

Consumers' Motivations and Dairy Production Beliefs Regarding Participation in an Educational Dairy Farm Event

Lindsay K. LaFollette¹, Neil A. Knobloch², Michael M. Schutz³, and Colleen M. Brady⁴

This research was supported in part by the National Institute of Food and Agriculture (Hatch Project IND011778), Indiana Soybean Alliance, Milk Promotion Services of Indiana, and Department of Youth Development and Agricultural Education. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the National Institute of Food and Agriculture or those organizations who supported the project.

Abstract

Exploratory discriminant analysis was used to determine the extent adult consumers' interest motivation to participate in a free educational dairy farm event and their beliefs of the dairy industry could correctly classify the respondents' predicted participation in a nonformal educational event. The most prominent conclusion of the study was that nearly three of four adult consumers in an Indiana community would attend an educational event on a dairy farm if they: (1) were motivated to attend an educational agricultural event because it is fun, interesting, and enjoyable, (2) were motivated to attend educational agricultural events to acquire new knowledge and meet a challenge, (3) were motivated to attend educational agricultural events out of desire to be nutritionally healthy, (4) were familiar with agriculture or directly involved in the industry, (5) were in agreement with the animal welfare practices that dairy farmers implement, and (6) resided in a household that reportedly consumed at least three gallons of fluid milk per week, on average, while at home. This finding may help outreach organizations develop non-formal, educational events that are more appealing to their target audiences as well as market those events in a way that will motivate more consumers to attend.

Keywords: outreach; nonformal education; consumer beliefs and motivation

Adult consumers who participate in non-formal educational on-farm events are better able to connect what they hear and see from others to what occurs in the food production system, which can help them make more informed food decisions. With less than two percent of the American population being actively involved in agriculture (U.S. Environmental Protection Agency, 2009), consumers' confidence in the food supply is dwindling and they are questioning the practices used to produce their food as well as the safety of the end product (Napier, Tucker, Henry, & Whaley, 2004). Consumers lack confidence in the food supply and their food

¹ Lindsay LaFollette is a Marketing Specialist at Postema Marketing Group, LLC, 2014 Baltimore St. Defiance, OH 43512, lindsay.lafollette@yahoo.com.

² Neil Knobloch is an Associate Professor in the Department of Youth Development and Agricultural Education at Purdue University, 615 W. State Street, West Lafayette, IN 47907, nknobloc@purdue.edu.

³ Michael Schutz is a Professor of Animal Sciences and the Assistant Director of Purdue Extension Agriculture and Natural Resources at Purdue University, 615 W. State Street, Agricultural Administration Building 104, West Lafayette, IN 47907-2053, mschutz@purdue.edu.

⁴ Colleen Brady is an Associate Professor in the Department of Youth Development and Agricultural Education at Purdue University, 615 W. State Street, West Lafayette, IN 47907, bradyc@purdue.edu.

preferences are shifting to convenient, sweetened or fat-enhanced foods (Jungheim & Moley, 2010). 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 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; Vander Mey, 2004; Wimberley et al., 2003). The American Association for Agricultural Educators (AAAE) identified "informed choices" as a national research priority (Doerfert, 2011) is aligned with the need that agricultural issues are increasing in complexity and consumers' decisions will impact the agricultural industry.

A state coalition of agricultural commodity organizations was organized to collectively 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). The general manager of the Indiana dairy promotion organization explained that the organization sponsors educational programs to build consumer awareness and confidence in the food supply as well as improve the diet of American consumers by teaching them about how dairy food products were produced (D. Osza, personal communication, January 14, 2011) with the understanding that consumers' knowledge and values impact their beliefs and confidence, as well as influence their behaviors and decisions (Schwartz, 1992, 2005). Although the dairy industry hosted educational consumer programs with these goals in mind, little is known about consumers' beliefs of the dairy industry, their motives for attending industry-sponsored place-based educational events, or about the consumers who choose to participate in these types of events in comparison to their neighbors who choose not to participate. Furthermore, consumers may be skeptical of the credibility of advocacy and product promotion groups representing agricultural commodities (Doerfert, 2011), and it is important to better understand how consumers choose to use (or not use) information shared by an agricultural commodity organization as part of an on-farm educational program.

Theoretical Framework

Adult consumers are more likely to support the dairy food system with favorable views and behaviors (Grunert, 2005; Yeung & Morris, 2001), if consumers understand and believe that dairy farmers are producing safe food that is economically feasible, environmentally sustainable, and socially responsible. Therefore, we framed the study by focusing on consumers' interest motivation and beliefs of the dairy industry. First, we chose self-determination theory to focus on interest motivation (Deci & Ryan, 1985, 1991; Ryan & Deci, 2000) because 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 such as choosing to participate in a given activity, such as a free educational dairy event.

Next, we chose to focus on the domain of consumer beliefs of the dairy industry using the basic human values theory developed by Schwartz (1992, 2005). This theory describes the characteristics of values that individuals share and their interactions with one another (Schwartz, 1996; Schwartz, Sagiv, & Boehnke, 2000). The theory highlights that although 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; Rokeach,

1973; Schwartz, 1992, 2005; Schwartz & Bilsky, 1987). The context of specific values helps humans to determine upon which values they will enact (Schwartz 1992, 1996). 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 (Schwartz, 1996; Verplanken & Holland, 2002). If an individual's value has high priority, it is activated, and he or she feels confident in completing the action that it suggests, then it is probable that person will plan for the behavior to occur (Gollwitzer, 1996). Therefore, we assumed consumers' beliefs of the dairy industry, which were informed by their own values, could be expressed as behaviors, such as whether or not consumers attended a free educational dairy event.

Review of Literature

Although no studies were found that investigated consumer motivations to attend educational dairy events specifically, consumer motivations for visiting farms in the literature on agritourism were reviewed due to their similarity in purpose for education, enjoyment, and promotion of products (Ou & Shih, 2002). While substantial research has been conducted on the economic benefits of agritourism for farms and the multitude of agritourist opportunities that exist (Caballe, 1999; Clarke, 1999; Jensen, Lindborg, English, & Menard, 2006), minimal research has been conducted on consumer motivations to visit farms (Ou & Shih, 2002; Rilla, 2007). Nonetheless, consumer engagement and the agritourism industry could be more successful if marketing specialists knew what drove people to their farm businesses (Srikatanyoo & Campiranon, 2010). Experiencing agriculture, participating in adventure and the quality of life, and relaxing and leisure enjoyment were mentioned as consumers' motivations to visit farms (Caballe, 1999; Miller, 2006; Ou & Shih, 2002; Pan & Ryan, 2007; Ramsey & Schaumleffel, 2006). Moreover, a national study found enjoying rural scenery, visiting family and friends, and learning about food production to be the greatest consumers' motivations to visit farms (Barry & Hellerstein, 2004), and Jolly and Reynolds (2005) found that buying fresh or homemade products, buying from a farmer, enjoying nature, and relaxing were motivations to visit farms. 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). However, more research needs to be conducted regarding consumer motivations to participate in an educational farm event, and the relationships of beliefs as informed by theory (Phillip, Hunter, & Blackstock, 2010; Srikatanyoo & Campiranon, 2010).

Three themes helped us conceptually frame consumers' beliefs regarding agricultural practices: (1) environmental concerns; (2) animal welfare; and, (3) food safety. First, consumers' beliefs of agriculture and the *environment* focused on odor and closer proximity to a farm (Jones et al., 2000.; Safley, 1994), flies (Jones et al., 2000), pesticide use in animal farming (Whittmore, 1995); and, water protection and sustainable farming practices (Food Systems Insider, 2010). Second, consumers' beliefs of agriculture and *animal welfare* practices focused on: (1) being responsible for proper animal treatment (Bailey Norwood, 2010); (2) no animal suffering (Bailey Norwood, 2010; Harper & Henson, 2001; Prickett., Bailey Norwood, & Lusk, 2010); (3) and, "ways they [farmers] ensured animal care" (Food Systems Insider, 2010; Harper & Henson, 2001; Mayfield, Bennett, Tranter, & Wooldrige, 2007). Although important, Bailey Norwood (2010) noted that animal welfare was viewed by consumers as a much less pertinent issue than food safety and the environment. Moreover, there may be lack of clarity among consumers as they receive too much information regarding animal welfare (Lagerkvist & Hess, 2010) and most consumers do not understand good animal welfare practices (Lagerkvist & Hess, 2010). Yet, consumers want to know more about ways farmers cared for animals (Food Systems Insider, 2010). Finally, consumers' beliefs regarding agriculture and *food safety* focused on concerns such

as: (1) bacterial contamination (Chipman, Kendall, Slater, & Auld, 1996; Jones et al., 2000; Food Marketing Institute, 2002; McIntosh, Acuff, Christensen, & Hale, 1994; Whaley & Doerfert, 2003); (2) the use of chemicals, pesticides, medications and antibiotics during production (Food Systems Insider, 2010); (3) pesticide residues (Jones et al., 2000; Tucker, Whaley, & Sharp, 2006); (4) antibiotic residues (Food Systems Insider, 2010); and, (5) protecting water from contamination (Food Systems Insider, 2010; Goss & Barry, 1995; Hamlett & Epp, 1994; Molnar & Duffy, 1985; Tucker et al., 2006). Consumers also overwhelmingly agreed or strongly agreed that they wanted more information about "measures used to produce safe food" (Food Systems Insider, 2010). Demographic factors can also play a role in consumers' beliefs. Specifically, individuals who were raised on or near a farm 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 (Napier, Tucker, Henry, & Whaley, 2004; Tomazic, Katz, & Harris, 2002).

Purpose and Research Questions

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 and their beliefs regarding the dairy industry. The research questions that guided the study were: (1) In comparison between participants and non-participants, what were adult consumers' motivation (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) Were participants more familiar with agriculture and did they report a higher level of weekly household fluid milk consumption than non-participants? (3) To what extent could participation in a free educational dairy event be predicted based on adult consumers' motivations to participate in a free educational dairy event, their beliefs of the dairy industry, their familiarity with agriculture, and their weekly household fluid milk consumption?

Methods and Procedures

This descriptive study used survey methods as recommended by Dillman, Smyth, and Christian (2009) to assess adult consumers' interest motivation to participate in a free educational dairy event (i.e., *Brunch on the Farm*) and their beliefs of the dairy industry. The target population of this study was the 1,201 households that MPSI invited via a postcard announcement to attend a *Brunch on the Farm* event. Local residents that had at least one child (10 years or younger) within a 40-mile radius of a Indiana dairy farm were invited to a brunch meal where they could meet a local dairy family and neighbors, and get a personal tour of the dairy farm. The goal of this educational event was to help consumers gain knowledge and a better understanding of how milk is produced through a place-based learning experience. However, not all households within the 40-mile radius were chosen because MPSI capped the number of invitations to 1,201 due to budgeted financial resources. 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 was 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 food purchaser of those households.

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 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 poverty stricken (USDA, 2006). The largest city in the targeted area included had a population of about 17,800 (U.S. Census Bureau, 2010) with 63% (754 of the 1,201) addresses coming from that city. 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, which is 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 3, 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).

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 $\pm 3\%$ margin of error, 95% confidence level, and 50% response distribution were used based on Dillman, Smyth, and Christian's (2009) recommendations. The researcher collected data from mid-September to mid-October using four points of contact via U. S. postal mail as suggested by Dillman et al. (2009): (1) prenotice letter; (2) cover letter, questionnaire and \$1.00 incentive; (3) postcard thank you/reminder; and, (4) follow-up letter and questionnaire. Thirty-seven percent of the households' primary food purchaser (211/565) returned the questionnaire. Because some of the questionnaires were returned blank or partially completed, the usable data sample consisted of 203 questionnaires (36% response rate). Non-response bias was controlled for by selecting a random sample of 10% of those households that did not respond to the questionnaire (Lindner, Murphy, & Briers, 2001), and they were contacted via telephone and asked to answer 16 randomly chosen items. Analyses were then conducted to ensure that the respondents did not differ from the non-respondents of the questionnaire.

Of the 201 participants, 62% were female ($n = 125$), 98% were white ($n = 197$), 75% were married ($n = 152$), and 68% had children who were ages 10 years old and younger in their households ($n = 116$). Regarding age ($N = 194$), 8% of the participants were 20-29, 31% were 30-39, 34% were 40-49, 19% were 50-59, 4% were 60-69, and 4% were 70-79 years old. Regarding income ($N = 199$), 17% had an average household income of less than \$25,000, 28% had \$25,000 to \$49,999, 21% had \$50,000 to \$74,999, 16% had \$75,000 to \$99,999, 10% had \$100,000 or more, and 7% preferred not to answer.

The questionnaire had three sections with a total of 62 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). There were 20 items in this section using a summated 5-point rating scale (i.e., not at all = 1, slightly = 2, somewhat = 3, mostly = 4, and always = 5) assessed participants' motivations (i.e., health, social comparison, competence, social desire, and enjoyment) to attend the *Brunch on the Farm* or a similar event. 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 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). There were 20 items in this section with a 4-point summated rating scale (i.e., strongly disagree = 1, disagree =

2, agree = 3, and strongly agree = 4) to assess participants' beliefs (i.e., animal welfare, environmental care, and food safety practices) of the dairy industry. 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." Reliability of the instrument was established by calculating the Cronbach's *alpha* coefficient for each metric variable. The reliability coefficients for the five motivation variables were: Health = 0.96, Social Comparison = 0.89, Competence = 0.90, Social Desire = 0.76, and Enjoyment = 0.89. The reliability coefficients for the three consumers' views of the whole dairy industry were: Animal Welfare Practices of Dairy Producers = 0.77, Environmental Practices of Dairy Producers = 0.83, and Food Safety Practices of the Dairy Industry = 0.83.

Part 3 of the questionnaire was developed by the researcher to obtain demographic information from the study participants. There were 22 items to assess additional demographics of the study participants, such as household dairy consumption and other general demographic information. 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?" The dependent variable was attendance to the 2010 *Brunch on the Farm*.

Data for the study were organized and managed using IBM SPSS. Negatively worded items were reverse coded prior to analyzing the data, and SPSS automatically excluded any missing data. A descriptive analysis was completed to report central tendencies such as means as well as dispersions, including standard deviations. 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. The analyses determined if there were any significant differences between participants and nonparticipants of the *Brunch on the Farm* based on the independent variables using an independent samples Kruskal Wallis Test. This allowed the researchers 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). Three categorical variables were dummy coded (Warner, 2008). The most highly correlated relationships to the dependent variables were tested using discriminant analysis. The researchers chose and inserted independent variables into the model by choosing those variables with the highest relationship to participation first. We agreed 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. Alternative models were run to verify the six variables were the most parsimonious model.

Results

Regarding consumers' motivation to participate in an educational dairy farm event, participants were motivated on four variables, including enjoyment, social desire, competence,

and health motivation (Table 1). Non-participants were motivated on three variables, including enjoyment, competence, and health motivation. Moreover, participants had significantly higher motivation on all five variables compared to non-participants. Regarding beliefs of agricultural production practices, participants and non-participants agreed that dairy farmers used animal welfare, environmental care, and food safety practices. Participants reported significantly higher agreement on beliefs of animal welfare and environmental care practices. Moreover, 51% of those who participated and 24% of those who did not participate in the *Brunch on the Farm* event were very familiar or were (or have been) directly involved in agriculture. Participants reported being more familiar and directly involved in agriculture. Finally, 52% of those who participated and 32% of those who did not participate in the *Brunch on the Farm* event reported they consumed three gallons or more of fluid milk per week in their households. Participants reported their households consumed significantly more fluid milk than non-participants.

Table 1.

Means and Standard Deviations of Consumers' Motivations & Beliefs

Variable	Participants Mean (SD)	Non-Participants Mean (SD)	<i>p</i>	<i>d</i>
Enjoyment Motivation ¹	3.78 (.75)	2.85 (1.06)	<.01*	.94*
Social Desire Motivation ¹	2.83 (.81)	2.31 (.86)	<.01*	.61*
Social Comparison Motivation ¹	2.38 (1.06)	1.90 (.78)	<.01*	.52*
Competence Motivation ¹	3.71 (.86)	3.04 (1.14)	<.01*	.62*
Health Motivation ¹	3.96 (.71)	3.33 (1.26)	<.01*	.54*
Belief of Animal Welfare ²	2.87 (.28)	2.74 (.31)	<.01*	.38
Belief of Environmental Care Practices ²	2.97 (.38)	2.81 (.44)	.03*	.38
Belief of Food Safety Practices ²	2.77 (.43)	2.63 (.43)	.09	.33
Agriculture Familiarity ³	.51 (.51)	.24 (.43)	.01*	.60*
Fluid Milk Consumption ⁴	.52 (.51)	.32 (.47)	.02*	.42

* Items are significant at the .05 level or a medium or large effect size ($d \geq .50$)

¹ Scale: 1 = Not at all, 2 = Slightly, 3 = Somewhat, 4 = Mostly, 5 = Always

² Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

³ Being very familiar with agriculture or am/have been directly involved in agriculture

⁴ Reporting a household consumption of fluid milk of at least 3 gallons

The canonical correlation coefficient of Test Function 1 was 0.43 and Wilks' lambda (λ) was 0.82 with six degrees of freedom (df) and a significance (*p*) of <.01. From an examination of the standardized canonical discriminant function coefficient, the most highly discriminating attributes of participants when compared with nonparticipants were that cases in participation tended to be more predictable based on enjoyment motivation, health motivation, fluid milk consumption (e.g., household consumption of fluid milk of at least 3 gallons), beliefs of the dairy industry's animal welfare practices, and agriculture familiarity (e.g., being very familiar with agriculture and/or were/having been directly involved in agriculture). Cases in nonparticipation tended to be more predictable by competence motivation (Table 2).

The classification analysis for participation reported that nearly three in four respondents' *Brunch on the Farm* participation could be predicted by the following variables: (1) enjoyment motivation, (2) competence motivation, (3) health motivation, (4) agriculture familiarity (e.g., being very familiar with agriculture and/or were/had been directly involved in agriculture), (5) belief of animal welfare, and (6) fluid milk consumption (e.g., household consumption of fluid milk of at least 3 gallons). By using this model, 73.0% of the original grouped cases were

correctly classified (Table 3); specifically, there prediction model as 70.7% accurate for predicting participants and 73.7% for nonparticipants.

Table 2.

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 Very familiar with agriculture or am/have been directly involved in agriculture

² Reporting a household consumption of fluid milk of at least 3 gallons

Table 3.

Classification Analysis for Participation in the Brunch on the Farm

Actual Group Membership	n	Predicted Group Membership			
		Participants		Nonparticipants	
		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.

Conclusions, Implications and Recommendations

Participants were more motivated to attend an educational dairy farm event, had higher agreement that dairy farmers used animal welfare and environmental care practices, were more familiar or directly involved in agriculture, and reported their households consumed more fluid milk than consumers who did not participate in a free educational dairy farm event. Using these variables (i.e., motivation to engage in an event, beliefs of agricultural production practices, familiarity with agriculture, and weekly household consumption of three or more gallons of fluid milk) an empirical model was tested to explain and predict consumers' participation in a free place-based learning experience at a dairy farm. Nearly three of four consumers in a rural Midwest 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.

This conclusion supported self-determination theory because participants identified with motivation variables that reflected self-growth, mastery of challenges, and integration of new experiences (Deci & Ryan, 1985; Ryan & Deci, 2000). There was close alignment between self-determination and motivation variables in the discriminant model. 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. It is also important to consider the actions that people take can be encouraged or depressed by the social context in which one exists (Deci & Ryan, 1991). As such, the social context of attending an educational event on a dairy farm may have encouraged (and possibly discouraged) participants' motivation. For example, those who were familiar with agriculture were more likely to participate than those who were not familiar with agriculture.

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 (Spray Spray, Wang, Biddle, & Chatzisarantis, 2006; Wankel & Kreisel, 1982; Wankel & Pabich, 1982; Wilson, Mack, & Grattan, 2008). It is probable that similar results were found because the Motives for Physical Activities – Revised (MPA-R) 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, which were aligned with agritourists' motivations (Caballe, 1999; Miller, 2006; Ou & Shih, 2002; Pan & Ryan, 2007; Ramsey & Schaumleffel, 2006). The educational dairy farm event taught participants about food nutrition thus allowing them to make more informed food choices potentially increasing their overall health (Harper, 2004). Sports provide an opportunity for individuals to exercise thus increasing their physical health. Ultimately, this finding suggests that the MPA-R scale which has focused on individuals' participation and retention in sports (Wankel & Kreisel, 1982; Wankel & Pabich, 1982; Wilson, Rodgers, & Blanchard, 2003; Zahariadis, et al., 2006) can be used for participation and retention in other activities, such as a place-based, educational agricultural event. Similarly, 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, Nezlek, & Sheinman, 1981; Grolnick & Ryan, 1985; Guay et al., 2010; Vansteenkiste, Smeets, Soenens, Matos, & Deci., 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. Participants had higher agreement on beliefs of animal welfare practices compared to those who did not participate. 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, those who held animal welfare practices with high priority or importance actually attended (Schwartz, 1996; Verplanken & Holland, 2002).

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 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 (Gollwitzer, 1996; Schwartz, 1996; Verplanken & Holland, 2002). Therefore, the basic human values theory was supported by the present study as we 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. (2000) 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. (2000) 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.

Although many 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, we found those who participated in a free educational dairy farm event tended to be those who were very familiar with agriculture and believed it had high value. Alternative educational 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, Akers, Doerfert, Lawver, & Wilson, 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, Miles, & Marsh, 2002; Tucker, Whaley, & Sharp, 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).

By utilizing the findings from this and future studies, agricultural education 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. For example, it is imperative to target audiences interested in the product (i.e., consumption) and context (i.e., familiarity with agriculture), and to appeal to being a fun, interesting and enjoyable experience, learning new information or experiencing something novel, promoting nutrition and health, and caring about animals. It is increasingly important to reach a broader range of consumers about how their food is produced for several 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.

The findings of this study are limited in generalizability to a small targeted geographic area regarding a specific food commodity. Further exploration and identification is necessary to verify if these results are similar or different when comparing other targeted populations, other food commodities, and other 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. Future studies should continue to investigate theory-based motivations to determine why consumers participate in educational, on-farm events, and if the results vary based on differences in geographic areas. Furthermore, future studies should use mixed methods, including qualitative inquiry, to analyze consumers' beliefs of a specific agricultural industry's practices with regard to animal welfare, environmental care, and food safety. Future studies should investigate a deeper understanding of consumer motivations and beliefs regarding agriculture and food production practices.

In summary, 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, including consumers' motivations to attend an educational, on-farm event, their beliefs of animal welfare practices in the dairy industry, and their behaviors such as fluid milk consumption and familiarity with agriculture. A better understanding of consumer motivations and their beliefs of the agricultural industry may help agricultural educators be more effectively in planning, implementing and evaluating nonformal and informal educational programs to engage a more informed stakeholder and consumer.

References

- Allport, G. W. (1961). *Pattern and growth in personality*. New York: Holt, Rinehart & Winston.
- Bailey Norwood, F. (2010). Presentation from ADSA-PSA-AMPA-CSAS-WSASASASAS Joint Annual Meeting: *Animal Welfare as a Commodity and as a Morality*. Denver, CO: Oklahoma State University. Retrieved from <http://asp.okstate.edu/baileynorwood/>
- Barry, J. J., & Hellerstein, D. (2004). Farm Recreation. In H. K. Cordell (Ed.), *Outdoor recreation for the 21st century*. State College, PA: Venture Publishing.
- Caballe, A. (1999). Farm tourism in Spain: A gender perspective. *GeoJournal*, 48(3), 245.
- 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.
- Clarke, J. (1999). Marketing structures for farm tourism beyond the individual provider of rural tourism. *Journal of Sustainable Tourism*, 7(1), 26-47.
- 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.
- DeCharms, R. (1976). *Enhancing motivation: Change in the classroom*. New York: Irvington Publishers.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- 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.
- Doerfert, D. L. (Ed.) (2011). *National research agenda: American Association for Agricultural Education's research priority areas for 2011-2015*. Lubbock, TX: Texas Tech University, Department of Agricultural Education and Communications.
- 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.
- 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/PAVSNR20094006
- 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.
- 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-offood-production/2010-05-06/Article_FSI.aspx?oid=1067779
- 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.
- 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., & Barry, D. A. J. (1995). Groundwater quality: Responsible agriculture and the public perceptions. *Journal of Agricultural Environmental Ethics*, 8(1), 52.
- 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.
- Harper, G., & Henson, S. (2001). *Consumer concerns about animal welfare and the impact on food choice* (Final Report EU Fair No. CT98-3678). Reading UK: University of Reading Centre for Food Economics Research. Retrieved from <http://orgprints.org/1650/2/EU/harper.pdf>
- Indiana Beef Council (2011). *Our Mission*. Retrieved from www.indianabeef.org/
- Indiana Corn Marketing Council (2011). *About ICMC*. Retrieved from www.incorn.org/
- Indiana Pork (2010). *About Indiana Pork*. Retrieved from www.indianapork.com
- Indiana Soybean Alliance (2011). *About ISA*. Retrieved from www.indianasoybean.com/
- Jensen, K., Lindborg, C., English, B., & Menard, J. (2006). *Visitors to Tennessee agritourism 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., Maretzki, A. N., & Pitts, C. W. (2000). 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://www.ajog.org>
- 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.
- 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.
- McIntosh, W. A., Acuff, G. R., Christensen, L. B., & Hale, D. (1994). Public perceptions of food safety. *The Social Science Journal*, 31, 285-292.
- Milk Promotion Services of Indiana (2010b). *Winners drink milk! American Dairy Association of Indiana*. Retrieved from <http://winnersdrinkmilk.com/>
- Miller, M. (2006). *Agritourism profile*. Ames, IA: Iowa State University. Retrieved from <http://www.agmrc.org/agmrc/commodity/agritourism/agritourism/agritourismprofile.htm>
- Molnar, J. J., & Duffy, P. A. (1985). Public perceptions of how farmers treat the soil. *Journal of Soil Water Conservation*, 43(2), 182.
- 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.
- 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.
- Ou, F., & Shih, A. (2002, March). *A framework for ecotourism and agritourism development*. Paper presented at the IUCN/WCPA-EA-4 Taipei Conference, Taipei, Taiwan.
- 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.
- Phillip, S., Hunter, C., & Blackstock, K. (2010). A typology for defining agritourism. *Tourism Management*, 31, 754-758.
- Prickett, R. W., Bailey Norwood, F., & Lusk, J. L. (2010). Consumer preferences for farm animal welfare: Results from a telephone survey of U.S. households. *Animal Welfare*, 19, 335-347.
- Ramsey, M., & Schaumleffel, N. (2006). Agritourism and rural economic development. *Indiana Business Review*, 81(3), 6-9.
- Rilla, E. (2007). *Agritourism in Britain and New England*. Davis: University of California Cooperative Extension.

- Rokeach, M. (1973). *The nature of human values*. New York: Free 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.
- Safley, L. M. (1994). Best management practices for livestock production. *Journal of Soil and Water Conservation*, 49, 57.
- 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.
- 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, N., & Campiranon, K. (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.
- 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. Molnar and T. J. Tomazic (eds), *The Social Risks of Agriculture* (pp. 57-74). New York: Praeger.
- 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 States Census Bureau. (2010). *State and county quickfacts*. Retrieved from <http://quickfacts.census.gov/>

- 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 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>
- Vander Mey, B. J. (2004). The globalization of food and how Americans feel about it: Results of two surveys. *Journal of Food Distribution Research* 35(1), 6-17. Retrieved from <http://ageconsearch.umn.edu/bitstream/27128/1/35010006.pdf>
- 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.
- 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.
- 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. (1982). *The minor sport experience: Factors contributing to or detracting from enjoyment* (pp. 70-71). In T. Orlick, J. Partington, & J. Salmela (Eds.), *Mental training for coaches and athletes*. Ottawa: Coaching Association of Canada.
- Warner, R. M. (2008). *Applied statistics: From bivariate through multivariate techniques*. Thousand Oaks, CA: Sage.
- 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.
- 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.
- Wimberley, R. C., Vander Mey, B. J., Wells, B. L., Ejimakor, G. D., Bailey, C., Burmeister, L. L., ..., & Wheelock, G. (2003). *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>
- 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.

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

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