillman et al., 2009). To further control for non-response bias, a random sample of 10% of those households that did not respond to the questionnaire was selected (Lindner, Murphy, & Briers, 2001). These households were then contacted via telephone and asked to answer 11 randomly chosen items from Parts 1 and 2 of the questionnaire along with five questions from Part 4. Attempts were made to contact each household three times before they were replaced with another

randomly selected household. If there was no answer upon calling a household, then a voice message was left explaining who the researcher was, their reason for calling, and when they would call again. Once the researcher received responses from 20 of the households, she ceased this procedure. Following these procedures helped to determine if those who responded to the questionnaire were significantly different than those that did not. A one-sample t-test revealed that the mean responses for respondents and non-respondents were not significantly different for the motivation of social comparison ($p > .09$) or for beliefs of the environmental care practices ($p > .07$). A nonparametric binomial test revealed that there was no significant difference between respondents and non-respondents and their participation in the Brunch on the Farm ($p = .12$) nor between the gender ($p = .26$) of respondents and non-respondents.

A chi-square test indicated that the respondents did not significantly differ from the non-respondents for age (df = 5, $p = .142$). A chi-square test indicated that the respondents did not significantly differ from the non-respondents for average annual household income (df = 5, $p = .170$).

3.9. Researcher's Biases

The researcher possesses a Bachelor of Science degree in Animal Science, and worked for an educational and promotional entity of the Indiana dairy industry for more than 15 months, during which time this study began. She also held an officer position (e.g. Secretary, First Vice-President, and President) in the Purdue Dairy Club for three of the four years for which she was a member of the organization. Furthermore, the

researcher completed a dairy judging course while studying at Purdue University and she currently shows dairy cattle. However, the researcher monitored her biases by having the study reviewed by a panel of experts, and peer debriefing with her research adviser on a weekly basis. In addition, she attempted to avoid biased language and presented the information in terms of furthering the dairy industry's knowledge base rather than in terms of direct benefits to the researcher.

Although the study was supported in part by Milk Promotion Services of Indiana and the Indiana Soybean Alliance, the researcher completed the analysis and thesis without sharing any of the findings with these sponsors to minimize any potential threat of influencing the interpretation of the findings.

3.10. Data Analysis

Data for the study were organized and managed using Predictive Analytics Software for Windows (PASW), Version 18. First, a descriptive analysis was completed for the purpose of inferential statistics to report central tendencies such as means as well as dispersions, including standard deviations. These findings determined if there were any significant differences between participants and nonparticipants of the Brunch on the Farm based on the independent variables. By conducting this analysis, the researcher was able to better understand significant variations within the sample population. Then, an independent samples Kruskal Wallis Test was conducted to determine if frequencies between Brunch on the Farm participants and nonparticipants were significantly different for information channels they used for food purchasing information, who they trusted for

food purchasing information, their average household milk consumptions, and their average household dairy product consumption. Ultimately, this allowed the researcher to make more appropriate judgments for the discriminant analysis that followed.

An exploratory discriminant analysis was then conducted using a simultaneous model, in which all independent variables were treated at once in order to determine if variations of the independent variables (i.e., health, social comparison, competence, social desire, enjoyment, beliefs of animal welfare practices, beliefs of environmental care practices, and beliefs of food safety practices) resulted in a variation of the dependent variable (i.e., attendance to the free educational dairy event). In this discriminant analysis, the researcher chose and inserted independent variables into the model by choosing those variables with the highest relationship to participation first. Initially, 10 variables were included: health, social comparison, competence, social desire, enjoyment, average household fluid milk consumption, beliefs of animal welfare practices, beliefs of environmental care practices, level of trust in the USDA as a source of food purchasing information, and level of involvement in agriculture. The three categorical variables were dummy coded (Warner, 2008). The analysis was run a total of six times until parsimony was reached. As previously stated, the first test included 10 variables and the variable with the lowest relationship was removed prior to each of the proceeding five calculations. However, it was agreed upon between the researcher and her advisor that including six variables (e.g., enjoyment, competence, health, beliefs of animal welfare practices, being very familiar or directly involved with agriculture, and average household fluid milk consumption of at least three gallons per week) was the solution that allowed for the greatest accuracy using the fewest variables. Such results

allowed the researcher to make predictions of the dependent variable based on responses to the independent variables. For example, to what extent can it be predicted that a positive view of the dairy industry will result in an adult consumer choosing to attend a free educational dairy event? Doing so permits dairy industry-supported organizations to make similar judgments for future events and better tailor its programs for specific audiences as well as to better market its programs to the intended audiences.

To complete the descriptive analysis for the purpose of inferential statistics, it was assumed that the sampling methods used would result in data from the chosen sample that would be an accurate representation of the larger population. Several additional assumptions were met in order to conduct the discriminant analysis. First, for discriminant analysis to be the most appropriate analysis, there needed to be a combination of quantitative and categorical variables. Next, because this was the first study for this particular field of interest, actual group membership needed to be known in order to develop the predictive model. This was addressed in the study's questionnaire. Third, it was assumed that the discriminating variables would, to some extent, be correlated with one another. These were controlled for when forming the equation for the discriminant functions. Also, it was assumed that all quantitative discriminating variables were approximately normally distributed. Furthermore, discriminant variables were only paired if they were linearly related. Fourth, the numbers within in the groups needed to exceed the number of discriminant variables with the recommendation that the total number of participants be at least 20 times as large as the number of discriminating variables (Warner, 2008). For this study there were 154 participants within the group that attended the Brunch on the Farm and 49 participants within the group that did not attend

the Brunch on the Farm. Lastly, when computing the sum of cross products for the discriminant analysis, it was assumed that the "elements of the variance/covariance matrix were homogeneous across groups" (Warner, 2008, p. 667).

The first five independent variables that assessed consumer motivation to attend a free educational dairy event were measured using a 5-point scale. The next three independent variables that assessed consumer beliefs of dairy production were measured using a 4-point scale. Part 2 of the questionnaire included 10 items that were reverse-coded prior to analysis. All of the variables were translated into quantitative, interval level variables when similar items were combined to compute variable means. The first subsection of Part 3 of the instrument measured how often consumers used given channels of information to make food purchasing decisions as categorical items measured on a 3-point scale. The second subsection of Part 3 measured the degree of trustworthiness of the sources used to inform food purchasing decisions. These items were categorical and measured on a 5-point scale. The dependent variable, whether or not study participants attended the Brunch on the Farm, was categorical and measured at the nominal level because study participants chose which category (e.g. attended or did not attend) they belonged to, but one category was not greater than the other.

The level of measurement, central tendency, variance, and inferential statistics were identified for each independent variable and the dependent variable in Table 3.7. All means, standard deviations, relationship sizes, and effect sizes were rounded to the nearest $1/100^{th}$. In addition, PASW excluded any missing data. The statistical tests used to determine relationships between variables are listed in Table 3.8. The relationships were then described using Hopkin's (2000) conventions (Table 3.9).

Table 3.7. Level of Measurement, Central Tendency, Variance, and Inferential Statistics for Each Independent and Dependent Variable

Domain	Variable	Level of Measurement	Central Tendency	Variance	Inferential Statistics
Consumer Motivations	Health	Item: Ordinal Scale: Interval	Frequency Mean	Standard Deviation	t-test and Confidence Interval
Consumer Motivations	Social Comparison	Item: Ordinal Scale: Interval	Frequency Mean	Standard Deviation	t-test and Confidence Interval
Consumer Motivations	Competence	Item: Ordinal Scale: Interval	Frequency Mean	Standard Deviation	t-test and Confidence Interval
Consumer Motivations	Social Desire	Item: Ordinal Scale: Interval	Frequency Mean	Standard Deviation	t-test and Confidence Interval
Consumer Motivations	Enjoyment	Item: Ordinal Scale: Interval	Frequency Mean	Standard Deviation	t-test and Confidence Interval
Consumer Beliefs	Animal Welfare Practices	Item: Ordinal Scale: Interval	Frequency Mean	Standard Deviation	t-test and Confidence Interval
Consumer Beliefs	Environmental Care Practices	Item: Ordinal Scale: Interval	Frequency Mean	Standard Deviation	t-test and Confidence Interval
Consumer Beliefs	Food Safety Practices	Item: Ordinal Scale: Interval	Frequency Mean	Standard Deviation	t-test and Confidence Interval

Consumer Information	Channel Preferences	Item: Ordinal Scale: Interval	Frequency	Kruskal Wallis Test
Consumer Information	Sources Trusted	Item: Ordinal Scale: Interval	Frequency	Kruskal Wallis Test
	Fluid Milk Consumption	Item: Interval Scale: Ratio	Frequency	Kruskal Wallis Test
	Agriculture Familiarity	Item: Ordinal Scale: Interval	Frequency	Kruskal Wallis Test
	Attendance to the 2010 Brunch on the Farm	Nominal	Frequency	

Table 3.8. Statistical Tests Used to Describe Each Relationship

Dependent and Independent Variable Relationships	Statistical Test	Measure of Association
Consumers' Motivation (i.e., enjoyment)/ Attendance to 2010 Brunch on the Farm	Pearson's correlation & confidence intervals	Linear
Consumers' Motivation (i.e., social desire)/ Attendance to 2010 Brunch on the Farm	Pearson's correlation & confidence intervals	Linear
Consumers' Motivation (i.e., social comparison)/ Attendance to 2010 Brunch on the Farm	Pearson's correlation & confidence intervals	Linear
Consumers' Motivation (i.e., competence)/ Attendance to 2010 Brunch on the Farm	Pearson's correlation & confidence intervals	Linear
Consumers' Motivation (i.e., health)/ Attendance to 2010 Brunch on the Farm	Pearson's correlation & confidence intervals	Linear
Consumers' View of the Dairy Industry (i.e., animal welfare practices)/ Attendance to 2010 Brunch on the Farm	Pearson's correlation & confidence intervals	Linear
Consumers' View of the Dairy Industry (i.e., environmental care practices)/ Attendance to 2010 Brunch on the Farm	Pearson's correlation & confidence intervals	Linear
Consumers' View of the Dairy Industry (i.e., food safety practices)/ Attendance to 2010 Brunch on the Farm	Pearson's correlation & confidence intervals	Linear

Table 3.9. Conventions for Relationships (Hopkins, 2000)

Relationship Coefficient (*r*)	**Convention**
0.0-0.1	Trivial
0.1-0.3	Low
0.3-0.5	Moderate
0.5-0.7	High
0.7-0.9	Very Large
0.9-1.0	Nearly Perfect

Note: Relationships were reported as positive or negative.

The findings were interpreted by descriptive statistics and significance tests to establish knowledge claims. Level of significance was established a priori at $p = .05$. Effect sizes were used to determine practical significance of the findings with medium and large effect sizes being practically significant. Cohen's *d* and Cohen's descriptors (1988) were used to calculate the effect sizes for mean differences (Table 3.10). Cohen's (1988) conventions were used to describe the effect sizes for relationships which were calculated using point biserial correlation r^2 (Table 3.11).

Table 3.10. Conventions for Effect Sizes of Mean Differences (Cohen, 1988)

Effect Size Coefficient (*d*)	**Convention**
0.0-0.2	Trivial
0.2-0.5	Small
0.5-0.8	Moderate
>0.8	Strong

Table 3.11. Conventions for Effect Sizes of Relationships (Cohen, 1988)

Effect Size Coefficient (r^2)	**Convention**
0.01-0.08	Small
0.09-0.24	Medium
≥0.25	Large

CHAPTER 4. RESULTS

4.1. Purpose of the Study

The purpose of this study was to explain and predict consumers' participation in a place-based learning experience on a dairy farm based on consumers' interest motivation to participate in a free educational dairy event, adult consumers' beliefs of the dairy industry, the channels of information that adult consumers use to inform their food choices, and which sources of food information they trust.

4.2. Research Questions for the Study

The research questions for this study included the following:

1. What are the consumer information channel preferences of participants and nonparticipants of the Brunch on the Farm when making food purchasing decisions, to what degree do they trust food information sources, and how much dairy do their households consume (i.e., fluid milk and dairy product consumption)?

2. Were there significant differences between participants and nonparticipants of the Brunch on the Farm based on the following variables: 1) adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and 2) their beliefs (i.e., animal welfare, environmental care, and food safety practices) of the dairy industry?

3. What were the relationships between adult consumers' participation in the Brunch on the Farm and their motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

4. To what extent could participation in a free educational dairy event be predicted based on adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

4.3. Results for the Study

The results of the study were presented for each research question with additional demographic information being presented after the fourth research question.

4.3.1. Results for Research Question 1: Consumer Information Channel Preferences, Degree of Trust for Food Information Sources, and Household Dairy Consumption

Approximately one out of four participants' reported that they "always" used family and/or friends as a channel of food purchasing information. Educational events, medical professionals, and local community newspaper were the next three channels reported as "always" used by approximately one in ten of the participants. Approximately 60% of the participants reported that they "never" used social media or company and/or organization-sponsored websites as a channel for making food purchasing decisions. Furthermore, approximately one-half of the participants reported "never" using the Indianapolis Star newspaper or talk shows (television or radio).

Nearly 15% of nonparticipants reported "always" using family and/or friends as a channel of food purchasing information with only approximately one in 10 nonparticipants "always" using medical professionals. Similar to participants, approximately 70% of nonparticipants reported "never" using social media as a channel for food purchasing information and slightly more than one half reported "never" using company and/or organization sponsored websites or the Indianapolis Star newspaper. Nonparticipants were significantly different than participants regarding their use of the

following food purchasing information channels: family and/or friends ($p < .05$) and educational events ($p < .01$).

Table 4.1. Frequencies (as percentages: %) of Consumer Information Channel Preferences for Food Purchasing Information

	Participants ($N = 48$)			Nonparticipants ($N = 154$)		
	Never	Sometimes	Always	Never	Sometimes	Always
Family and/or Friends*	4.2	68.8	27.1	6.5	79.1	14.4
Medical Professionals[1]	14.6	75.0	10.4	18.2	73.4	8.4
Educational Events*	19.1	70.2	10.6	39.5	57.2	3.3
Advertisements (TV, radio, or print)	20.8	70.8	8.3	14.3	79.2	6.5
Local Television News	18.8	75.0	6.3	20.1	73.4	6.5
National Television	27.1	64.6	8.3	20.8	72.7	6.5
Talk Shows (TV or radio)	45.8	50.0	4.2	41.6	55.8	2.6
Local Community Newspaper	25.0	64.6	10.4	26.6	67.5	5.8
Indianapolis Star Newspaper	50.0	45.8	4.2	52.9	43.8	3.3
Magazines	18.8	75.0	6.3	32.5	63.0	4.5

Social Media[2]	62.5	33.3	4.2	72.7	26.0	1.3
Company and/or Organization Sponsored Websites	58.3	39.6	2.1	54.5	43.5	1.9
Other[3] (n = 6, n = 24)	66.7	16.7	16.7	58.3	33.3	8.3

[1] Examples included doctor, nurse, pediatrician, and dietitian.
[2] Examples included Facebook, Twitter, MySpace, and blogs.
[3] Other responses included store advertisements, schools, brochures, billboards, and sample products.
* Items were significant at the .05 level.
Note. Scale: 1 = Never, 2 = Sometimes, 3 = Always

Approximately one-third of the participants reported that they "always" trusted the USDA and the FDA as sources of food purchasing information. One-fourth of the participants reported that they "always" trusted the EPA as a source of information to make food purchasing decisions. Approximately 55% of participants reported that they "never" trusted elected officials or celebrities and about 40% reported that they "never" trusted advocacy groups for food purchasing information. In contrast, approximately 15% of nonparticipants reported that they "always" trusted medical professionals and family and/or friends for food purchasing information. Nearly 1 in 10 participants reported that they "always" trusted the FDA and USDA as a source of information for food purchasing decisions. Approximately 43% of nonparticipants reported that they "never" trusted celebrities or elected officials as sources of food purchasing information. Furthermore, nearly one-third of nonparticipants reported that they "never" trusted business executives as sources of food purchasing information.

Nonparticipants were significantly different than participants regarding two sources of information they trusted to make food purchasing decisions: advocacy groups

(p = .03) and the USDA (p = .01). While one-third of the participants reported that they "always" trusted the USDA, a pro-agriculture organization, 40% also reported that they "never" trusted advocacy groups. This appears to be contradictory as Brunch on the Farm was sponsored by agricultural advocacy groups. However, the participants may not consider pro-agriculture organizations (e.g., MPSI) as advocacy groups, but they likely viewed anti-agriculture organizations (e.g., People for the Ethical Treatment of Animals (PETA) or the Humane Society of the United States (HSUS) as advocacy groups when responding to this item.

Table 4.2. Frequencies (as percentages: %) of the Degree of Trust that Consumers Assign to Sources of Food Purchasing Information

	Participants (*N* = 48)					Nonparticipants (*N* = 154)				
Family and/or Friends	0.0	8.3	45.8	29.2	16.7	1.3	14.6	37.7	33.8	12.6
Medical Professionals[1]	0.0	4.2	27.1	47.9	20.8	2.6	5.2	23.4	52.6	16.2
Farmers	2.1	4.2	39.6	47.9	6.3	3.2	7.8	39.0	44.8	5.2
Food Processors	2.1	16.7	56.3	22.9	2.1	8.5	26.1	40.5	20.9	4.0
University Professors	10.4	6.3	43.8	22.9	16.7	7.9	14.5	38.2	36.2	3.3
Business Executives	33.3	33.3	29.2	2.1	2.1	30.5	31.8	33.8	3.9	0.0
Celebrities	54.2	25.0	16.7	2.1	2.1	44.7	34.2	18.4	2.6	0.0
Advocacy Groups*	41.7	18.8	33.3	2.1	4.2	22.2	24.8	41.2	10.5	1.3
Elected Officials	55.3	23.4	17.0	0.0	4.3	41.2	35.9	20.3	2.0	.7
USDA[2]*	2.1	4.2	29.2	33.3	31.3	3.2	14.3	25.3	47.4	9.7
EPA[3]	2.1	12.5	35.4	25.0	25.0	4.5	18.2	29.2	41.6	6.5
FDA[4]	4.3	4.2	33.3	29.2	29.2	3.9	13.7	26.1	46.4	9.8
Other[5] (*n* = 4, *n* = 15)	50.0	0.0	25.0	0.0	25.0	53.3	20.0	20.0	0.0	6.7

[1] Examples included doctor, nurse, pediatrician, and dietitian.
[2] United States Department of Agriculture
[3] Environmental Protection Agency
[4] Food and Drug Administration
[5] Other responses included school authorities and health store employees.
* Items were significant at the .05 level.
Note. Scale: 1 = Not At All, 2 = Slightly, 3 = Somewhat, 4 = Mostly, 5 = Always

Approximately 10% of Brunch on the Farm participants, compared to 3.5% of nonparticipants, reported that on average their households consumed more than 5 gallons of milk at home in one week. Consuming 3 gallons of milk per week at home was the most frequently chosen response for participants and consuming 1 gallon of milk per week at home was the most frequently chosen response for nonparticipants. Similarly, nearly 5% fewer participants reported that on average their households consumed less than 1 gallon of milk at home in one week than nonparticipants. Furthermore, nonparticipants reported consuming a significantly different amount of gallons of fluid milk ($p = .01$) than participants. Additional information regarding the frequency of self-reported household consumption of fluid milk at home in one week is found in Table 4.3.

Table 4.3. Frequency of Self-reported Household Consumption of Fluid Milk at Home in One Week

Gallons Consumed*	Participants ($N = 46$)	Nonparticipants ($N = 149$)
Less than 1	7.1%	11.5%
1	15.3%	28.4%
2	25.6%	27.1%
3	27.5%	17.4%
4	13.3%	8.9%
5	0.0%	3.2%
More than 5	11.2%	3.5%

*Item was significant at the .05 level.
Note. Scale: 0 = No, 1 = Yes

Approximately two-thirds of the Brunch on the Farm participants reported that on average their households consumed cheese more than one time per day and none of the participants reported that on average their households consumed cheese less than three times per month. Approximately one-fourth of the participants reported that on average their households consumed ice cream, yogurt, real butter, and other dairy products more than one time per day. Approximately one-half of the nonparticipants reported that their households consumed cheese more than one time per day on average and less than 5% reported that their households consumed cheese less than three times per month on average. Approximately one-fourth of nonparticipants reported that on average their households consumed yogurt and real butter more than one time per day. Furthermore, there was no significant difference found between the responses of the participants and nonparticipants. A similar pattern was found between participants and nonparticipants regarding their frequencies of consuming dairy products with both groups most frequently choosing more than one time per day for cheese, one to four times per week for ice cream and other, and less than three times per month for yogurt (See Table 4.4). However, the groups were different regarding real butter with participants most frequently choosing one to four times per week and nonparticipants most frequently choosing less than three times per week (See Table. 4.4).

Table 4.4. Frequency of Self-reported Household Consumption of Dairy Products at Home in One Week

	Participants (N = 49)			Nonparticipants (N = 153)		
Dairy Product	Less than 3x / month	1 – 4x / week	More than 1x / day	Less than 3x / month	1 – 4x / week	More than 1x / day
Cheese	0.0%	34.7%	65.3%	4.6%	43.8%	51.6%
Ice Cream	30.6%	46.9%	22.5%	36.6%	51.0%	12.4%
Yogurt	51.7%	21.1%	27.2%	52.5%	21.8%	25.7%
Real Butter	35.4%	41.5%	23.1%	42.1%	32.9%	25.0%
Other[1]	18.4%	55.1%	26.5%	24.8%	56.2%	19.0%

[1] Sour Cream, Cottage Cheese, Whipped Cream. Note. Scale: 0 = No, 1 = Yes

4.3.2. Results for Research Question 2: Differences Between Participants and Nonparticipants Based on Motivations and Dairy Industry Beliefs

Participants of the Brunch on the Farm were "mostly" or "always" motivated by health (M = 3.96, SD = .79) to attend the Brunch on the Farm. They were "somewhat to mostly" motivated by enjoyment (M = 3.78, SD = .75) and competence (M = 3.71, SD = .86). Lastly, participants of the Brunch on the Farm were "slightly" motivated by social desire (M = 2.83, SD = .81) and social comparison (M = 2.35, SD = 1.06). With 95%

confidence, it is estimated that the participant population could be as much as 3.99 points or as little as 3.57 points of the 5-point scale C(-.21 < μ < .21) = .95 for enjoyment. With 95% confidence, it is estimated that the participant population could be as much as 3.06 points or as little as 2.60 points of the 5-point scale C(-.23 < μ < .23) = .95 for social desire. With 95% confidence, it is estimated that the participant population could be as much as 2.65 points or as little as 2.05 points of the 5-point scale C(-.30 < μ < .30) = .95 for social comparison. With 95% confidence, it is estimated that the participant population could be as much as 3.95 points or as little as 3.47 points of the 5-point scale C(-.24 < μ < .24) = .95 for competence. With 95% confidence, it is estimated that the participant population could be as much as 4.18 points or as little as 3.74 points of the 5-point scale C(-.22 < μ < .22) = .95 for health.

Nonparticipants of the Brunch on the Farm were somewhat motivated by health (*M* = 3.33, *SD* = 1.26), competence (*M* = 3.04, *SD* = 1.14), and enjoyment (*M* = 2.85, *SD* = 1.06) to attend the Brunch on the Farm. They were slightly motivated by social desire (*M* = 2.31, *SD* = .86) and social comparison (*M* = 1.90, *SD* = .78). With 95% confidence, it is estimated that the nonparticipant population could be as much as 3.02 points or as little as 2.68 points of the 5-point scale C(-.17 < μ < .17) = .95 for enjoyment. With 95% confidence, it is estimated that the nonparticipant population could be as much as 2.45 points or as little as 2.17 points of the 5-point scale C(-.14 < μ < .14) = .95 for social desire. With 95% confidence, it is estimated that the nonparticipant population could be as much as 2.03 points or as little as 1.77 points of the 5-point scale C(-.13 < μ < .13) = .95 for social comparison. With 95% confidence, it is estimated that the nonparticipant population could be as much as 3.23 points or as little as 2.85 points of the 5-point scale

C(-.19 < μ < .19) = .95 for competence. With 95% confidence, it is estimated that the nonparticipant population could be as much as 3.54 points or as little as 3.12 points of the 5-point scale C(-.21 < μ < .21) = .95 for health.

There was a significant difference between the participants and nonparticipants for the following motivations: enjoyment ($p < .01$), social desire ($p < .01$), social comparison ($p < .01$), competence ($p < .01$), and health ($p < .01$). Furthermore, the effect size of enjoyment was strong. The remaining four effect sizes were moderate.

Table 4.5. Means and Standard Deviations of Consumers' Motivations to Participate in a Free Educational Dairy Event (i.e., Brunch on the Farm)

	Participants (N = 49)	Nonparticipants (N = 142)		
Variable	Mean (Standard Deviation)	Mean (Standard Deviation)	p (sig.)	d (effect size)
Enjoyment	3.78 (.75)	2.85 (1.06)	<.01*	.94
Social Desire	2.83 (.81)	2.31 (.86)	<.01*	.61
Social Comparison	2.35 (1.06)	1.90 (.78)	<.01*	.52
Competence	3.71 (.86)	3.04 (1.14)	<.01*	.62
Health	3.96 (.79)	3.33 (1.26)	<.01*	.54

* Items are significant at the .05 level.
Note. Scale: 1 = Not at all, 2 = Slightly, 3 = Somewhat, 4 = Mostly, 5 = Always

With 95% confidence, it is estimated that the difference between the population means for enjoyment could be as much as 1.20 points or as little as 0.64 points C($-.64 \leq \mu_{(np)} - \mu_{(p)} \leq 1.20$) = .95. With 95% confidence, it is estimated that the difference between the population means for social desire could be as much as 0.80 points or as little as 0.24 points C($-.24 \leq \mu_{(np)} - \mu_{(p)} \leq .80$) = .95. With 95% confidence, it is estimated that the difference between the population means for social comparison could be as much as 0.77 points or as little as 0.11 points C($-.11 \leq \mu_{(np)} - \mu_{(p)} \leq .77$) = .95. With 95% confidence, it is estimated that the difference between the population means for competence could be as much as 0.99 points or as little as 0.37 points C($-.37 \leq \mu_{(np)} - \mu_{(p)} \leq .99$) = .95. With 95% confidence, it is estimated that the difference between the population means for health could be as much as 0.93 points or as little as 0.32 points C($-.32 \leq \mu_{(np)} - \mu_{(p)} \leq .93$) = .95.

Table 4.6. Confidence Intervals of the Differences of Consumers' Motivations to Participate in a Free Educational Dairy Event (i.e., Brunch on the Farm)

	95% Confidence Interval of the Differences	
Variable	Lower	Upper
Enjoyment	-1.20	-.64
Social Desire	-.80	-.24
Social Comparison	-.77	-.11
Competence	-.99	-.37
Health	-.93	-.32

Participants of the Brunch on the Farm reported that they "agreed" with the environmental care practices (M = 2.97, SD = .38), animal welfare practices (M = 2.87, SD = .28), and food safety practices (M = 2.77, SD = .43) of the dairy industry that were presented in questionnaire. With 95% confidence, it is estimated that the participant population could be as much as 2.95 points or as little as 2.79 points of the 4-point scale $C(-.08 < \mu < .08) = .95$ for animal welfare practices. With 95% confidence, it is estimated that the participant population could be as much as 3.08 points or as little as 2.86 points of the 4-point scale $C(-.11 < \mu < .11) = .95$ for environmental care practices. With 95% confidence, it is estimated that the participant population could be as much as 2.90 points or as little as 2.64 points of the 4-point scale $C(-.13 < \mu < .13) = .95$ for food safety practices.

Nonparticipants of the Brunch on the Farm reported that they "agreed" with the environmental care practices (M = 2.81, SD = .44), animal welfare (M = 2.74, SD = .31), and food safety practices (M = 2.63, SD = .43) of the dairy industry that were presented in the questionnaire. With 95% confidence, it is estimated that the nonparticipant population could be as much as 2.79 points or as little as 2.69 points of the 4-point scale $C(-.05 < \mu < .05) = .95$ for animal welfare practices. With 95% confidence, it is estimated that the participant population could be as much as 2.88 points or as little as 2.74 points of the 4-point scale $C(-.07 < \mu < .07) = .95$ for environmental care practices. With 95% confidence, it is estimated that the participant population could be as much as 2.70 points or as little as 2.56 points of the 4-point scale $C(-.07 < \mu < .07) = .95$ for food safety practices.

Two out of three beliefs of the dairy industry were statistically significantly different between the participants and nonparticipants: animal welfare practices (p = .01) and environmental care practices (p = .03). Although beliefs of animal welfare practices and beliefs of environmental care practices were statistically significant, they were not considered practically significant due to their small effect sizes.

Table 4.7. Means and Standard Deviations of Consumers' Beliefs of the Dairy Industry

	Participants (N = 44)	Nonparticipants (N = 142)		
Variable	Mean (Standard Deviation)	Mean (Standard Deviation)	p (sig.)	d (effect size)
Animal Welfare Practices	2.87 (.28)	2.74 (.31)	.01*	.38
Environmental Care Practices	2.97 (.38)	2.81 (.44)	.03*	.38
Food Safety Practices	2.77 (.43)	2.63 (.43)	.09	.33

* Items are statistically significant at the .05 level.
Note. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

With 95% confidence, it was estimated that the difference between the population means for beliefs of animal welfare practices could be as much as 2.90 points or as little as 2.51 points $C(-2.51 \leq \mu_{(np)} - \mu_{(p)} \leq 2.90) = .95$. With 95% confidence, it was estimated that the difference between the population means for beliefs of environmental care practices could be as much as 2.99 points or as little as 2.50 points $C(-2.50 \leq \mu_{(np)} - \mu_{(p)} \leq$

2.99) = .95. With 95% confidence, it was estimated that the difference between the population means for beliefs of food safety practices could be as much as 2.79 points or as little as 2.34 points C($-2.34 \leq \mu_{(np)} - \mu_{(p)} \leq 2.79$) = .95.

Table 4.8. Confidence Intervals of the Differences of Consumers' Beliefs of the Dairy Industry

	95% Confidence Interval of the Differences	
Variable	Lower	Upper
Animal Welfare Practices	-.23	-.03
Environmental Care Practices	-.31	-.02
Food Safety Practices	-.29	.02

4.3.3. Results for Research Question 3: Relationships Between Event Participation, Motivations, and Beliefs of the Dairy Industry

With 95% confidence, it was estimated that in the studied population the relationship (r = .38**) between Brunch on the Farm participation and the enjoyment motivation was positive with a magnitude within the range of C($.26 \leq \rho \leq .54$) = .95. With 95% confidence, it was estimated that in the studied population the relationship (r = .26**) between Brunch on the Farm participation and the social desire motivation was positive with a magnitude within the range of C($.12 \leq \rho \leq .41$) = .95. With 95%

confidence, it was estimated that in the studied population the relationship (r = .22**) between Brunch on the Farm participation and the social comparison motivation was positive with a magnitude within the range of C(.08 ≤ ρ ≤ .37) = .95. With 95% confidence, it was estimated that in the studied population the relationship (r = .27**) between Brunch on the Farm participation and the competence motivation was positive with a magnitude within the range of C(.13 ≤ ρ ≤ .42) = .95. With 95% confidence, it was estimated that in the studied population the relationship (r = .23**) between Brunch on the Farm participation and the health motivation was positive with a magnitude within the range of C(.09 ≤ ρ ≤ .38) = .95. With 95% confidence, it was estimated that in the studied population the relationship (r = .18*) between Brunch on the Farm participation and the animal welfare practices view was positive with a magnitude within the range of C(.03 ≤ ρ ≤ .32) = .95. With 95% confidence, it was estimated that in the studied population the relationship (r = .16*) between Brunch on the Farm participation and the environmental care practices view was positive with a magnitude within the range of C(.01 ≤ ρ ≤ .31) = .95. With 95% confidence, it was estimated that in the studied population the relationship (r = .12) between Brunch on the Farm participation and the food safety practices view was positive with a magnitude within the range of C(-.27 ≤ ρ ≤ .27) = .95. The correlation coefficient of the positive relationship between participation and enjoyment was moderate and the effect size of the relationship was medium. The correlation coefficient of the positive relationships between participation and social desire, social comparison, competence, health, animal welfare, environmental care, and food safety were low and the effect sizes of the relationships were small.

Table 4.9. Relationships Between Consumers' Participation in the Brunch on the Farm and Their Motivations to Participate in a Free Educational Dairy Farm Event and Their Beliefs of the Dairy Industry

Measure	Participation (r)	Effect Size (r^2)	95% Confidence Interval of the Relationship (r)	
			Lower Limit	Upper Limit
Enjoyment	.38**	.14	.26	.54
Social Desire	.26**	.07	.12	.41
Social Comparison	.22**	.05	.08	.37
Competence	.27**	.07	.13	.42
Health	.23**	.05	.09	.38
Animal Welfare Practices	.18*	.03	.03	.32
Environmental Care Practices	.16*	.03	.01	.31
Food Safety Practices	.12	.02	-.27	.27

** Correlation is significant at the .01 level (2-tailed).
*Correlation is significant at the .05 level (2-tailed).

4.3.4. Results for Research Question 4: Extent to Which Event Participation Can Be Predicted Based on Motivations and Beliefs of the Dairy Industry

An exploratory discriminant analysis was used to determine to what extent the chosen independent variables could correctly classify the respondents predicted participation in the Brunch on the Farm and their actual participation. First, participants who self-reported that they attended the event or planned to, but did not because of the rain were classified as participants for this analysis. There were no significant differences found between participants and those that intended to participate prior to heavy rainfall the day of the event regarding the enjoyment motivation, competence motivation, health motivation, and beliefs of animal welfare practices. Six models were run based upon the most highly correlated relationships to the dependent variables, and the model with six variables was chosen as the most parsimonious model with the highest level of prediction.

The canonical correlation coefficient of Test Function 1 was 0.43 and Wilks' lambda (λ) is .82 with six degrees of freedom (df) and a significance (p) of <.01. From an examination of the standardized canonical discriminant function coefficient, it was concluded that the most highly discriminating attributes of participants when compared with nonparticipants, were that cases in participation tended to be more predictable by enjoyment motivation, health motivation, agriculture familiarity (e.g., Respondent being very familiar with agriculture and/or were/having been directly involved in agriculture), beliefs of the dairy industry's animal welfare practices, and fluid milk consumption (e.g., Reporting a household consumption of fluid milk of at least 3 gallons) than

nonparticipants, while cases in nonparticipation tended to be more predictable by competence motivation.

Table 4.10. Correlation of Predictor Variables with Discriminant Function and Standardized Canonical Discriminant Function Coefficients

Predictor Variable	Correlation with Discriminant Function	Standardized Canonical Discriminant Function Coefficients
Enjoyment Motivation	.84	.88
Competence Motivation	.57	-.47
Health Motivation	.55	.35
Agriculture Familiarity[1]	.48	.24
Belief of Animal Welfare	.39	.25
Fluid Milk Consumption[2]	.36	.34

[1] Respondent being very familiar with agriculture and/or Am/Have been directly involved in agriculture.
[2] Reporting a household consumption of fluid milk of at least 3 gallons.

The classification analysis for participation reported that nearly three in four respondents' Brunch on the Farm participation could be predicted by the following variables: enjoyment motivation, competence motivation, health motivation, agriculture familiarity (e.g., Respondent being very familiar with agriculture and/or were/had been directly involved in agriculture), belief of animal welfare, and fluid milk consumption (e.g., Reporting a household consumption of fluid milk of at least 3 gallons). There was

70.7% accuracy in predicting the participants' participation and their actual participation in the educational dairy farm event. There was 73.7% accuracy in predicting that nonparticipants did not participate in the educational dairy farm event. By using this model, 73.0% of the original grouped cases were correctly classified (See Table 4.11).

Table 4.11. Classification Analysis for Participation in the Brunch on the Farm

		Predicted Group Membership			
		Participants		Nonparticipants	
Actual Group Membership	*n*	*n*	%	*N*	%
Participants	42	29	70.7	12	29.3
Nonparticipants	149	35	26.3	98	73.7

Note. 73.0% of original grouped cases correctly classified.

CHAPTER 5. CONCLUSION

5.1. Purpose of the Study

The purpose of this study was to explain and predict consumers' participation in a place-based learning experience on a dairy farm based on consumers' interest motivation to participate in a free educational dairy event, adult consumers' beliefs of the dairy industry, and the sources of information that adult consumers use to inform their food choices.

5.2. Research Questions for the Study

The research questions for this study included the following:

1. What are the consumer information channel preferences of participants and nonparticipants of the Brunch on the Farm when making food purchasing decisions, to what degree do they trust food information sources, and how much dairy do their households consume (i.e., fluid milk and dairy product consumption)?

2. Were there significant differences between participants and nonparticipants of the Brunch on the Farm based on the following variables: adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal welfare, environmental care, and food safety practices) of the dairy industry?

3. What were the relationships between adult consumers' participation in the Brunch on the Farm and their motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

4. To what extent could participation in a free educational dairy event be predicted based on adult consumers' motivations (i.e., enjoyment, social desire, social comparison, competence, and health) to participate in a free educational dairy event and their beliefs (i.e., animal care, environmental care, and food safety practices) of the dairy industry?

5.3. Conclusions for the Study

There were four conclusions for this study. Each conclusion was discussed regarding its interpretation and contribution to the knowledge base. Implications for practice and recommendations for further study were also made in the following sections.

5.3.1. Conclusion 1: Favorable Beliefs of the Dairy Industry's Animal Welfare, Environmental Care, and Food Safety Practices

Participants and those who did not participate in the place-based educational dairy farm event had favorable beliefs of the dairy industry's animal welfare, environmental care, and food safety practices. Although the differences in beliefs of animal welfare practices and environmental care practices were statistically significant between participants and those that did not participate, these differences were not considered practically significant due to their small effect sizes which meant that they were not considered to be important for use in the dairy industry regarding future program development and education. The difference in beliefs of food safety practices was neither statistically different nor practically different.

This conclusion provides a preliminary contribution to the literature as the researcher was unable to locate any significant studies that focused on the dairy industry or dairy products as a whole as did the present study. Although a study conducted by The Integer Group (personal communication, December 19, 2009) found that a majority of its participants were most concerned with the food safety, animal care, and environmental care practices of the agricultural industry, the present study found that both those who

participated and those that did not participate "agreed" with the food safety, animal welfare, and environmental care practices that the dairy industry implements. This difference may be due to the type of industry and the type of communities where the respondents lived. The Integer Group study considered the agricultural industry as a whole, whereas the current study focused primarily on the dairy industry and respondents were from rural counties rather than an urban locale. For example, greater concerns have been found for the swine, laying hen, broiler, and veal cattle industries (Carruthers, 1991; Center for Food Economics Research, 2001), and these concerns may have been at the forefront of The Integer Group study participants' minds resulting in their negative responses. In contrast, one study found that water and soil contamination led to more complaints for dairy farms than for swine, poultry, or beef farms (Jones et al., n.d.). Multiple studies also found water contamination to be of great consumer concern when viewing agriculture as whole (Goss & Barry, 1995; Hamlett & Epp, 1994; Molnar & Duffy, 1985; Tucker et al., 2006). Again, the difference between that study and the present study's results may be due to this concern being focused on agricultural industries other than dairy.

The researcher located a few studies regarding consumer beliefs of animal welfare practices on dairy farms. Most of those studies focused on actual animal welfare practices rather than consumer beliefs of the practices (Center for Food Economics Research, 2001; Prickett et al., n.d.). Therefore, this study contributed to the knowledge base in that it focused on beliefs of animal welfare practices within the dairy industry, specifically (Center for Food Economics Research, 2001). The present study's respondents reported that they "agreed" with the animal welfare practices that the dairy

industry implements which supports the finding of others studies. Bailey Norwood (2010) and Prickett et al. (n.d.) found that consumers accepted animal care practices so long as the animal did not suffer. Therefore, it is probable that consumers did not view animals on dairy farms as suffering, which may have supported their agreement with the dairy industry's animal welfare practices. The results regarding the beliefs of animal welfare of this study also supported the results of a study that found consumers generally view farmers positively in terms of animal care (Food Systems Insider, 2010).

With regard to beliefs of the dairy industry's food safety practices, it is unclear if the current study's results supported those found in many other studies focused on food safety. For example, bacterial contamination (Bryan, 1989; Chipman et al., 1996; Food Marketing Institute, 2002; Jones et al., n.d.; McIntosh et al., 1994; Sachs et al., 1987; Whaley & Doerfert, 2003) and pesticide residues (Jones et al., n.d.; Stucker & Parhan, 1984; Tucker et al., 2006) in food products were of notable concern to consumers. More importantly, it was found that dairy was one of two food types receiving the most bacterial contamination concerns compared to pork, poultry, and beef. In addition, dairy products received more pesticide residue concerns than any of the other three food types. Initially, it appears that the present study does not support these concerns because both participants and those who did not participate "agreed" with the food safety practices of the dairy industry. However, it is not possible to make this claim because the current study did not compare the dairy industry's food safety practices with those of other industries nor did it focus on bacteria or pesticide contamination concerns.

Furthermore, no practically significant differences existed among the beliefs of the dairy industry's animal welfare, environmental care, and food safety practices when

comparing participants to those that did not participate. This may be due to the area from which the respondents resided. The largest city from which respondents were from had a population of 17,800 and the smallest town had a population of less than 200 (U.S. Census Bureau, 2010). While there was a city included, it was not a very large city, thus allowing the researcher to assume that a majority of the respondents were not from an urban community. Perhaps the lack of practical differences was due to most individuals residing in rural communities, which have similar or less diverse beliefs of agriculture. Similarly, this was supported by both participants and those that did not participate reporting that they "agreed" with the animal welfare, environmental care, and food safety practices of the dairy industry. Lastly, this finding supported that of studies which found that households with lower income levels oftentimes have greater levels of food production concern (Dosman et al., 2001; Miles et al., 2004; Nayga, 1996). One in six of the respondents reported an income level of less than $25,000 and the mean response from participants was that they "agreed" with the dairy industry's practices. However, it was also found that about two-thirds of the respondents were at least somewhat familiar with or directly involved in agriculture. Therefore, agricultural familiarity may have explained some of the reason for participants and those that did not participate having similar beliefs of the dairy industry's practices.

Although the mean response for this study was "agree" for beliefs of the animal welfare, environmental care, and food safety practices of the dairy industry, industry-supported organizations should continue their consumer education efforts on these topics. Dairy advocacy groups may also wish to continue their efforts as there were individuals who "disagreed" or "strongly disagreed" for each of the areas. Supporting this

implication for practice was Abdalla and Lawton (2006) who found that a favorable, or at least neutral, opinion view opinion of consumers is critical to the retention and expansion of the industry. Lastly, continuing to educate consumers will help connect farmers and consumers regarding food safety and other industry practices. This is important because consumers feel that farmers should be held responsible for ensuring that the products leaving their hands is safe (Truitt, 2010) and consumer confidence in the food supply is critical to the well-being of the food industry and dairy farming (Stenholm & Waggoner, 1992).

5.3.2. Conclusion 2: Participants Were More Motivated to Attend Educational Dairy Farm Events

Consumers were motivated to attend farm-based educational events because of enjoyment, competence, and health, and participants were more motivated to attend a free educational dairy farm event than those who did not participate. Participants were more motivated on five types of motivation, including enjoyment, social desire, social comparison, competence, and health, compared to those who did not participate in the educational dairy farm event. As such, all five types of motivation had statistically significant differences with moderate to large effect sizes. First, those who participated in the educational dairy farm event were more likely to find the opportunity fun, interesting, and enjoyable. Second, those who participated had a stronger desire to be with friends and family as well as to meet new people. Third, those who participated had a stronger desire to be looked upon favorably by others, including their peers. Fourth,

those who participated had a stronger desire to acquire new knowledge and meet a challenge. Last, those who participated had a stronger desire to be nutritionally healthy.

Nutritional health was found to be the strongest motivation for both participants and those who did not participate; however participants reported this at a higher mean (*M* = 3.96) than nonparticipants (*M* = 3.33). Desire to be nutritionally healthy was expected to receive a high rating because it impacts each person's daily life and is an area in which most consumers have at least some concern (Moorman & Matulich, 1993). Enjoyment (M = 3.78) was the next strongest motivation for those who participated in the educational dairy farm event which was not surprising because consumers participate in activities that are enjoyable so that they may relieve stress, increase their self-confidence, and improve their self-esteem (Arai et al., 2008; Baker & Palmer, 2006; Kim & Heo, 2009; Patterson, 2000; Siegenthaler & O'Dell, 2003). The third strongest motivation for participants to attend an educational dairy farm event was the desire to acquire new knowledge and meet a challenge (*M* = 3.71). The previous two motivations were reversed for those who did not participate with a reported a mean of 3.04 for the motivation of desire to acquire new knowledge and meet a challenge and a mean of 2.85 for enjoyment. Therefore, it was suggested that enjoyment was of greater importance to consumers whereas the need to gain knowledge of dairy industry practices and dairy nutrition was of greater importance to those that did not participate (Deci, 1975; Woodworth, 1918, 1958). However, it was plausible that the location of the event may have discouraged those who did not participate from attending. For example, had the event been at a museum or mall, maybe those who did not participate would have been stronger in this motivation than the participants. Similarly, participants may not have

reported the desire to acquire new knowledge with a higher ranking because they may not have been greatly concerned with self-knowledge even though all individuals have a natural desire to socially compare themselves with others (Festinger, 1954; Miller & Prentice, 1996; Mussweiler, 2003a, 2003b). Regardless, participants reported higher means than those that did not participate for both variables. The weakest motivation for both participants and those that did not participate was the desire to be looked upon favorably by others; however, participants reported it with a higher mean (M = 2.35) than those who did not participate (M = 1.90).

While the researcher located literature discussing consumer motivations to attend agritourist and place-based learning opportunities, the current study added to the knowledge base in that it focused on consumer motivations to attend educational dairy events. Furthermore, a majority of agritourism research has focused on its economic benefits for farms as well as the multitude of opportunities that exist within it (Barbieri & Tew, 2009; Bernardo et al., 2004; Caballe, 1999; Clarke, 1999; Hsu, 2005; Ilbery et al., 1998; Jansen et al., 2006; Leeds & Barrett, 2004; Lopez & Larkin, 2004) rather than on consumers' motivation to participate in agritourism (Oh & Shih, 2002; Rilla, 2007).

Oh and Shih (2002) defined agritourism as "a business conducted by a farmer for the enjoyment and education of the public to promote the products of the farm and thereby generate additional farm income" (p. 577). Therefore, due to the similarities between agritourism and an educational dairy farm event, such as each being held for education, enjoyment, and product promotion (Dairy Business Innovation Center, 2006), it was proposed that present study's motivational findings would be similar to those found if it were repeated for an agritourist opportunity. If similar findings were found, it

would help the agritourist industry to be more successful because it would have a better understanding of why consumers participate in agritourism (Srikatanyoo et al, 2010; The Food and Fertilizer Technology Center, 2007). Moreover, being highly motivated to attend educational agricultural events because they are fun, interesting, and enjoyable as well as to acquire new knowledge and meet a challenge support the literature finding that consumers participate in agritourism because of leisure enjoyment (Jolly & Reynolds, 2005; Miller, 2006) and learning about food production (Barry & Hellerstein, 2004).

Moreover, the educational on-farm event could be viewed as a place-based learning experience which occurs when one is "immerse[ed] in local heritage, culture, ecology, landscapes, opportunities, and experiences as a foundation for the study of subjects" (Place-Based Education Evaluation Collaborative, 2010). Therefore, the current study contributed to the knowledge base of understanding consumers' motivation to attend place-based educational opportunities. Participating in place-based events, such as one at a dairy farm, may help connect consumers to local heritage, culture, landscapes, opportunities, and experiences. For example, consumers may not understand the culture of agriculture, but attending an educational dairy farm event would help them to learn about the lifestyle of living on a farm and the responsibilities that it includes. In addition, attending an educational dairy farm event immerses consumers in the landscape of dairy farming and allows them the opportunity the ask questions as well as potentially participate in some of the farm's daily practices.

Knowing the motivations of those who participate educational, on-farm or place-based events may help the organizations that host these events to more efficiently and effectively deliver their messages to their target audiences. For example, the present

study found that health was the strongest motivation for those who participated in the educational dairy farm event. Therefore, it was suggested that future program development focus on providing the most educational experience possible regarding nutritional health and that event marketing reflect similar characteristics. Modifying the current program development and marketing for these events may help increase event participation which is important because participating in farm tours allows consumers to connect what they hear and see from others to what actually occurs, helping them to make more informed decisions (Harper, 2004; Watson et al., 1998). Furthermore, it was postulated that increased consumer attendance at educational, on-farm events would help to increase consumer awareness and understanding of the food supply system, which may ultimately affect consumers' decisions and behaviors. Additionally, it is important for consumers to make the most informed decision possible because their behaviors affect the local, regional, and national economic conditions of all industries (Stenholm & Waggoner, 1992; Doerfert et al., 2005).

Moreover, utilizing the motivation results from this study to modify program development and marketing to increase educational, on-farm event participation may help agricultural industry-supported organizations that host the events greater opportunity to address the growing concerns about modern food production practices and skepticism regarding the origin of food (Frewer et al., 2002; Tucker et al., 2005; Doerfert et al., 2005; Butler, 2002). Ultimately, by addressing these concerns, consumers should have a more favorable, or at least neutral, opinion of dairy, which is critical to the retention and expansion of the industry (Abdalla & Lawton, 2006).

5.3.3. Conclusion 3: Prediction of Consumer Participation

Nearly three of four consumers in an Indiana community would attend an educational event on a dairy farm if they were informed by six factors: (1) were highly motivated to attend educational agricultural events because it is fun, interesting, and enjoyable, (2) were highly motivated to attend educational agricultural events out of desire to acquire new knowledge and meet a challenge, (3) were highly motivated to attend educational agricultural events out of desire to be nutritionally healthy, (4) were very familiar with agriculture or were/had been directly involved with agriculture, (5) agreed or strongly agreed with the animal welfare practices that dairy farmers implement, and (6) resided in households that reported consuming, on average, at least three gallons of fluid milk per week while at home.

Self-determination theory assumes that individuals are active and that they naturally strive for self-growth, mastery of challenges, and integration of new experiences (Deci & Ryan, 1985; Ryan & Deci, 2000). However, these actions can be encouraged or depressed by the social context in which one exists (Deci & Ryan, 1991). Therefore, it was assumed that the social context encouraged the participants' motivation more than it did for those that did not participate. Furthermore, the motivations included in the present study's prediction index were closely related to above assumptions, and therefore support those assumptions. For example, striving for self-growth is similar to the desire to be nutritionally healthy and acquire new knowledge; mastery of challenges is similar to the desire to acquire new knowledge and meet a challenge; and integration of new experiences is similar to participating in the event because it is fun and interesting.

Moreover, the inclusion of the first three motivations: (1) because it is fun, interesting, and enjoyable, (2) desire to acquire new knowledge and meet a challenge, and (3) desire to be nutritionally healthy support self-determination research that has found individuals participate in sports due to skill improvement, personal accomplishment, excitement, competence, and challenge (Alderman & Wood, 1976; Spray et al., 2006; Wankel & Kreisel, 1982; Wankel & Pabich, 1982; Wilson et al., 2008). It is probable that similar results were found because the Motives for Physical Activities – Revised scale was used to collect data for the above studies and a modified version of the same scale was used to collect data for the current study. Furthermore, multiple similarities can be found between the educational dairy farm event and sports including the following: each can provide individuals with enjoyment, they can teach individuals new knowledge and skills as well as challenge their current knowledge and skills, and each can help individuals become healthier. The educational dairy farm event teaches participants about food nutrition thus allowing them to make more informed food choices potentially increasing their overall health. Sports provide an opportunity for individuals to exercise thus increasing their physical health. Ultimately, this finding suggests that the Motives for Physical Activities – Revised scale which has focused on individuals' participation and retention in sports (Wankel & Kreisel, 1982; Wankel & Pabich, 1982; Wilson, et al., 2003; Zahariadis, et al., 2006) can be used for participation and retention in other activities, such as a place-based, educational agricultural event.

Similarly, the bulk of self-determination research has been conducted in the areas of education, psychotherapy, work, and sports (Deci & Ryan, 1985). In addition, much of the education research has focused on children and adolescents as well as in a formal

classroom learning environment (DeCharms, 1976; Deci et al., 1981; Grolnick & Ryan, 1985; Guay et al., 2010; Vansteenkiste et al., 2010). Therefore, the current study broadens the use of the self-determination theory to a non-formal educational context as well as to adults rather than children.

The theory of basic human values states that one's actions can be predicted by their values. Although no significant difference was found between the beliefs of animal welfare practices for participants and those that did not participant, the finding that those who "agreed" with the dairy industry's animal welfare practices are more likely to attend an educational, on-farm event supported the theory. The basic human values theory also states that if an individual's value has high priority, it is activated, and he or she feels confident in completing the action, then it is probable that person will plan for the behavior to occur (Gollwitzer, 1996). In addition, the importance of specific values helps humans determine upon which values they will act (Schwartz, 1992, 1996). Therefore, perhaps while both participants and those that did not participate had similar beliefs of the dairy industry's animal welfare practices, only those who held animal welfare practices with high priority or importance actually attended (Bardi, 2000; Verplanken & Holland, 2002; Schwartz, 1996).

Similarly, the theory of basic human values assumes that if someone favorably views an ideal, then they are more likely to invest in it (Schwartz, 1992, 2005). While both participants and those that did not participate "agreed" with the dairy industry's animal welfare practices, perhaps the participants had a somewhat more favorable view causing them to be more likely to invest in it. Lastly, although Bailey and Norwood (2010) found that consumers are much less concerned about animal welfare than they are

about food safety and the environment, the current study found their beliefs of animal welfare to be correlated with their decision to participate in an educational dairy farm event.

While consumers' familiarity with agriculture was not informed by basic human values theory, the two concepts align well with one another in terms of the current study's prediction model. For example, if an individual has invested enough time in agriculture to become very familiar with it or to be directly involved with it at one time or another, then it can be presumed that he or she would hold agriculture with high value or importance. If he or she held agriculture with high value or importance, then it is probable that the individual would act in ways that support that value (Bardi, 2000; Gollwitzer, 1996; Schwartz, 1996; Verplanken & Holland, 2002). Therefore, the basic human values theory was supported by the present study as the researcher found that being very familiar with agriculture or being/having been directly involved with agriculture was a prediction indicator for participating in an educational, on-farm event. In addition, Jones et al. (n.d.) and Safley (1994) found that the closer a person lives to a farm; the more likely they are to have complaints. So, it was plausible that a larger percentage of the Jones et al. (n.d.) study participants resided near a dairy farm causing a greater number of complaints to be reported, whereas in the present study only a small number of the participants could have lived near a dairy farm because there was only one major dairy farm in the target population. Furthermore, Napier et al. (2004) found that individuals who were raised on or near a farm have greater trust of food production practices due to their assumed familiarity with food production itself. A similar relationship was found with regard to residing in a household that reports consuming, on

average, at least three gallons of fluid milk per week while at home being an indicator of participation in an educational, on-farm event.

The previous two findings suggest that while most educational, on-farm events aim to educate those who are not familiar with agriculture or who do not hold agriculture with high value that is not the audience who attend the events. Instead, those who participate tend to be those who are very familiar with agriculture and hold it with high value. Therefore, alternate approaches need to be utilized to encourage the target audience to attend. One such approach may be to personally invite individuals to the events, rather than sending mass mailings to numerous households. Doing so would show the consumers that agriculturalists are interested in them and that they want them to learn. It would also help to build relationships with those consumers which may help to lessen the current communication gap. Ultimately, by lessening the communication gap between agricultural producers and consumers, then consumers may gain a more favorable view of agriculture, have greater confidence in the food supply, and develop a clearer understanding of agriculture's importance to the economy and to themselves (Oshel et al., 2009). If this occurs, then consumers may cease avoiding certain foods in fear of potential risks and more readily accept new production practices to be implemented (Frewer et al., 2002; Tucker et al., 2005). Lastly, consumers may vote in support of laws that allow agriculture to grow and develop in a positive manner rather than hinder its success (Bailey Norwood, 2010).

5.3.4. Conclusion 4: Differences in Food Purchasing Information Channels

Participants were more frequently informed by family and/or friends and educational events when making food purchasing decisions than those who did not participate in the educational dairy farm event. This difference between participants and those who did not participate may be the result of participants valuing agriculture more than those that did not participate. Therefore, they may view those involved with agriculture, such as farmers, as friends or maybe those that participated had friends and/or family that worked at the event's host farm. In addition, the participants attended the educational, on-farm event, so it was proposed that they were more likely to obtain food purchasing information from educational events than those who did not participate.

Limited studies have been conducted regarding the channels and sources of consumers' food purchasing information. The current study's findings did not support those of the most prominent study located by researcher. That study, conducted by Wimberley et al. (2003), found that 82.0% of its respondents trusted the USDA, 75% trusted the FDA, and 72% trusted the EPA for food information whereas only 51.0% of this study's respondents trusted the USDA, 56.7% trusted the FDA, and 48.6% trusted the EPA. Furthermore, Wimberley et al. (2003) found that two-thirds of their respondents mistrusted elected officials, celebrities, and business executives for food safety information compared with the present study which found 51.0% of respondents did not trust elected officials, 39.3% did not trust celebrities, and 77.5% did not trust business executives for the same information. Therefore, nearly one-fourth more of the Wimberley et al. (2003) study's respondents trusted governmental organizations (i.e.,

USDA, FDA, and EPA) than the current study's respondents. Wimberley et al. (2003) found more respondents mistrusted elected officials than the current study's respondents. In contrast, the current study's respondents mistrusted celebrities more than the Wimberley et al. (2003) study's respondents. Last, nearly 30% more of the Wimberley et al. (2003) study's respondents mistrusted elected officials than the current study's respondents. According to the present study's results, it is recommended that agricultural industry-supported organizations focus on having their key messages developed by governmental agencies that have established credibility, such as the USDA, FDA, and EPA and avoid distributing messages that were developed by elected officials, celebrities, and business executives as these sources are often viewed as untrustworthy.

In addition, the current study found that approximately 6 out of 10 participants and approximately 7 out of 10 of those who did not participate "never" used social media for food purchasing information. Similarly, approximately 6 out of 10 of participants and slightly more than one-half of those that did not participate "never" used company and/or organization-sponsored websites. Therefore, based on this study's results, it was suggested that agricultural industry-supported organizations should not use company and/or organization-sponsored websites as a channel for delivering food purchasing information. More specifically, it is recommended that industry-supported organizations consider the sources of food purchasing information that rural audiences trust when using social media as a channel to deliver food purchasing information.

Gaining information on consumers' source and channel preferences when making food purchasing decisions, such as that which was gathered in this study, allows for increased success rates of reaching them with the intended information (Israel & Wilson,

2006). Furthermore, by understanding how consumers obtain their food purchasing information agricultural industry-supported organizations, scientists, and government agencies can deliver more accurate messages to consumers which would help to close the communication gap (Doerfert et al., 2005). Ultimately, this has the potential to lead to a greater understanding of food production practices and food products, less skepticism of food production, fewer emotionally charged decisions, and great confidence in the food supply by consumers (Sobal & Maurer, 1995; Tucker et al., 2006).

5.4. Non-formal Agricultural Education Significance

This study was important because it developed a prediction model for determining if consumers would or would not attend a non-formal, educational, dairy farm event based on six key factors. This prediction model was able to be created upon the determination of consumers' motivations to attend an educational, on-farm event as well as their beliefs of the dairy industry in terms of animal welfare practices along with behaviors such as fluid milk consumption and familiarity with agriculture. With further study that explores the reasons behind consumer motivations and their beliefs of the dairy industry, as well as other specific agricultural industries, agricultural industry-supported organizations will have the information they need to provide programs that help to create a more informed American consumer, which will directly affect their associated industry.

By utilizing the findings from this and future studies, agricultural industry-supported organizations may be able to develop non-formal, educational events that are

appealing to their target audiences as well as market those events in a way that may be more appealing to consumers to attend. Furthermore, the study determined consumers' channel preferences for food purchasing information as well as the sources they trust for the same information. Therefore, such organizations may be able to more effectively and efficiently deliver its key messages to consumers. This is increasingly important for the following reasons: (1) less than 2% of the American population is actively involved in production agriculture; (2) consumers are becoming more sensitive about how their food is produced and whether they perceive the management practices as environmentally friendly or socially responsible; (3) millions of Americans are overweight or obese and healthy food choices are important to the America's overall health; (4) there is a lack of accurate communication between consumers, industry, scientists, the media, and governmental officials; (5) many consumers do not have a clear understanding of the importance of agriculture to the economy and how it may directly or indirectly affect them; and, (6) a favorable, or at least neutral, opinion of agriculture by consumers is critical to the viability and sustainability of the industry.

This study revealed several important findings, but further exploration and identification is necessary to verify if these results are accurate among other populations and non-formal, educational, on-farm events. The results of those studies may lead to further program development and marketing impacting consumers' beliefs of and behaviors toward agriculture.

5.5. Recommendations

This may be one of the first studies of its kind to utilize theory-based motivations to determine why consumers participate in educational, on-farm events. Furthermore, it was one of few studies that analyzed consumers' beliefs of a specific agricultural industry's practices with regard to animal welfare, environmental care, and food safety. While several important findings were revealed, the study's limitations have led to recommendations for future study, including utilization of alternative data collection methods, continuation of theory development, and replication of the study in other contexts.

5.5.1. Utilization of Alternative Data Collection Methods

Further research should focus on utilizing data collection methods beyond a questionnaire so that more qualitative information may be obtained. For example, conducting focus groups or interviews would allow for researchers to learn more about why various motivations are important to the consumers and why they believe animal welfare, environmental care, and food safety practices to be the way that they do. In addition, future data collection should include an item determining the respondent's level of education. Previous studies have found that level of education is directly related to consumer concerns; however, due to a clerical error in the current study's questionnaire the educational item had to be removed. Therefore, more information is needed in this

area with regard to agriculture. Moreover, the consumers' trust of advocacy groups for food purchasing information item included in Part 3 of the questionnaire needs to be revised in future studies. The study's results revealed that there may have been confusion among the respondents in terms of what they view as an advocacy group as well as whether it was referring to an advocacy group with a political agenda, a promotional agenda, a joint agenda, or even if they were, for example, pro- or anti-agriculture. In any case, future researchers should be aware that individuals interpret advocacy groups differently. It may also be helpful to include specific and very different examples of advocacy groups, such as MPSI and PETA. Similarly, the social media item should be divided into specific venues because there may have been several respondents who frequently used one venue for their food purchasing information, but never used any others. Therefore, their response may have shown that they "sometimes" use social media when they may actually use blogs for food information on a daily basis. Lastly, if a questionnaire is to be used again, alternative methods should be utilized to attain a higher response rate. The current study had a response rate of 36% which past studies have found to be acceptable in situations where the researcher had no prior contact or relationship with the potential respondents (Church, 1993). However, an increased response may have allowed for even more accurate results and additional data analyses may have been conducted.

5.5.2. Continuation of Theory Development

Continuation of theory development should be the focus of future studies because previous research has noted that theory-based consumer motivations have not been commonly used in agricultural-based studies. Therefore, there is great opportunity to continue implementing the self-determination theory and the theory of basic human values in studies similar to this one. Additionally, by furthering theory development, it may be possible to determine if beliefs are linked to behaviors in an agricultural context. For example, if consumers are motivated to participate in an educational, on-farm event, they attend the event and their values are positively or negatively influenced, do their at-home behaviors (i.e., fluid milk consumption) actually change? Such studies could include a pre- and post-test or observation analyzing changes in consumers' behaviors and beliefs regarding dairy purchases or consumption and beliefs of dairy production. Analyzing these changes may then indicate if participation in educational, dairy farms events has a significant impact on consumers' beliefs and behaviors.

5.5.3. Replication of Study in Other Contexts

Lastly, future research should replicate this study in other contexts. Understanding consumer motivations to participate in a non-formal, educational, agricultural event as well as consumer beliefs of other agricultural industries (i.e., beef, swine, poultry, crops, etc.) may be of significant benefit to other fields. For example, if

the agritourism industry understood consumer motivations to participate in its activities, then it may be able to increase agritourism participation thus potentially influencing its economic impact. Additional entities that may benefit from this information include, but are not limited to, the Cooperative Extension Service, fair associations, and convention associations. Furthermore, the venues in which the education occurs should also be considered for future studies as it is suspected that a farm-based event may draw a different audience than a museum-based, web-based, retail store-based event. In addition, if consumers were to attend each of these types, it is probable that they will experience each one differently. Consumers' experiences in each of the different event settings may be correlated to their association with an urban or rural environment. So, future research should be conducted to understand differences in how consumers experience these methods and if they have different impacts on their beliefs and behaviors.

5.6. Research Summary

In summary, this study focused on developing a prediction model for consumer participation in a non-formal, educational, dairy farm event. In doing so, it also identified the following: (1) consumers' motivations (enjoyment, social desire, social comparison, competence, and health) to attend an educational, on-farm event, (2) their beliefs of the dairy industry in terms of animal welfare, environmental care, and food safety practices, (3) consumers' food purchasing information channel preferences, (4) sources of food purchasing information that consumers' trust, and (5) consumers' demographic

information. Ultimately, it was found that enjoyment motivation, competence motivation, health motivation, agriculture familiarity, beliefs of animal welfare, and fluid milk consumption can predict consumer participation in a non-formal, educational, dairy farm event with 73% accuracy. Based upon this study's outcomes, implications for agriculture industry-supported organizations were reported and potential areas for future research were identified.

LIST OF REFERENCES

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Aakkula, J., Peltola, J., Maijala, R., & Siikamaki, J. (2005). Consumer attitudes, underlying perceptions and actions associated with food quality and safety. *Journal of Food Products Marketing, 11*(3), 67-87.

Abdalla, C. W., & Lawton, J. L. (2006). Environmental issues in animal agriculture. *Choices: The Magazine of Food, Farm, and Resource Issues, 21*(3). Retrieved from http://www.choicesmagazine.org/2006-3/animal/2006-3-11.htm

Alderman, R. B., & Wood, N. L. (1976). An analysis of incentive motivation in young Canadian athletes. *Canadian Journal of Applied Sports Sciences, 1*, 169-176.

Allport, G. W. (1961). *Pattern and growth in personality.* New York: Holt, Rinehart & Winston.

Althaus, S., & Tewksbury, D. (2002). Agenda setting and the 'new' news: Patterns of issue importance among readers of the paper and online versions of the New York Times. *Communication Research, 29*(2), 180-207.

Ankey, R., Heilman, P., & Kolff, J. (1996). Newspaper coverage of the coronary artery bypass grafting report. *Science Communication, 18*, 153-164.

Arai, S. M., Griffin, J., Miatello, A., & Greig, C. L. (2008). Leisure and recreation involvement in the context of healing from trauma. *Therapeutic Recreation Journal Special Issue, 42*(1), 37-55.

Arkansas Foundation for Agriculture. (2006). *Farm families in Arkansas: Background.* Retrieved from http://www.growingarkansas.org/background.asp

Bailey Norwood, F. (2010). Presentation from ADSA-PSA-AMPA-CSAS-WSASAS-ASAS Joint Annual Meeting**:** *Animal Welfare as a Commodity and as a Morality.* Denver, CO: Oklahoma State University. Retrieved from http://asp.okstate.edu/baileynorwood/

B ker, D. A., & Palmer, R. J. (2006). Examining the effects of perceptions of community and recreation participation on quality of life. *Social Indicators Research, 75*, 395-418.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

Barbieri, C., & Tew, C. (2009, July). *Missouri agritourism survey: A preliminary assessment of agritourism in Missouri.* Retrieved from http://www.agrimissouri.com/pdf/agritourismsurvey.pdf

Bardi, A. (2000). Relations of values to behavior in everyday situations. (Unpublished doctoral dissertation). The Hebrew University: Jerusalem.

Bardi, A., & Schwartz, S. H. (2003). Values and behavior: Strength and structure of relations. *Personality and Social Psychology Bulletin, 29,* 1207-1220.

Barletta, A., & Loy, D. P. (2006). The experience of participation in challenger little league through the eyes of a child with physical disability. *American Journal of Recreation Therapy, 5,* 6-12.

Barry, J. J., & Hellerstein, D. (2004). Farm Recreation. In H. K. Cordell (Ed.), *Outdoor recreation for the 21st century.* State College, PA: Venture Publishing Inc.

Bennett, D. (2008, March 10). Consumers' strange views of farmers' role. *Delta Farm Press*. Retrieved from HTTP://DELTAFARMPRESS.COM/CONSUMERS-STRANGE-VIEWS-farmers-role

Bernardo, D., Valentin, L., & Leatherman, J. (2004). *Agritourism: If we build it, will they come?* Manhattan: Kansas State University.

Beus, C. E., & Dunlap, R. E. (1990). Conventional versus alternative agriculture: The paradigmatic roots of the debate. *Rural Sociology*, *55*(4), 590-616.

Beus, C. E., & Dunlap, R. E. (1991). Measuring adherence to alternative vs. conventional agricultural paradigms: A proposed scale. *Rural Sociology, 56*(3), 432-460.

Borra, S. T., Earl, R., & Hogan, E. H. (1998). Paucity of nutrition and food safety 'news you can use' reveals opportunity for dietetics practitioners. *Journal of the American Dietetic Association, 98*, 190-193.

Broiller, C., Shepherd, J., & Markley, K. F. (1994). Transition from school to community living. *American Journal of Occupational Therapy, 48,* 346-353.

Bryan, F. L. (1989). Risks associated with vehicles of foodborne pathogens and toxins. *Journal of Food Protection,* 51, 498-508.

Butler, L. M. (2002). Rural-urban interdependency and the future of agriculture. Paper presented at the *Agricultural Outlook Forum 2002*. Washington, DC. Retrieved from http://ageconsearch.umn.edu/bitstream/33500/1/fo02bu02.pdf

Buzby, J. C. (2001). Effects of food-safety perceptions on food demand and global trade. In A Regmi (Ed.), *Changing structure of global food consumption and trade* (pp. 55-66). Washington, DC: United States Department of Agriculture.

Caballe, A. (1999). Farm tourism in Spain: A gender perspective. *GeoJournal, 48*(3), 245.

Cardwell, V. (2005). Literacy: What level for food, land, natural resources, and environment? *Journal of Natural Resources and Life Sciences Education, 34,* 112-117.

Carpio, C. E., Wohlgenant, M., & Boonsaeng, T. (2006, February 5-8). The demand for agritourism in the United States. Paper presented at the *Southern Agricultural Economics Association Annual Meeting*. Orlando, FL.

Carruthers, S. P. (1991). Farm animals: It pays to be humane. *Center for Agricultural Strategy,* The University of Reading, Reading.

Cassels, A., Hughes, M. A., Cole, C., Mintzes, B., Lexchin, J., McCormack, J. P. (2003). Drugs in the news: An analysis of Canadian newspaper coverage of new prescription drugs. *Canadian Medical Association Journal, 168*(9), 1133-1137.

Center for Food Economics Research. (2001). *Final Report.* United Kingdom: Harper, G. & Henson, S.

Center for Food Integrity. (2011). *About us.* Retrieved from http://www.foodintegrity.org/page/about/

Centers for Disease Control and Prevention. (2009). *Obesity data and statistics: Obesity trends among U.S. adults between 1985-2009.* Retrieved from www.cdc.gov/obesity/data/trends.html

Chipman, H., Kendall, P., Slater, M., & Auld, G. (1996). Audience responses to a risk communication message in four media formats. *Journal of Nutrition Education,* 28, 133-139.

Church, A. H. (1993). Estimating the effect size of incentives on mail survey response rates: A meta-analysis. *Public Opinion Quarterly, 57*(1), 62-79.

Clarke, J. (1999). Marketing structures for farm tourism beyond the individual provider of rural tourism. *Journal of Sustainable Tourism, 7*(1), 26-47.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). New Jersey: Lawrence Erlbaum.

Cole, C. A., & Gaeth, G. J. (1990). Cognitive and age-related differences in the ability to use nutritional information in a complex environment. *Journal of Marketing Research, 27,* 175-184.

Collins, J. W. III, & O'Brien, N. P. (Eds.). (2003). *The Greenwood dictionary of education.* Westport, CT: Greenwood.

DeCharms, R. (1976). *Enhancing motivation: Change in the classroom.* New York: Irvington Publishers.

Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum.

Deci, E. L. (1992). The relation of interest to the motivation of behavior: A self-determination theory perspective. In K. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development* (pp. 43-70). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum.

Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska Symposium on Motivation: Vol. 38. Perspectives on motivation* (pp. 237-288). Lincoln: University of Nebraska Press.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227-268.

Deci, E. L., & Nezlek, J., & Sheinman, L. (1981). Characteristics of the rewarder and intrinsic motivation of the rewardee. *Journal of Personality and Social Psychology, 40,* 1-10.

Denzin, N. K., & Lincoln, Y. S. (2005). *The Sage Handbook of Qualitative Research* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2009). *Internet, mail, and mixed-mode surveys: The tailored design method* (3rd ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Dimopoulos, K., & Koulaidis, V. (2003). Science and technology education for citizenship: The potential role of the press. *Science Education, 87*, 241-256.

Doerfert, D. L., Robertson, J. T., Akers, C., & Kistler, M. (2005). Farm broadcaster knowledge and beliefs of biotechnology and genetically modified organisms. *Journal of Applied Communications, 89*, 55-68.

Dosman, D. M., Adamowics, W. L., Hrudey, S. E. (2001). Socioeconomic determinants of health- and food safety-related risk perceptions. *Risk Analysis, 21*, 307-318.

Dreher, N. (1998). How pollution affects our health. *Current Health 2, 24*(7), 13-15.

Ellis, J. D., & Tucker, M. A. (2009). Consumer perceptions of food-related risks. *CAB Reviews: Perspectives in Agriculture, Veterinary Sciences, Nutrition and Natural Resources, 4*(6). doi: 10.1079/PAVSNNR20094006

Feather, N. T. (1995). Values, valences, and choice: The influence of values on the perceived attractiveness and choice of alternatives. *Journal of Personality and Social Psychology, 68,* 1135-1151.

Festinger, L. (1954). The theory of social comparison processes. *Human Relations, 7,* 117-140.

Fisher, A., & Chen, Y. C. (1996). Customer perceptions of agency risk communication. *Risk Analysis, 16,* 177-184.

The Food and Fertilizer Technology Center. (2007). *Rural tourism.* Taipei, Taiwan: The Food and Fertilizer Technology Center.

Food Marketing Institute. (2002). *Trends in the United States 2002: Consumer Attitudes and the Supermarket* (pp. 41-45). Washington, DC: FMI.

Food Systems Insider (2010, May 6). *Consumer perceptions of food production.* Retrieved from http://www.foodsystemsinsider.com/Consumer-perceptions-of-food-production/2010-05-06/Article_FSI.aspx?oid=1067779

Frederick, C. M., & Ryan, R. M. (1993). Differences in motivation for sport and exercise and their relationship with participation and mental health. *Journal of Sport Behavior, 16,* 125-145.

Frewer, L., Miles, S., & Marsh, R. (2002). The media and genetically modified foods: Evidence in support of social amplification of risk. *Risk Analysis*, 22(4): 701-711.

Friedman, M. L., & Churchill, G. A. Jr. (1987). Using consumer perceptions and a contingency approach to improve health care delivery. *Journal of Consumer Research, 13*, 492-510.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.

Gollwitzer, P. M. (1996). The volitional benefits of planning. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The Psychology of action*. New York: Guilford.

Goss, M. J., & D. A. J. Barry. (1995). Groundwater quality: Responsible agriculture and the public perceptions. *Journal of Agricultural Environmental Ethics, 8*(1), 52.

Dairy Business Innovation Center. (2006). *Cheese tourism in Wisconsin: Issues and prospects* (p. 1). Madison, WI: Greenberg, L. S. Z.

Grobe, D., Douthitt, R., & Zepeda, L. (1999). A model of consumers' risk perceptions toward recombinant bovine growth hormone (rbGH): The impact of risk characteristics. *Risk Analysis, 19*, 661-673.

Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology, 81*, 143-154.

Grunert, K. G. (2005). Food quality and safety: Consumer perception and demand. *European Review of Agricultural Economics, 32*(3), 369-391. doi: 10.1093/eurrag/jbi011

Guay, F., Ratelle, C. F., Roy, A., & Litalien, D. (2010). Academic self-concept, autonomous academic motivation, and academic achievement: Mediating and additive effects. *Learning and Individual Differences, 20*(6), 644-653.

Hamlett, J. M., & Epp, D. J. (1994). Water quality impacts of conservation and nutrient management practices in Pennsylvania. *Journal of Soil Water Conservation. 49*(1), 59.

Harper, R. (2004). The use of group work and presentations on field trips to facilitate active learning experience. In M. Healey & J. Roberts (Eds.), *Engaging students in active learning: Case studies in geography, environment and related disciplines.* University of Gloucestershire: United Kingdom.

Hopkins, W. G. (2000). *New View of Statistics: Effect Magnitudes.* Retrieved from http://www.sportsci.org/resource/stats/effectmag.html

Howell, J. L., & Habron, G. B. (2004, December). Agricultural landowners' lack of preference for Internet Extension. *Journal of Extension, 42*(6). Retrieved from http://www.joe.org/joe/2004december/a7.shtml

Hsu, C. (2005). *Identification of intangible resources essential to agri-tourism enterprises in Taiwan: A Delphi study.* Columbus: The Ohio State University.

Ilbery, B., Bowler, I., Clark, G., Crockett, A., & Shaw, A., (1998). Farm-based tourism as an alternative farm enterprise: A case study from the Northern Pennines, England. *Regional Studies, 32*(4), 355-365.

Indiana Beef Council (2011). *Our Mission*. Retrieved from http://www.indianabeef.org/council/about-mission-statement.html

Indiana Corn Marketing Council (2011). *About ICMC*. Retrieved from http://www.incorn.org/index.php?option=com_content&view=article&id=40&Itemid=49

Indiana Pork (2010). *About Indiana Pork*. Retrieved from http://www.indianapork.com/AboutIndianaPork/tabid/780/Default.aspx

Indiana Soybean Alliance (2011). *About ISA*. Retrieved from http://www.indianasoybean.com/index.php?option=com_content&view=article&id=68&Itemid=68

Inglehart, R. (1997). *Modernization and postmodernization.* Princeton, NJ: Princeton University Press.

Isaac, S., & Michael, W. B. (1995). *Handbook in research and evaluation: For education and the behavioral sciences* (3rd ed.). San Diego, CA: Knapp.

Israel, G. D. (1991). Reaching Extension's clientele: Exploring patterns of preferred information channels among small farm operators. *Southern Rural Sociology, 8,* 15-32.

Israel, G. D., & Wilson, K. M. (2006). Sources and channels of information used by educational program clients. *Journal of Applied Communications, 90*(4), 55-78.

Jensen, K., Lindborg, C., English, B., & Menard, J. (2006). *Visitors to Tennessee agri-tourism attractions*: Knoxville: The University of Tennessee.

Jolly, D. A., & Reynolds, K. A. (2005). *Consumer demand for agricultural and on-farm nature tourism.* Davis, CA: University of California Small Farm Center.

Jones, K., Kelsey, T. W., Nordstrom, P. A., Wilson, L. L., PAS, Maretzki, A. N., & Pitts, C. W. (n.d.). Neighbors' perceptions of animal agriculture. *The Professional Animal Scientist, 16*, 105-110.

Jungheim, E. S., & Moley, K. H. (2010). Current knowledge of obesity's effects in the pre- and periconceptional periods and avenues for future research. *American Journal of Obstetrics and Gynecology, 203*(6), 522-524. Retrieved from http://http://www.ajog.org

Kerlinger, F. N. (1964). Foundations of behavioral research (2nd ed.). New York: Holt, Rinehart, & Winston.

Kim, J., & Heo, J. (2009, December). Research update: The field of serious leisure. *Parks and Recreation,* 29-31.

Kirk, S. F. L., Greenwood, D., Cade, J. E., & Pearman, A. D. (2002). Public perception of a range of potential food risks in the United Kingdom. *Appetite, 38,* 189-197.

Kluckhohn, C. (1951). Values and value-orientations in the theory of action: An exploration in definition and classification. In T. Parsons & E. Shils (Eds.), *Toward a general theory of action* (pp.388-433). Cambridge, MA: Harvard University Press.

Knight, A., & Warland, R. (2005). Determinants of food safety risks: A multi-disciplinary approach. *Rural Sociology, 70*, 253-275.

Knowles, M. S. (1998). *The adult learner: The definitive classic in adult education and human resource development,* (5th ed.). Houston, TX: Gulf Publishing Company.

Kohn, M. L. (1969). *Class and conformity.* Homewood, Il.: Dorsey Press.

Koka, A., & Hagger, M. (2010). Perceived teaching behaviors and self-determination motivation in physical education: A test of self-determination theory. *Research Quarterly for Exercise and Sport, 81*(1), 74-86.

Lagerkvist, C. J., & Hess, S. (2010). A meta-analysis of consumer willingness to pay for farm animal welfare. *European Review of Agricultural Economics,* 1-24. doi: 10.1093/erae/jbq043

Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education, 42*(4), 43-53.

Leeds, R., & Barrett, E. (2004, May). Agritourism: Cultivating a trend. In Ohio State University Extension – South Centers & Hocking Hills Tourism Association (Chairs), *A conference connecting tourism and agriculture*. Symposium conducted at the meeting of Advancing Community Tourism, Logan, OH.

Lobb, A. E., Mazzocchi, M., & Traill, W. B. (2002). Modeling risk perception and trust in food safety information within the theory of planned behavior. *Food Quality and Preference, 18*, 384-395.

Logan, R. A., Zegjun, P., & Wilson, N. F. (2000). Prevailing impressions in science and medical news: A content analysis of the Los Angeles Times and the Washington Post. *Science Communications, 22*, 27-45.

Lopez, L., & Larkin, J. (2004, December 30). Thailand's relief effort stands out: Asian nation moves fast to give aid after tsunami with minimal foreign help. *Wall Street Journal,* p. A7.

Lord, H. G. (1973, July). Ex post facto studies as a research method. Special Report No. 7320. Syracuse City School District, N.Y.

Malone, R. E., Boyd, E., & Bero, L. A. (2000). Science in the news: Journalists' constructions of passive smoking as a social problem. *Social Studies of Science, 30*, 713-735.

Market Directions. (2006). Consumer attitudes about animal welfare: 2004 national public opinion survey. Retrieved from http://www.animalagalliance.org/images/ag_insert/2004_Pub_Op_PR.ppt

Massey, L. K. (2001). Dairy food consumption, blood pressure, and stroke. *Journal of Nutrition, 131*(7), 1875-1878.

Mawby, R. (1985). Foreword. In G. K. Douglas (Ed.), *Cultivating agricultural literacy: Challenge for the liberal arts* (pp. 7-8). Battle Creek: W. K. Kellogg Foundation.

Mayen, C. D., & McNamara, K. T. (2006). *Economic importance of the Indiana dairy industry* (pp. 15-20). West Lafayette, IN: Purdue Agricultural Resources Report.

Mayfield, L. E., Bennett, R. M., Tranter, R. B., & Wooldridge, M. J. (2007). Consumption of welfare-friendly food products in Great Britain, Italy and Sweden, and how it may be influenced by consumer attitudes to, and behavior towards, animal welfare attributes. *International Journal of Sociology of Food and Agriculture, 15*, 59-73.

McDougall, W. (1908). *Social psychology.* New York: Luce & Co.

McIntosh, W. A., Acuff, G. R., Christensen, L. B., & Hale, D. (1994). Public perceptions of food safety. *The Social Science Journal, 31,* 285-292.

Miles, S., Brennan, M., Kuznesof, S., Ness, M., & Ritson, C. (2004). Public worry about specific food safety issues. *British Food Journal, 106,* 9-22.

Milk Promotion Services of Indiana (2010a). *Delivering results through the dairy checkoff: MPSI news.* Indianapolis, IN: D. Osza.

Milk Promotion Services of Indiana (2010b). *Winners drink milk! American Dairy Association of Indiana, Dairy Nutrition Council of Indiana*. Retrieved from http://www.indianadairycouncil.org

Miller, M. (2006). *Agritourism profile.* Ames, IA: Iowa State University. Retrieved from http://www.agmrc.org/agmrc/commodity/agritourism/agritourism/agritourismprofile.htm

Miller, D. T., & Prentice, D. A. (1996). The construction of social norms and standards. In E.T. Higgins & A.W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 799-829). New York: Guilford.

Molnar, J. J., & Duffy, P. A. (1985). Public perceptions of how farmers treat the soil. *Journal of Soil Water Conservation, 43*(2), 182.

Molnar, & T. J. Tomazic (Eds.), *The social risks of agriculture* (pp. 57-74). Westport, CT: Praeger Publishers.

Moon, W., & Balasubramanian, S. K. (2004). Public attitudes toward agrobiotechnology: The mediating role of risk perceptions on the impact of trust, awareness, and outrage. *Review of Agricultural Economics, 26,* 186-208.

Moorman, C., & Matulich, E. (1993). A model of consumers' preventive health behaviors: The role of health motivation and health ability. *Journal of Consumer Research, 20,* 208-228.

Morris, C.W. (1956). *Varieties of human value.* Chicago: University of Chicago Press.

Mussweiler, T. (2003a). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review, 110,* 472-489.

Mussweiler, T. (2003b). "Everything is relative": Comparison processes in social judgment – The 2002 Jaspars Lecture. *European Journal of Social Psychology, 33,* 719-733.

Napier, T. L., Tucker, M., Henry, C., & Whaley, S. R. (2004). Consumer attitudes toward GMOs: The Ohio experience. *Journal of Food Science,* 69, 69-76.

National Football League (2011). *Fuel Up to Play 60.* Retrieved from http://www.fueluptoplay60.com

National Research Council, Board of Agriculture, Committee on Agricultural Education in Secondary Schools. (1988). *Understanding agriculture: New directions for agricultural education.* Washington, D. C.: National Academy Press.

Nayga, R. M. (1996). Sociodemographic influences in consumer concern for food safety: The care of irradiation, antibiotics, hormones, and pesticides. *Review of Agricultural Economics, 18,* 467-475.

Nelkin, D. (1995). *Selling science: How the press covers science and technology* (2nd ed.). W. H. Freeman, New York, New York: USA.

Norris, S. P., & Phillips, L. M. (2003). Communicating, interpreting, and applying the science of learning. *Education Canada, 43,* 24-27.

Ntoumanis, N., & Standage, M. (2008). A self-determination theory approach to understanding the antecedents of teachers' motivational strategies in physical education. *Journal of Sport and Exercise Psychology 30*(1), 75-94.

Oh, F., & Shih, A. (2002, March). *A framework for ecotourism and agritourism development.* Paper presented at the IUCN/WCPA-EA-4 Taipei Conference. Taipei, Taiwan.

Ohr, L. M. (2009). The diversity of dairy. *Food Technology, 63*(7), 57-80.

O'Keefe, G. J., Boyd, H. H., & Brown, M. R. (1998). Who learns preventative health care information from where: Cross-channel and repertoire comparisons. *Health Communication, 10*(1), 25-36.

Oliver, R. L., & Berger, P. K. (1979). A path analysis of preventive health care decisions. *Journal of Consumer Research, 6,* 113-122.

Opperman, M. (1996). Rural tourism in Southern Germany. *Annals of Tourism Research, 23,* 86-102.

Oshel, A., Akers, C., Doerfert, D., Lawver, D., & Wilson, K. (2009). *Change in attitude and perception of the media by Texas agriculture producers after a one-day media training workshop.* Paper presented at the *American Association for Agricultural Education Research Conference*. Louisville, KY.

Pan, S., & Ryan, C. (2007). Mountain areas and visitor usage – Motivations and determinants of satisfaction: The case of Pirongia Forest Park, New Zealand. *Journal of Sustainable Tourism, 15*(3), 288-308.

Parsons, T. (1951). *The social system*. Glencoe, IL: Free Press.

Patterson, I. (2000). Developing a meaningful identity for people with disabilities through serious leisure activities. *World Leisure Journal, 2*, 41-51.

PETA. (2007). *Yearly Financial Reports 2007.* Retrieved from http://www.peta.org/about/numbers.asp

Phillip, S., Hunter, C., & Blackstock, K. (2010). A typology for defining agritourism. *Tourism Management, 31*, 754-758.

Pisano, C., & Woods, M. D. (2002). Communicating food safety across cultures: Issues of trust and credibility within diverse populations. Paper presented at the *International Meeting of Agricultural Communications in Education*. Savannah, GA.

Place-based Education Evaluation Collaborative. (2010). *The benefits of place-based education: A report from the Place-based Education Evaluation Collaborative* (2nd ed.). Retrieved from http://www.peecworks.org/PEEC/Benefits _of_PBE-PEEC_2008_web.pdf

Pollan, M. (2006). *The omnivore's dilemma.* New York: Penguin Press.

Powell, D., Agnew, D., & McJunkin, M. (2009). *Changes in agricultural literacy in third and fifth grade using the food, land, and people curriculum in core academic classes.* Paper presented at the *American Association for Agricultural Education Research Conference*. Louisville, KY.

Powell, D. A., Hubbell, A. L., & Chapman, B. (2009). New media for communicating food safety. *Food Technology*, *63*(1), 38-43.

Powell, D., & Leiss, W. (1997). *Mad cows and mother's milk: The perils of poor risk communication*. Montreal: McGill-Queen's University Press.

Prickett, R. W., Bailey Norwood, F., & Lusk, J. L. (n.d.) *Consumer preferences for farm animal welfare: Results from a telephone survey of U.S. households.* Retrieved from http://asp.okstate.edu/baileynorwood/Survey4/files/Robspaper.pdf

Ramsey, M., & Schaumleffel, N. (2006). Agritourism and rural economic development. *Indiana Business Review, 81*(3), 6-9.

Randall, J. L., & Gustke, L. D. (2005). *Top ten travel and tourism trends.* Retrieved from http://www.rtmnet.com/

Rauch, A., & Sharp, J. S. (2005, January). *Ohioans' attitudes about animal welfare.* Department of Human and Community Resource Development: The Ohio State University.

Renninger, K. A., Hidi, S., & Krapp, A. (Eds.). (1992). *The role of interest in learning and development*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Rilla, E. (2007). *Agritourism in Britain and New England.* Davis: University of California Cooperative Extension.

Rimal, A., Fletcher, S.M., McWatters, K. H., Misra, S. K., & Deodher, S. (2001). Perception of food safety and changes in food consumption habits: A consumer analysis. *International Journal of Consumer Studies, 25,* 43-52.

Rokeach, M. (1973). *The nature of human values.* New York: Free Press.

Roseman, M., Kurzynske, J., & Tietyen, J. (2005). Consumer confidence regarding the safety of the US food supply. *International Journal of Hospitality and Tourism Administration, 6*, 71-90.

Russo, J. E., Staelin, R., Nolan, C. A., Russell, G. J., & Metcalf, B. L. (1986). Nutrition information in the supermarket. *Journal of Consumer Research, 13*, 48-70.

Ryan, R. M. & Connell, J. P. (1989). Preceived locus of causality and internalization. *Journal of Personality and Social Psychology, 57*, 749-761.

Ryan, R. M., Connell, J. P., & Deci, E. L. (1985). A motivational analysis of self-determination and self-regulation in education. In C. Ames & R. E. Ames (Eds.), *Research on motivation in education: The classroom milieu* (pp. 13-51). New York: Academic Press.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychology, 55*(1), 68-78.

Ryan, R. M., Frederick, C. M., Lepes, D., Rubio, N., & Sheldon, K. M. (1997). Intrinsic motivation and exercise adherence. *International Journal of Sport Psychology, 28*, 335-354.

Sachs, C., Blair, D., & Richter, C. (1987). Consumer pesticide concerns: A 1965 and 1984 comparison. *Journal of Consumer Affairs, 21*, 96-107.

Safley, L. M. (1994). Best management practices for livestock production. *Journal of Soil and Water Conservation, 49,* 57.

Sarasohn, J. (2006, September 7). Merger Adds to Humane Society's Bite. *Washington Post,* p. A25.

Schlosser, E. (2002). *Fast food nation: The dark side of the all-American meal.* New York: Houghton-Mifflin.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theory and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25). New York: Academic Press.

Schwartz, S. H. (1996). Value priorities and behavior: Applying a theory of integrated value systems. In C. Seligman, J.M. Olson, & M.P. Zanna (Eds.), *The psychology of values: The Ontario Symposium* (Vol. 8). Hillsdale, NJ: Erlbaum.

Schwartz, S. H. (2005). Basic human values: Their content and structure across countries. In A. Tamayo & J. B. Porto (Eds.), *Valores e comportamento nas organizações* [Values and behavior in organizations] (pp. 21-55). Petrópolis, Brazil: Vozes.

Schwartz, S. H., & Bilsky, W. (1987). Toward a psychological structure of human values. *Journal of Personality and Social Psychology, 53*, 550-562.

Schwartz, S. H., Sagiv, L., & Boehnke, K. (2000). Worries and values. *Journal of Personality, 68,* 309-346.

Siegenthaler, K. L., & O'Dell, I. (2003). Older golfers: Serious leisure and successful aging. *World Leisure Journal, 45*(1), 47-54.

Smith, J. A., & Scammon, D. L. (1986). Understanding the predisposing, enabling, and reinforcing factors associated with the utilization of cancer screening by women. In M. Venkatesan & W. Lancsater (Eds.), *Advances in Health Care Research* (pp. 43-48). Silver Spring, MD: American Association for the Advances in Health Care Research.

Sobal, J., & Maurer, D. (1995). Food, eating, and nutrition as social problems. In D. Maurer & J. Sobal, *Eating agendas: Food and nutrition as social problems* (pp. 3-7). New York: Aldine De Gruyter.

Specht, J., King, G., Brown, E., & Foris, C. (2002). The importance of leisure in the lives of persons with congenital physical disabilities. *American Journal of Occupational Therapy, 56,* 436-445.

Spittle, M., Jackson, K., & Casey, M. (2009). Applying self-determination theory to understand the motivation for becoming a physical education teacher. *Teaching and Teacher Education, 25*(1), 190-197.

Spray, C. M., Wang, C. K. J., Biddle, S. J. H., & Chatzisarantis, N. L. D. (2006). Understanding motivation in sport: An experimental test of achievement goal and self-determination theories. *European Journal of Sport Science, 6*(1), 43-51.

Srikatanyoo, Natthawut, Campiranon, & Kom (2010). Agritourist needs and motivations: The Chiang Mai case. *Journal of Travel and Tourism Marketing, 27*(2), 166-178.

Stenholm, C. W., & Waggoner, D. B. (1992). Public policy in animal biotechnology in the 1990s: Challenges and opportunities. In J. F. MacDonald (Ed.), *Animal biotechnology: opportunities and challenges* (pp. 25-35). Ithica, NY: National Agricultural Biotechnology Council.

Stipek, D. J. (1996). Motivation and instruction. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of educational psychology*. New York: Prentice Hall International.

Stranahan, S. Q. (1990, February/March). It's enough to make you sick. *National Wildife, 28*, 8-15.

Stucker, T., & Parhan, K. (1984). Beef, pork and poultry: Our changing consumption habits. *National Food Review, 25*.

Sun, H., & Chen, A. (2010). A pedagogical understanding of the self-determination theory in physical education. *Quest, 62*(4), 364-384.

Tomazic, T. J., Katz, B. M., & Harris, C. K. (2002). Is that strawberry safe to eat? Consumer attitudes about food safety. In R.C. Wimberly, C. K. Harris, J.J.

Treise, D., & Weigold, M. F. (2002). Advancing science communication: A survey of science communicators. *Science Communication,* 23(3), 310-322.

Triplett, N. (1898). The dynamogenic factors in peacemaking and competition. *The American Journal of Psychology, 9*(4), 507-533.

Truitt, G. (2010, July 26). *Indiana consumers hold farmers responsible for food safety and animal care.* Retrieved from http://www.hoosieragtoday.com/wire/news/01134_roundtable_193739.php

Tucker, M., & Napier, T. L. (2002). Preferred sources and channels of soil and water conservation information among farmers in three Midwestern US watersheds. *Agriculture, Ecosystems, & Environment, 92,* 297-313.

Tucker, M., Whaley, S. R., & Sharp, J. S. (2006). Consumer perceptions of food-related risks. *International Journal of Food Science and Technology, 41,* 135-146.

Tucker, M., Whaley, S., & Sharp, J. (2005). Consumer perceptions of food-related risks. *International Journal of Food Science and Technology, 40,* 1-12.

United Soybean Board. (2011). *Soy's role in health and nutrition.* Retrieved from http://www.soyconnection.com

United States Department of Agriculture. (2006). *Economic Research Service: The economics of food, farming, natural resources, and rural America*. Retrieved from http://www.ers.usda.gov/

United States Department of Agriculture. (2011). *MyPyramid.gov: Setps to a healthier you.* Retrieved from http://www.mypyramid.gov/

United States Department of Agriculture, National Agricultural Statistics Services, Indiana Field Office. (2009). *Indiana highlights: "Fact finding for agriculture".* West Lafayette, IN: G. Preston.

United States Environmental Protection Agency. (2009). *Ag 101*. Retrieved from http://www.epa.gov/agriculture/ag101/demographics.html

University of Rochester. (2008). *Self-determination theory: An approach to human motivation and personality.* Retrieved from http://www.psych.rochester.edu/SDT/index.php

U.S. Census Bureau. (2010). *State and county quickfacts.* Retrieved from http://quickfacts.census.gov/

U.S. Department of Labor. (2010-2011). *Career Guide to Industries* (2010-2011 ed.). Retrieved from http://www.bls.gov/oco/cg/cgs001.htm

Van Dalen, D. (1962). *Understanding educational research.* New York: McGraw-Hill.

Vansteenkiste, M., Smeets, S., Soenens, B., Matos, L., & Deci, E. (2010). Autonomous and controlled regulation of performance-approach goals: Their relations to perfectionism and educational outcomes. *Motivation and Emotion, 34*(4), 333-353.

Vergot, P. III, Israel, G. D., & Mayo, D. E. (2005, April). Sources and channels of information used by beef cattle producers in twelve counties of the Northwest Florida Extension District. *Journal of Extension, 43*(2).

Verplanken, B., & Holland, R. W. (2002). Motivated decision making: Effects of activation and self-centrality of values on choices and behavior. *Journal of Personality and Social Psychology, 82,* 434-447.

Vestal, T. A., & Briers, G. E. (2000). Exploring knowledge, attitudes and perceptions of newspaper journalists in metropolitan markets in the United States regarding food biotechnology. *Journal of Agricultural Education, 4,* 134-144.

Wankel, L. M., & Kreisel, P. (1982, May). *An investigation of factors influencing sport enjoyment across sport and age groups.* Paper presented at the *North American Society for the Psychology of Sport and Physical Activity conference.* College Park, MD.

Wankel, L. M., & Pabich, P. (1913). *The minor sport experience: Factors contributing to or detracting from enjoyment.* (Unpublished manuscript). University of Alberta, Edmonton.

Wargel, C. (2010, April 28). *SegmenTrak Benchmarks "indicator consumer" trends in national study: Demeter Communications launches proprietary market research tool for agriculture.* A Service of Demeter Communications.

Warner, R. M. (2008). *Applied statistics: From bivariate through multivariate techniques*. Thousand Oaks, CA: Sage Publications, Inc.

Watson, P., Dawes, L. A., Mathieson, W., & Shanableh, A. (1998). Putting environmental engineering into perspective: A field study. In P. Howard, G. Swarbrick & A. Churches (Eds.), *Waves of change: Proceedings of the 10th Australasian Conference on Engineering Education* (pp. 179-183). Rockhampton, Queensland: James Goldston Faculty of Engineering and Physical Systems, Central Queensland University.

Weaver, C. M. (2009). Should dairy be recommended as part of a healthy vegetarian diet? *American Journal of Clinical Nutrition, 89*(5), 1634S-1637S.

Whaley, S. R., & Doerfert, D. L. (2003). *Is Your Food Safe or Scary? How U.S. News Magazines Communicated Food Safety Issues, 1990-2000.* Paper presented at the *International Meeting of Agricultural Communicators in Education* Conference. Kansas City, MO.

White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review, 66,* 297-333.

Whittmore, T. C. (1995). Response to environmental and welfare imperatives by U.K. livestock production industries and research services. *Journal of Agricultural and Environmental Ethics, 8*(1), 65.

Williams, P. R. D., & Hammitt, J. K. (2001). Perceived risks of conventional and organic produce: Pesticides, pathogens, and natural toxins. *Risk Analysis, 21,* 319-330.

Wilson, M. (2008, February 18). Natural, humane labels studied. *Feedstuffs, 80*(7).

Wilson, P. M., Mack, D. E., & Grattan, K. P. (2008). Understanding motivation for exercise: A self-determination theory perspective. *Canadian Psychology, 49*(3), 250-256.

Wilson, P. M., Rodgers, W. M., & Blanchard, C. M. (2003). The relationship between psychological needs, self-determined motivation, exercise attitudes, and physical fitness. *Journal of Applied Social Psychology, 33*(11), 2373-2392.

Wimberley, R. C., Vander Mey, B. J., Wells, B. L., Ejimakor, G. D., Bailey, C., Bumeister, L. L., …, & Wheelock, G. (2003, February 3). Food from our changing world: The globalization of food and how Americans feel about it. Raleigh, NC: North Carolina State University. Retrieved from https://sasw.chass.ncsu.edu/global-food

Winner, C. (1996). Groundwater: Our hidden endangered resource. *Current Health 2, 22*(1), 28-29.

Wisconsin Milk Marketing Board. (2005). *You've never been on a dairy farm. You've never milked a cow. But if you live in Wisconsin, you're in the dairy business.* Madison, WI: Author.

Woodworth, R. S. (1918). *Dynamic psychology*. New York: Columbia University Press.

Woodwroth, R. S. (1958). *Dynamics of behavior*. New York: Holt.

Worsfold, D. (2006). Eating out: Consumer perceptions of food safety. *International Journal of Environmental Health Research, 16,* 219-229.

Yeung, R. M. W., & Morris, J. (2001). Food safety risk: Consumer perception and purchase behavior. *British Food Journal 103*(3), 170-187. doi: 10.1108/00070700110386728

Zafiriou, M., Robbins, L., Karamchandani, D., & Ominsiki, P. (2003). *Changing consumer demand and its impact on Canadian agricultural policy and trade*. Paper presented at the *International Agricultural Trade Research Consortium Annual Meeting*. Monterey, CA. Retrieved from http://ageconsearch.umn.edu/bitstream/14582/1/wp03-02.pdf

Zahariadis, P., Tsorbatzoudis, H., & Alexandris, K. (2006). Self-determination in sport commitment. *Perceptual and Motor Skills 102*(2), 405-420.

Zajonc, R. B. (1965). Social facilitation. *Science, 149*, 269-274.

APPENDICES

Appendix A. IRB Protocol Ref. 1006009464

PURDUE
UNIVERSITY

HUMAN RESEARCH PROTECTION PROGRAM
INSTITUTIONAL REVIEW BOARDS

To:	NEIL KNOBLOCH AGAD
From:	RICHARD MATTES, Chair Social Science IRB
Date:	07/09/2010
Committee Action:	**Exemption Granted**
IRB Action Date:	07/08/2010
IRB Protocol #:	1006009464
Study Title:	Consumers' Beliefs about Dairy Production and Motivation to Experience a Dairy Farm Educational Event

The Institutional Review Board (IRB) has reviewed the above-referenced protocol and has determined that it qualifies for exemption pursuant to Federal regulations 45 CFR 46.101(b) exempt category(2) .

If you wish to revise or amend the protocol, please submit a revision request to the IRB for consideration. Please contact our office if you have any questions.

We wish you good luck with your work. Please retain copy of this letter for your records.

Ernest C. Young Hall, 10th Floor · 155 S. Grant St. · West Lafayette, IN 47907-2114 · (765) 494-5942 · Fax: (765) 494-9911

Appendix B. Questionnaire

Consumer Preferences of Dairy Farming & Food Choices Questionnaire

1. Are you at least 18 years of age? YES NO

2. Do you make the majority of the food purchasing decisions for your household? YES NO

If you did not answer "YES" to both questions,
please give this packet to someone who can.
Continue, if you did answer "YES" to both.

Please answer this questionnaire to the best of your ability. Upon completion return it to me for a chance to win a $100 gift card to the grocery store of your choice!

Thank you!

Lindsay Nobbe, Graduate Student

PURDUE
UNIVERSITY

PART 1: Below are reasons why people attend agricultural events. To what extent are the following true of you in explaining why you attend free educational dairy events, such as the *Brunch on the Farm*, or similar events?

	True of me...				
	not at all	slightly	somewhat	mostly	always
1. Because I want to know if my family & I are consuming healthy food products.	1	2	3	4	5
2. Because it is fun attending educational farm tours.	1	2	3	4	5
3. Because I like engaging in activities that challenge my thinking and/or beliefs.	1	2	3	4	5
4. Because I want to obtain new knowledge.	1	2	3	4	5
5. Because of my profession, I feel obligated to attend events like the *Brunch on the Farm*.	1	2	3	4	5
6. Because I have friends that go to events like the *Brunch on the Farm*.	1	2	3	4	5
7. Because I like to participate in new experiences.	1	2	3	4	5
8. Because I want to improve my current knowledge of farming and the dairy industry.	1	2	3	4	5
9. Because I want to know where and how my food is produced.	1	2	3	4	5
10. Because of my social role, I feel obligated to attend events like the *Brunch on the Farm*.	1	2	3	4	5

	True of me...				
	not at all	slightly	somewhat	mostly	always
11. Because I enjoy agriculture.	1	2	3	4	5
12. Because I want to keep up-to-date with current food production information.	1	2	3	4	5
13. Because I want to know how dairy products can help my family & me be nutritionally healthy.	1	2	3	4	5
14. Because I like to be with others who are interested in dairy farming and agriculture.	1	2	3	4	5
15. Because I want to know if my family & I are consuming safe food products.	1	2	3	4	5
16. Because I know people who own or work for the event's host farm.	1	2	3	4	5
17. Because I think dairy farming and agriculture are interesting.	1	2	3	4	5
18. Because I want others to know that I support dairy farming and agriculture.	1	2	3	4	5
19. Because I want to meet new people.	1	2	3	4	5
20. Because I want to spend the day with my family doing something out of the ordinary.	1	2	3	4	5

PART 2: Below are statements about dairy farming & food safety practices. To what extent do you agree or disagree with each?

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. When it comes to animal care, I give dairy farmers the benefit of the doubt that they give their animals proper care, regardless of what I hear in the media.	1	2	3	4
2. Most dairy farmers are not careful about the disposal of waste water.	1	2	3	4
3. Even if used as directed, antibiotics & hormones are a threat to humans.	1	2	3	4
4. Dairy farms provide clean & sanitary living quarters for their animals.	1	2	3	4
5. Most dairy farmers are concerned with the impact that their farming practices have on the environment.	1	2	3	4
6. Family-owned dairy farms produce higher quality and safer food products than those that are not family-owned.	1	2	3	4
7. Dairy farmers use technology so that they can do less physical labor rather than to provide better care for their animals.	1	2	3	4
8. Dairy farming is a major source of pollution in our nation today.	1	2	3	4
9. Strict government standards, put in place by the United States Department of Agriculture (USDA), ensure that all dairy products are safe and nutritious	1	2	3	4

	Strongly Disagree	Disagree	Agree	Strongly Agree
10. Dairy farmers use more antibiotics & hormones than are necessary to produce milk.	1	2	3	4
11. Most dairy farmers do a good job of managing manure wastes to protect our environment.	1	2	3	4
12. Milk & other dairy products from cows that have been given antibiotics at approved levels are safe to consume.	1	2	3	4
13. Even if used as directed, antibiotics & hormones are a threat to animals.	1	2	3	4
14. All milk is strictly tested for antibiotics, and any that tests positive is disposed of immediately so that it does not enter the food supply.	1	2	3	4
15. Farm animal wastes, such as those from dairy cows, significantly harm water quality.	1	2	3	4
16. Most dairy farmers use antibiotics & hormones safely.	1	2	3	4
17. Left to themselves, most dairy farmers would not protect the environment.	1	2	3	4
18. Milk & other dairy products from cows that have been given hormones at approved levels are not safe to consume.	1	2	3	4
19. Most dairy farmers take good care of the soil.	1	2	3	4
20. Most dairy farmers do not treat their animals humanely	1	2	3	4

PART 3: The following is a set of questions regarding your food purchasing decisions.

1. How often do you use each of the following to inform your food purchasing decisions?

	Never	Sometimes	Always
Family and/or Friends	1	2	3
Medical Professionals (for example: doctor, nurse, pediatrician, dietitian, etc.)	1	2	3
Educational Events (for example: *Brunch on the Farm*)	1	2	3
Advertisements (TV, radio, or print)	1	2	3
Local Television News	1	2	3
National Television	1	2	3
Talk Shows (TV or radio)	1	2	3
Local Community Newspaper	1	2	3
Indianapolis Star Newspaper	1	2	3
Magazines	1	2	3
Social Media (for example: Facebook, Twitter, MySpace, blogs)	1	2	3
Company and/or Organization Sponsored Websites	1	2	3
Other, please specify: _____ _____ _____	1	2	3

2. How trustworthy are each of following when providing food safety and nutrition information?

	Not At All	Slightly	Somewhat	Mostly	Always
Family and/or Friends	1	2	3	4	5
Medical Professionals (for example: doctor, nurse, pediatrician, dietitian, etc.)	1	2	3	4	5
Farmers	1	2	3	4	5
Food Processors	1	2	3	4	5
University Professors	1	2	3	4	5
Business Executives	1	2	3	4	5
Celebrities	1	2	3	4	5
Advocacy Groups	1	2	3	4	5
Elected Officials	1	2	3	4	5
United States Department of Agriculture (USDA)	1	2	3	4	5
United States Environmental Protection Agency (EPA)	1	2	3	4	5
United States Food & Drug Administration (FDA)	1	2	3	4	5
Other, please specify: _____ _____ _____	1	2	3	4	5

PART 4: The following is a set of questions regarding your background.

1. On average, how many gallons of fluid milk (from cows) does your household drink each week at home?

   <1 1 2 3 4 5 >5

2. On average, how often does your household consume each of the following dairy products (from cows) at home?

	Never	1-2 x / year	1-2 x / month	1-2 x / week	3-4 x / week	1 x / day	3 x / day
Cheese							
Ice Cream							
Yogurt							
Real Butter							
Other: Sour Cream, Cottage Cheese, Whipped Cream							

3. What is your gender? Female Male

4. What is your race? _____ Black or African American _____ Hispanic
   _____ White _____ Other

5. In what year were you born? _____

6. In what year was each child living in your household born?
   1. _____ 2. _____ 3. _____
   4. _____ 5. _____ 6. _____
   7. _____ 8. _____ 9. _____

7. What is your marital status? _____ Married _____ Single
   _____ Living Together _____ Divorced

8. On average, what is your household's total yearly income?

_____ < $25,000
_____ $25,000 - $49,999
_____ $50,000 - $74,999
_____ $75,000 - $99,999
_____ ≥ $100,000
_____ Prefer not to answer

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

_____ Less than High School
_____ High School
_____ Bachelor's Degree
_____ Master's Degree

10. How familiar are you with agriculture?

_____Not at all familiar
_____ Slightly familiar
_____ Somewhat familiar
_____ Very familiar
_____ Am/have been directly involved

11. Is any member of your household lactose intolerant? YES NO

12. Is any member of your household a vegetarian? YES NO

13. Is any member of your household a vegan? YES NO

14. Did you attend the *Brunch on the Farm* on June 12, 2010, at the "Happy" Family Dairy Farm in "Smallville", Indiana? YES NO
If "YES", skip to #16.

15. If it had not been raining the day of the *Brunch on the Farm* event, would have you attended? YES NO

16. Did other members of your household attend the *Brunch on the Farm*?
YES NO *If "YES", skip to #18.*

17. If it had not been raining the day of the *Brunch on the Farm* event, would have other members of your household have attended? YES NO

18. If you have additional comments that you would like to share, please write them below.

Please now place the questionnaire in the provided pre-paid, addressed envelope and drop it in the mail today.

Doing so will enter your address into a drawing* to win a $100 gift card to a grocery store of your choice.

Thank you!

Lindsay

*Odds of winning the drawing are equal for each participant who returns a completed questionnaire.

Appendix C. Panel of Experts

Throughout the study, the researcher was advised by an expert panel including Dr. Neil Knobloch, Dr. Colleen Brady, and Dr. Michael Schutz. Dr. Knobloch is an Associate Professor of Extension Education from Purdue University whose expertise is in non-formal education, motivation, personal epistemology, and experiential learning. Dr. Brady is also an Associate Professor of Extension Education from Purdue University whose expertise is in the human-animal bond and how animals can help engage learners. Dr. Schutz is an Associate Professor of Animal Sciences as well as the Indiana State Dairy Extension Specialist from Purdue University. His research expertise is in the dairy industry and he serves as an advisor to Milk Promotion Services of Indiana's Board of Directors. Furthermore, the questionnaire was reviewed by Dr. Knobloch, Dr. Brady, and Dr. Schutz.

Appendix D. Pre-notice Letter

PURDUE
UNIVERSITY

DEPARTMENT OF YOUTH DEVELOPMENT AND
AGRICULTURAL EDUCATION

College of Agriculture

Date

Resident
Address Line 1
Address Line 2

Dear Resident,

I am writing to ask for your help with an important study, *Consumer Preferences of Dairy Farming & Food Choices*, that I am conducting as a graduate student at Purdue University. The purpose is to understand why consumers attend free educational dairy events as well as to learn what resources they prefer to use when making food purchasing decisions. Within the next week you will receive a request to participate in this study by answering questions about the dairy industry and the choices that you make.

By writing in advance, I hope that it will make it easier and more enjoyable for you to participate in the study. Please note that this research can only be successful with the generous help of people like you.

To say thanks, you will receive a small token of appreciation with the request to participate. By taking 10 to 15 minutes to complete the questionnaire you will be helping yourself and your neighbors receive important food information in a more beneficial way. Furthermore, you will be able to view the study's results at http://www.ydae.purdue.edu/lsesa/.

Best Wishes,

Lindsay K. Nobbe
Graduate Student, Purdue University

Agricultural Administration Building, Room 214 • 615 W. State St. • West Lafayette, IN 47907-2053 •
(765) 494-8422 • FAX: (765) 496-1152 •ydae@ydae.purdue.edu • www.ydae.purdue.edu

Appendix E. Cover Letter

PURDUE
UNIVERSITY

DEPARTMENT OF YOUTH DEVELOPMENT AND AGRICULTURAL EDUCATION

College of Agriculture

Date

Resident
Address Line 1
Address Line 2

Dear Resident,

I am writing to request your help in understanding why consumers attend agricultural events and to learn about their food purchasing decisions. Asking a variety of people invited to the American Dairy Association's *Brunch on the Farm* to share their thoughts is my best way of learning this information. Your household is one of a few that was randomly chosen to participate, and to accurately represent the views of your community, it is important to hear from both those who did and did not attend the event.

Study Information:
Who: The *adult* (age 18 or over) in your household who makes the *majority of food purchasing decisions* for your family should complete the enclosed questionnaire.

Participation: Voluntary, and should only take 10-15 minutes.

Confidentiality: Your name is not on my mailing list, and your answers will never be associated with your address. Purdue University's Institutional Review Board reviewed and approved this study, and if you have questions about your rights as a participant, you may contact them at 765-494-5942.

Questions about the Survey: Please email me at lknobbe@purdue.edu.

Incentive: Returning a completed questionnaire enters your mailing address into a drawing* for a $100 gift card to a grocery store of your choice.

Sharing your thoughts by completing the enclosed questionnaire will help consumers a great deal, and a small token of appreciation is enclosed to say thank you. I hope you enjoy participating in this study, and I look forward to receiving your responses.

Many Thanks,

Lindsay K. Nobbe
Graduate Student, Purdue University

**Odds of winning the drawing are equal for each participant who returns a completed questionnaire.*

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Appendix F. Thank you/Reminder Postcard

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Date

As a randomly chosen household, you should have received a questionnaire last week to participate in the *Consumer Preferences of Dairy Farming & Food Choices* study.

My records show that your household has not returned a completed questionnaire. Please respond today, if you have not already, because it is important that families like yours are represented. I am very grateful for your help, and accept my sincere thanks if your questionnaire has been mailed.

Did not receive a questionnaire? Misplace it? Please email lknobbe@purdue.edu and another one will be sent to you today.

Thanks!

Lindsay Nobbe, Graduate Student

Appendix G. Follow-up Letter

PURDUE
UNIVERSITY

DEPARTMENT OF YOUTH DEVELOPMENT AND
AGRICULTURAL EDUCATION

College of Agriculture

Date

Resident
Address Line 1
Address Line 2

Dear Resident,

A letter was sent to you in September asking that you complete the *Consumer Preferences of Dairy Farming & Food Choices* questionnaire. However, my records show that your household's responses have not been returned. Please note that hearing from nearly everyone in the randomly chosen sample is very important so that the results can truly represent your community, but this is your last chance! So, please complete and return the enclosed questionnaire by October 22nd.

Study Information:
Who: The *adult* (age 18 or over) in your household who makes the *majority of food purchasing decisions* for your family should complete the enclosed questionnaire.

Participation: Voluntary, and should only take about 15 minutes.

Confidentiality: Your name is not on my mailing list, and your answers will be kept confidential. Purdue University's Institutional Review Board approved this study, and if you have questions about your rights as a participant, you may contact them at 765-494-5942.

Questions about the Survey: Please email me at lknobbe@purdue.edu.

Incentive: Returning a completed questionnaire will enter your address into a drawing* for a $100.00 gift card to a grocery store of your choice.

Completing the questionnaire will help you and your neighbors receive important food information in a more beneficial way. Also, the study's results can be viewed at http://www.ydae.purdue.edu/lsesa/.

Sincerely,

Lindsay K. Nobbe
Graduate Student, Purdue University

**Odds of winning the drawing are equal for each participant who returns a completed questionnaire.*

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Appendix H. Participant and Nonparticipant Demographic Comparisons

Table 6.1. Number and Frequency of Participants' and Nonparticipants' Gender and Race

		Gender		Race	
		Male	Female	White	Non-White
Participants	Number (*n*)	23	26	46	3
(*N* = 49)	Percentage (%)	46.9	53.1	93.9	6.1
Nonparticipants	Number (*n*)	53	34.9	151	2
(*N* = 152)	Percentage (%)	99	65.1	98.7	1.3

Table 6.2. Number and Frequency of Participants' and Nonparticipants' Marital Status

		Marital Status			
		Married	Single	Living Together	Divorced
Participants (*N* = 49)	Number (*n*)	34	2	6	6
	Percentage (%)	70.8	4.2	12.5	12.5
Nonparticipants (*N* = 152)	Number (*n*)	118	10	7	17
	Percentage (%)	77.6	6.6	4.6	11.2

Table 6.3. Number and Frequency of Participants' and Nonparticipants' Age

		Age of Respondent (in years) (N = 194)					
		20-29	30 - 39	40 - 49	50 - 59	60-69	70- 79
Participants (N = 46)	Number (n)	4	15	12	13	1	1
	Percentage (%)	8.7	32.6	26.1	28.3	2.0	2.0
Nonparticipants (N = 148)	Number (n)	12	46	54	23	7	6
	Percentage (%)	8.1	31.1	36.5	15.5	4.7	4.1

Table 6.4. Number and Frequency of Participants' and Nonparticipants' Average Annual Household Income

		Average Annual Household Income (N = 199)	
		Number (n)	Percentage (%)
Participants	< $25,000	10	21.3
(N = 47)	$25,000 - $49,999	17	36.2
	$50,000 - $74,999	8	17.0
	$75,000 - $99,999	5	10.6
	≥ $100,000	2	4.3
	Prefer not to answer	5	10.6
Nonparticipants	< $25,000	24	15.8
(N = 152)	$25,000 - $49,999	39	25.7
	$50,0000 - $74,999	34	22.4
	$75,000 - $99,999	27	17.8
	≥ $100,000	18	11.8
	Prefer not to answer	10	6.6