

USING THE THEORY OF PLANNED BEHAVIOR TO EXPLORE RESTAURANT  
MANAGERS SUPPORT FOR EMPLOYEE FOOD SAFETY TRAINING

by

KEVIN R. ROBERTS

B.S., Iowa State University, 1999  
M.S., Iowa State University, 2002

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Hotel, Restaurant, Institution Management, and Dietetics  
College of Human Ecology

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

2008

## Abstract

Using the Theory of Planned behavior, this study tested a model that examined the relationships among restaurant managers' attitude, subjective norm, and perceived behavioral control that cause them to support or not support food safety training for their employees. The purpose of this study was to investigate the antecedents that affect restaurant managers' willingness to support food safety training for their employees and determine differences among antecedents by comparing manager food safety certification status and restaurant ownership structure.

Based on the results of the elicitation study, a pilot test focus group, and a pilot study, an 85 question instrument, which measured eight constructs and demographic information, was developed. The instrument was administered via telephone, but response data was input using an online format. Data was entered electronically as it was collected. A total of 266 managers responded, but due to incomplete and missing data, 237 responses were usable for a response rate of 17.9%.

A multiple regression analysis explored the prediction of behavior intention based on the respondents attitudes, subjective norms, and perceived behavioral controls and found the model was significant ( $F=139.932, p \leq .000$ ). The significant independent variables in the model were the attitude mean composite score ( $\beta=-0.106, p \leq .038$ ) and the subjective mean composite score ( $\beta = 0.727, p \leq .000$ ). Perception of control was not significant.

Three multiple regression models were used to examine the relationships between the attitudes, subjective norms, and perceived behavioral controls as dependent variables and the

factors for their indirect measures as independent variables. Of the three simple linear regression models, only two were significant. The regression of the behavioral belief factors ( $\sum_i bb_i be_i$ ) on attitude composite score (Hypothesis 4) ( $F=16.714, p \leq .000$ ) and the regression of normative belief factors ( $\sum_i nb_i mc_i$ ) on the subjective norm composite score ( $F=11.896, p \leq .000$ ) were significant. The regression of control beliefs ( $\sum_i cb_i pp_i$ ) on perceived behavioral control showed no significance.

Results determined that overall intention to offer food safety training to employees was high. Restaurant managers had a positive attitude about food safety, placed importance on the beliefs of individuals they consider important, and felt they were in control to offer food safety training to their employees.

Certified managers had more positive attitudes about offering food safety training and placed more emphasis on those individuals whom they considered to be important in their lives (subjective norms), but also perceived they had less control about offering food safety training to their employees. Most importantly, those managers who were certified had a higher intention to train employees than managers who did not have food safety certification. When comparing behavioral, normative, and control beliefs between chain and independent restaurant managers, only behavioral (specific attitudes) and normative beliefs (specific individuals whom they considered important) differed.

Overall, attitudes and subjective norms were the only significant predictors of behavioral intention. Therefore, if a foodservice manager has a positive attitude (they want to ensure safe food, maintain the operations reputation, and increase food safety practices of employees) and

their important referents (health inspectors, customers, long term employees, supervisors) all promote food safety, they are more likely to provide food safety training for employees.

IMPROVING THE PARTICIPATION OF RESTAURANT MANAGERS IN  
FOOD SAFETY TRAINING

by

KEVIN R. ROBERTS

B.S., Iowa State University, 1999  
M.S., Iowa State University, 2002

A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Hotel, Restaurant, Institution Management, and Dietetics  
College of Human Ecology

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

2008

Approved By:

Major Professor  
Betsy Barrett, PhD

# **Copyright**

Kevin R. Roberts

2008

## Abstract

Using the Theory of Planned behavior, this study tested a model that examined the relationships among restaurant managers' attitude, subjective norm, and perceived behavioral control that cause them to support or not support food safety training for their employees. The purpose of this study was to investigate the antecedents that affect restaurant managers' willingness to support food safety training for their employees and determine differences among antecedents by comparing manager food safety certification status and restaurant ownership structure.

Based on the results of the elicitation study, a pilot test focus group, and a pilot study, an 85 question instrument, which measured eight constructs and demographic information, was developed. The instrument was administered via telephone, but response data was input using an online format. Data was entered electronically as it was collected. A total of 266 managers responded, but due to incomplete and missing data, 237 responses were usable for a response rate of 17.9%.

A multiple regression analysis explored the prediction of behavior intention based on the respondents attitudes, subjective norms, and perceived behavioral controls and found the model was significant ( $F=139.932, p \leq .000$ ). The significant independent variables in the model were the attitude mean composite score ( $\beta=-0.106, p \leq .038$ ) and the subjective mean composite score ( $\beta = 0.727, p \leq .000$ ). Perception of control was not significant.

Three multiple regression models were used to examine the relationships between the attitudes, subjective norms, and perceived behavioral controls as dependent variables and the factors for their indirect measures as independent variables. Of the three simple linear regression models, only two were significant. The regression of the behavioral belief factors ( $\sum_i bb_i be_i$ ) on

attitude composite score (Hypothesis 4) ( $F=16.714, p \leq .000$ ) and the regression of normative belief factors ( $\sum_i nb_i mc_i$ ) on the subjective norm composite score ( $F=11.896, p \leq .000$ ) were significant. The regression of control beliefs ( $\sum_i cb_i pp_i$ ) on perceived behavioral control showed no significance.

Results determined that overall intention to offer food safety training to employees was high. Restaurant managers had a positive attitude about food safety, placed importance on the beliefs of individuals they consider important, and felt they were in control to offer food safety training to their employees.

Certified managers had more positive attitudes about offering food safety training and placed more emphasis on those individuals whom they considered to be important in their lives (subjective norms), but also perceived they had less control about offering food safety training to their employees. Most importantly, those managers who were certified had a higher intention to train employees than managers who did not have food safety certification. When comparing behavioral, normative, and control beliefs between chain and independent restaurant managers, only behavioral (specific attitudes) and normative beliefs (specific individuals whom they considered important) differed.

Overall, attitudes and subjective norms were the only significant predictors of behavioral intention. Therefore, if a foodservice manager has a positive attitude (they want to ensure safe food, maintain the operations reputation, and increase food safety practices of employees) and their important referents (health inspectors, customers, long term employees, supervisors) all promote food safety, they are more likely to provide food safety training for employees.



## Table of Contents

<b>LIST OF FIGURES .....</b>	<b>xiv</b>
<b>LIST OF TABLES .....</b>	<b>xv</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>xvii</b>
<b>DEDICATION.....</b>	<b>xviii</b>
<b>CHAPTER 1 - INTRODUCTION.....</b>	<b>1</b>
STATEMENT OF THE PROBLEM .....	5
JUSTIFICATION .....	6
PURPOSES.....	6
OBJECTIVES .....	6
HYPOTHESES .....	7
LIMITATIONS OF STUDY .....	9
SIGNIFICANCE OF STUDY .....	9
DEFINITION OF TERMS .....	10
REFERENCES .....	13
<b>CHAPTER 2 - REVIEW OF LITERATURE .....</b>	<b>17</b>
MAGNITUDE OF THE FOOD SAFETY ISSUE .....	17
INCIDENCE OF FOODBORNE ILLNESSES .....	19
CAUSES/SOURCES OF FOODBORNE ILLNESSES IN FOODSERVICE OPERATIONS .....	21
PREVENTION OF FOODBORNE ILLNESSES .....	27
WORKPLACE TRAINING .....	31

FOOD SAFETY TRAINING .....	33
THE THEORY OF PLANNED BEHAVIOR .....	40
TRA AND TPB CONSTRUCTS.....	43
Behavioral Beliefs and Attitude.....	44
Normative Beliefs and Subjective Norm .....	45
Control Beliefs and Perceived Behavioral Control (PBC).....	47
BEHAVIORAL INTENTION .....	48
SUMMARY .....	48
REFERENCES .....	50
<b>CHAPTER 3 - METHODOLOGY.....</b>	<b>62</b>
INTRODUCTION .....	62
POPULATION AND SAMPLE .....	62
QUESTIONNAIRE DEVELOPMENT .....	63
Exploratory Model Development & Elicitation Study with Managers.....	64
Pilot Study.....	67
QUESTIONNAIRE .....	68
Indirect Measurements.....	69
Behavioral Beliefs.....	69
Normative Beliefs.....	70
Control Beliefs .....	70
Direct Measurements .....	71
Attitude .....	71
Subjective Norm .....	72

Perceived Behavioral Control.....	72
Behavioral Intention.....	72
Demographic Variables .....	72
Additional Measures .....	73
SURVEY ADMINISTRATION.....	73
Use of Human Subjects in Research.....	74
STATISTICAL ANALYSIS .....	74
REFERENCES .....	76
<b>CHAPTER 4 - BELIEFS UNDERLYING THE INTENTION TO OFFER FOOD SAFETY</b>	
<b>TRAINING TO EMPLOYEES .....</b>	<b>78</b>
ABSTRACT.....	78
INTRODUCTION .....	80
METHODOLOGY .....	85
Sample.....	85
Data Collection .....	85
Instrument Development.....	85
Data Analysis .....	89
RESULTS.....	90
Demographics .....	90
Overall Analysis.....	91
Ownership Structure .....	92
Certification Status.....	92
DISCUSSION & IMPLICATIONS.....	94

CONCLUSIONS & APPLICATIONS .....	96
REFERENCES .....	99
<b>CHAPTER 5 - EXPLORING RESTAURANT MANAGERS' BELIEFS ABOUT FOOD SAFETY TRAINING: AN APPLICATION OF THE THEORY OF PLANNED BEHAVIOR.....</b>	<b>111</b>
ABSTRACT .....	111
INTRODUCTION .....	112
METHODOLOGY .....	118
Sample Population .....	122
Data Collection .....	123
Data Analysis .....	123
RESULTS .....	123
Respondent Characteristics .....	124
Operational Characteristics.....	124
Item Analysis .....	124
Direct Measures .....	124
Indirect Measures.....	127
DISCUSSION & IMPLICATIONS.....	129
CONCLUSIONS.....	132
REFERENCES .....	134
<b>CHAPTER 6 - SUMMARY AND CONCLUSIONS .....</b>	<b>144</b>
SUMMARY & FINDINGS .....	144
MAJOR FINDINGS .....	148

Research Conclusions .....	151
LIMITATIONS & FUTURE RESEARCH .....	155
REFERENCES .....	156
<b>APPENDIX A - WRITTEN PILOT TEST INSTRUMENT .....</b>	<b>159</b>
<b>APPENDIX B - ADVANCE LETTER, TELEPHONE PILOT TEST INSTRUMENT &amp; CALL TRACKING FORM .....</b>	<b>169</b>
<b>APPENDIX C - FINAL INSTRUMENT &amp; CALL TRACKING FORM .....</b>	<b>181</b>
<b>APPENDIX D - IRB APPROVAL .....</b>	<b>192</b>

## **List of Figures**

### **CHAPTER 1: INTRODUCTION**

Figure 1.1: Food Safety Training Behavioral Model Using the TpB (Ajzen, 1985)..... 8

### **CHAPTER 2: REVIEW OF LITERATURE**

Figure 2.1: The Theory of Reasoned Action (Ajzen & Fishbein, 1980) ..... 41

Figure 2.2: The Theory of Planned Behavior (Ajzen, 1985)..... 41

### **CHAPTER 3: METHODOLOGY**

Figure 3.1: Research Design..... 63

Figure 3.2: Data Analysis Procedures..... 74

## List of Tables

### CHAPTER 1 - INTRODUCTION

Table 1.1: Summary of Restaurant Participation in Free Food Safety Training .....	3
---	---

### CHAPTER 2 - REVIEW OF LITERATURE

Table 2.1: Estimated Incidents Per Year of the Leading Viral, Bacterial, and Parasitic Causes of Foodborne Disease.....	20
Table 2.2: Specific Causes of Foodborne Illness Outbreaks .....	23
Table 2.3: “Out of Compliance” Observations for Full Service Restaurants by Year .....	25
Table 2.4: “Out of Compliance” Observations for Quick Service Restaurants by Year .....	26
Table 2.5: Variable Relationships for Studies Using the TRA and the TpB .....	46

### CHAPTER 3 - METHODOLOGY

Table 3.1: Focus Interview Discussion Questions for Each TpB Construct.....	65
Table 3.2: Focus Group Behavioral Beliefs: Results of the Elicitation Study (N=20).....	66

### CHAPTER 4 - BELIEFS UNDERLYING THE INTENTION TO OFFER FOOD SAFETY TRAINING TO EMPLOYEES

Table 4.1. Characteristics of Managers (N=237).....	104
Table 4.2. Characteristics of the Restaurants (N=237).....	105
Table 4.3: TpB Direct and Indirect Belief Comparisons Between Chain and Independent Restaurant Operations.....	107
Table 4.4: TpB Direct and Indirect Belief Comparisons Between Chain and Independent Restaurant Operations.....	108

**CHAPTER 5 - EXPLORING RESTAURANT MANAGERS' BELIEFS ABOUT FOOD  
SAFETY TRAINING: AN APPLICATION OF THE THEORY OF PLANNED  
BEHAVIOR**

Table 5.1. Summary of Direct Measurement Scales (N=237)..... 140

Table 5.2. Multiple Regression Model for Predicting Behavioral Intention Based on Direct  
Measures ..... 141

Table 5.3. Descriptive Summary of Belief Items (N=237)..... 142

Table 5.4. The Regression of Behavioral Beliefs on Attitude Composite Score..... 143

Table 5.5. The Regression of Normative Beliefs on Subjective Norm Composite Score ..... 143



## ACKNOWLEDGEMENTS

I am grateful to have so many people to whom to express thanks. First of all, I must express my deepest gratitude to my parents, Diana Roberts and the late Kenneth Roberts and my fiancé Camilla Jones. My parents have been there for me and have constantly encouraged me to achieve all things possible. Camilla was always there to help calm me down after a late night writing session or to help me through any difficulties I ran into. If it wasn't for their endless love, steadfast support and trust, and encouragement I would have never finished my PhD.

I would also like to extend my sincere thanks and gratitude to my major professor, Dr. Betsy Barrett and research mentor Dr. Carol Shanklin. Without their guidance, supervision, and critical review of my research, this would have not been possible. I was impressed by the passion they displayed when working with graduate and undergraduate students, their never-ending support, and positive attitude toward helping me achieve a goal I thought at times to be impossible. Not only did they help to develop my research, but my teaching abilities as well. I would also like to thank the HRIMD faculty at Kansas State for giving me the opportunity to grow and learn from them in all aspects of graduate study. I would like to extend a sincere thanks to my committee members, Dr. Dallas Johnson and Dr. Laura Brannon, for their careful review and critical comments and suggestions on my thesis.

I would like to express my gratitude to my employers at Triangle Management, Inc. (Marc Weinbrenner, Jim Piersol, and Nelson Thompson). They developed my interest in the restaurant business and allowed me the opportunity to explore graduate study, while giving me hours and scheduling me around classes. The knowledge I gained from the thirteen years experience with Triangle Management has given me knowledge no individual could learn in the classroom.

## **Dedication**

To the memory of my father, Kenneth Roberts, whose faith in my abilities had no limits. He did not live to see me through to the end of my pursuit, but he never doubted the fact that I would one day accomplish it. He was a person to be admired, his work ethic, sense of humor, calm demeanor, and love for life help guide my life on a daily basis.

## **CHAPTER 1 - INTRODUCTION**

Restaurants and other retail and institutional foodservice operations have become an integral part of today's society because dining out or purchasing food to-go or ready-to-prepare has become routine for most Americans. The National Restaurant Association (NRA) (2008) reports that more than 70 billion meal and snack occasions will be eaten daily in restaurants and cafeterias in 2008. Given the number of people who dine out, the potential for foodborne illness resulting from food prepared in commercial foodservice operations is great. Therefore, foodborne illness and disease should be a significant concern for those who manage and own foodservice operations.

The Center for Disease Control and Prevention (CDC) has estimated that foodborne-related illnesses cause approximately six to 76 million illnesses, 325,000 hospitalizations, and approximately 5,000 deaths each year in the United States (Mead, et al, 1999). Both known and unknown agents attribute to the wide estimate range. Between 1993 and 1997, 50% of the illnesses caused by foodborne illness outbreaks were associated with food consumed in restaurants and other commercial food establishments. Some of these foodborne illnesses are mild and result in 24-hour flu-like symptoms, but many other cases have been severe enough to require hospitalization or cause death (CDC, 2000).

The Report of the FDA Retail Food Program Database of Foodborne Illness Risk Factors (2000) was the Food and Drug Administration's (FDA) first attempt to develop baseline data about compliance of retail foodservice operations' risk factors for foodborne illness. Only 60% of full-service and 74% of quick service restaurants were found to be in compliance with current

health code requirements. These are lower percentages than found in non-commercial foodservice operations, such as hospitals, nursing homes, and elementary schools.

A follow-up study by the FDA (2004) found that 13% of full-service restaurants were out of compliance for purchasing food from unsafe sources, 42.7% for poor personal hygiene, and 63.8% for improper holding time and temperature. The percentages of quick service restaurants out of compliance with these risk factors were lower with 2.3%, 31.2%, and 41.7%, respectively. Because of the relatively high incidence of restaurants that are “out of compliance” with risk factors and food safety, restaurant managers should focus on those behaviors that are known to cause foodborne illnesses and emphasize them in training.

The top three factors that contribute to foodborne illnesses are improper holding temperatures, poor personal hygiene, and cross contamination. All of which are directly related to the food handler’s knowledge of food safety (Bean & Griffin, 1990; Food and Drug Administration 2000, 2004). Previous research has suggested that food safety training is a way to assure that proper practices are followed in restaurants, although research relating knowledge to behavior change has been inconsistent. Studies have found that food safety training is effective in increasing overall sanitation inspection scores (Cotterchio, Gunn, Coffill, Tormey, & Barry, 1998; Kneller & Bierma, 1990), the microbiological quality of food (Cohen, Reichel, & Schwartz, 2001), and self-reported changes in food safety practices (McElroy & Cutter, 2004). Several states now mandate food safety certification for restaurant employees. In 2002, Schilling, O’Connor, and Hendrickson reported that 16 states have state-mandated certification requirements and 34 states have some form of voluntary requirements. Several states were in the process of adopting the 1999 food code (FDA, 1999), which requires operations to have at least one employee who can demonstrate knowledge about food safety.

In the State of Kansas, the 1999 Food Code (FDA, 1999) has been adopted; the code requires that employees be knowledgeable about food safety. Yet, a recent study conducted at Kansas State University found that even though food safety training is required, managers are reluctant to allow employees to participate in training even if it is provided free to their employees. In fact, of the three states where researchers were conducting training, less than 2% of restaurants in each state allowed their employees to participate in the free training (Roberts, Barrett, Howells, Shanklin, Pilling, & Brannon, 2008). Table 1.1 breaks down the results for Kansas, Iowa, and Missouri.

**Table 1.1: Summary of Restaurant Participation in Free Food Safety Training**

	State		
	Kansas	Missouri	Iowa
Number of restaurants asked to participate	870	374	333
Total number of restaurants that initially agreed to participate	77	117	65
Total number of restaurants that actually participated in training	13 (1.4%)	7 (1.8%)	1 (0.3%)

The relatively low number of responses to an offer of free food safety training indicates there are barriers that prevent restaurant managers from allowing their employees the opportunity to participate in food safety training. Attitudes of managers about food safety will impact the success of, or lack of, food safety programs within the operations they manage (Howes, McEwen, Griffith, & Harris, 1996). Giampaoli, Sneed, Cluskey, and Koenig (2002) found that

food safety education among managers is perceived as an important issue; yet, many managers did not have basic food safety programs in place.

This study uses the Theory of Planned Behavior to investigate why food safety educational opportunities are not offered to employees by managers. The Theory of Planned Behavior (TpB) (Ajzen, 1985, 1991) is a psychological model that examines the behavior of individuals and states that the best predictor of a person's behavior in any given situation is their intention to perform the behavior. The theory posits that a person's behavioral intention is based upon three antecedents: his or her attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991).

Attitude is expressed by “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question” (Ajzen, 1991, p188). Attitude encompasses all aspects of responses in the formation of attitude and includes: emotions, cognitions, and behavior (Eagly & Chaiken, 1998). One's attitude toward behavior is determined by beliefs that he/she holds about the behavior. An attitude is generally an evaluative response on a continuum from favorable to unfavorable (Eagly & Chaiken, 1998; Ajzen, 2002).

According to Ajzen (1991), the subjective norm is the perceived social pressure to engage or not to engage in a behavior. There is little research in food safety that focuses on the subjective norm of managers and food safety education and training. However, based on anecdotal evidence, some of these food safety factors could be: managers' perceptions of the value their employers place on food safety and customer perceptions of the importance of following proper food safety practices.

Perceived behavioral control is the aspect of the TpB that separates it from the Theory of Reasoned Action and is central to the theory itself (Ajzen, 1991). Perceived behavioral control

refers to people's perceptions of their ability to perform a given behavior (Ajzen, 1991). In the current literature, managers' have cited time and money as barriers to food safety programs (Giampaoli, Sneed, Cluskey, & Koenig, 2002; Hwang, Almanza & Nelson, 2001).

Giampaoli, Sneed, Cluskey, and Koenig (2002) conducted focus groups with school foodservice directors and found training, education, and comfort level with the ability to practice food safety were essential to implementing successful food safety and Hazard Analysis and Critical Control Point (HACCP) programs. Cochran-Yantis et al. (1996) concluded that "education is a critical factor in implementing food safety programs," (p. 127). But, only those who truly internalize what they have learned and recognize the importance of food safety will practice it. An in-depth review of literature did not reveal any food safety training research that had been conducted to address either subjective norms or perceived behavioral controls relative to employee training in foodservice operations. Therefore, this study applies the Theory of Planned Behavior (TpB) to investigate the relationship among restaurant managers' attitude, subjective norms, and perceived behavioral controls to explore factors that prevent them from allowing their employees to participate in food safety training and education (Ajzen, 1985).

### **STATEMENT OF THE PROBLEM**

There are several food safety training programs available for foodservice operations. The two most frequently used are ServSafe®, developed by the National Restaurant Association Educational Foundation, and Serving-It-Safe, sponsored by U.S. Department of Agriculture (USDA). Previous research has found that food safety training is effective in increasing employees' knowledge and attitudes about the importance of food safety (Cotterchio, Gunn, Coffill, Tormey, & Barry, 1998; Kneller & Bierma, 1990). However, managers are reluctant to provide employees the opportunity to participate in food safety training as noted in the study by

Roberts, Barrett, Howells, Shanklin, Pilling, Brannon (2008) where less than 2% of the restaurants contacted participated in free food safety training. No research has studied the reasons that restaurant managers fail to provide food safety training for their employees.

### **JUSTIFICATION**

Current research has shown that foodservice managers do not provide an opportunity for food safety training for employees (Roberts, Barrett, Howells, Shanklin, Pilling, Brannon, 2008). In-depth research is needed to determine the food safety attitudes, subjective norms, and perceived behavioral controls of foodservice managers. Only in discovering what impedes restaurant managers from providing training programs can food safety training be developed that will overcome traditional managerial barriers.

### **PURPOSES**

The purpose of this study was to investigate the antecedents that affect restaurant managers' willingness to support food safety training for their employees.

### **OBJECTIVES**

The objectives were:

1. Develop a model based on the Theory of Planned Behavior that would assist researchers and industry practitioners to identify training barriers.
2. Develop an effective instrument to test the proposed model.
3. Determine restaurant managers' attitudes about food safety training.
4. Determine what subjective norms restaurant managers consider when deciding whether to offer employee food safety training.



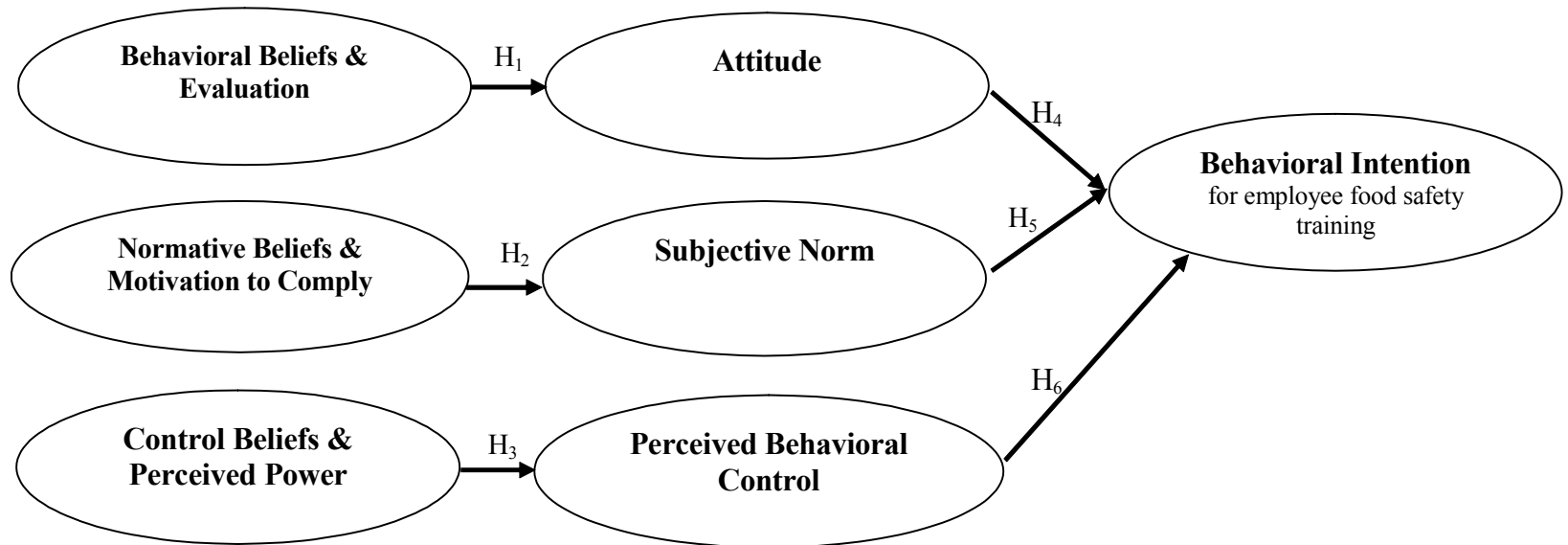
5. Determine restaurant managers' perceived behavioral controls that may prevent them from offering employee food safety training.
6. Identify reasons that managers fail to allow employees to participate in food safety training.
7. Explore differences in food safety training barriers between chain and independent restaurants.
8. Explore differences in food safety training barriers between operations whose managers are food safety certified and operations without certified managers.

### **HYPOTHESES**

To achieve the research objectives, the Theory of Planned Behavior will be utilized;

Figure 1.1 illustrates the hypothesized relationships.

- Hypothesis 1: Behavioral beliefs about food safety training are not significantly associated with attitudes toward food safety training.
- Hypothesis 2: Normative beliefs toward food safety training are not significantly associated with subjective norms about food safety training.
- Hypothesis 3: Control beliefs related to food safety training are not significantly associated with managers' perceived behavioral controls.
- Hypothesis 4: Managers' attitudes about food safety training are not significantly associated with their behavioral intentions to train employees.
- Hypothesis 5: Managers' subjective norms about food safety training are not significantly associated with their behavioral intentions to train employees.
- Hypothesis 6: Managers' perceived behavioral controls of food safety training are not significantly associated with their behavioral intentions to train employees.



∞

**Figure 1.1: Food Safety Training Behavioral Model Using the TpB (Ajzen, 1985)**

## **LIMITATIONS OF STUDY**

This study is limited to restaurants within the state of Kansas. Results cannot be generalized to other foodservices such as school, healthcare, and university foodservice operations or restaurants beyond the state of Kansas. One other limitation of this study might be the low response rate from restaurant managers. Other studies using restaurant managers as the target population have yielded less than a 20% response rate (Roberts & Sneed, 2003, Cochran-Yantis, Belo, Giampaoli, McProud, Everly & Gans, 1996). However, using a telephone survey rather than a mailed survey, it was anticipated that there would be a higher response rate.

This research did not address non-response bias. Managers who responded may be more supportive of food safety training and food safety training programs, therefore would have more positive attitudes and perceive fewer barriers to training than those managers who elected not to participate in the study.

Finally, this research did not explore the relationship between behavioral intention and behavior. Further research should seek to explore this relationship in an attempt to fully understand the antecedents to providing an opportunity for employees to participate in food safety training.

## **SIGNIFICANCE OF STUDY**

This study and the instruments used were based on the Theory of Planned Behavior and assessed attitudes, perceived behavioral control, and subjective norms to determine barriers to food safety training in restaurants. This study extended the current body of knowledge related to human behavior, specifically applying the Theory of Planned Behavior to foodservice operations. Although studies have examined the attitudes of foodservice managers about food safety, there has been no research with proven and sound theoretical underpinnings on this topic.

Utilizing an already proven theory helps to extend our understanding about foodservice managers' intention to offer food safety training to their employees.

This study sought to understand the antecedents that motivate restaurant managers' to allow their employees to participate in food safety training. Only when these antecedents are discovered can researchers develop training programs that will help managers implement more frequent training for their employees. This should ultimately lead to greater knowledge of food safety among employees and will improve the safety of food served to the general consumer. Future researchers who wish to understand beliefs and barriers about food safety training in other foodservice segments could utilize this model to achieve their research objectives, utilizing minor wording changes to make the survey applicable to the population being studied.

### **DEFINITION OF TERMS**

**Attitude:** A psychological tendency that is expressed by “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question” (Ajzen, 1991, p188).

**Behavioral Intention:** The individual's assessment to perform or not perform the behavior in question (Ajzen & Fishbein, 1980).

**Chain Restaurant:** Restaurants that are owned, or franchised, by the same company, usually sharing the same name and located in many different locations (Wikipedia, 2007).

**Commercial Foodservice Establishment:** A for-profit establishment where meals or refreshments may be purchased (Gregoire & Spears, 2007).

**Focus Group:** A small group interview, typically consisting of six to eight participants who come from similar backgrounds and moderated by a person who works from a set list of questions (Morgan, 1998).

**Foodborne Illness:** An illness that is transmitted to people by food (NRAEF, 2004)

**Independent Restaurant:** A for-profit foodservice operation operating in at least one location, but fewer than six (Gregoire & Spears, 2007).

**Perceived Behavioral Control:** An individual's beliefs about control that help or hinder the implementation of that behavior (Ajzen, 1985)

**Potentially Hazardous Food:** "Food in which microorganisms can grow rapidly. Potentially hazardous food has a history of being involved in foodborne illness outbreaks, has potential for contamination due to production and processing methods, and has characteristics that generally allow microorganisms to grow rapidly. Potentially hazardous food is often moist, contains protein, and has a neutral or slightly acidic pH" (National Restaurant Association Educational Foundation, 2004, p G-9).

**Restaurant:** A for-profit business establishment where meals or refreshments may be purchased (Merriam-Webster, 2008).

**ServSafe®:** A sanitation certification program developed and administered by the National Restaurant Association Educational Foundation. The program is used for training and certifying managers and employees in foodservice food safety (NRAEF, 2004).

**Subjective Norm:** A function of a set of beliefs concerned with the likelihood that important individuals, such as spouse, parents, or friend, would approve or disapprove of their behavior (Ajzen & Madden, 1986).

**Theory of Planned Behavior (TPB):** A theory that explains behavior as an antecedent of three variables: attitude, subjective norm, and perceived behavioral control (Ajzen & Fishbein, 1980).

## REFERENCES

- Ajzen, I. (1985). From intentions to action: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior*. Heidelberg: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2002). Behavioral intentions based on the theory of planned behavior. Retrieved November 1, 2003 from the World Wide Web:  
<http://www-unix.oit.umass.edu/~ajzen/pdf/tpb.intervention.pdf>
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Ajzen, I., & Madden, T. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22, 453-474.
- Bean, N. H., & Griffin, P. M. (1990). Foodborne disease outbreaks in the United States, 1973-1987: Pathogens, vehicles, and trends. *Journal of Food Protection*, 53, 804-817.
- Center for Disease Control and Prevention. (2000). Surveillance for foodborne disease outbreaks—United States, 1993–1997. *Morbidity and Mortality Weekly Report*, 49(SS-1). 22-26.
- Cochran-Yantis, D., Belo, P., Giampaoli, J., McProud, L., Everly, V., & Gans, J. (1996). Attitudes and knowledge of food safety among Santa Clara County, California restaurant operators. *Journal of Foodservice Systems*, 9, 117-128.
- Cohen, E., Reichel, A., & Schwartz, Z. (2001). On the efficacy of an in-house food sanitation training program: Statistical measurements and practical conclusions. *Journal of Hospitality and Tourism Research*, 25(1), 5-16.

- Cotterchio, M., Gunn, J., Coffill, T., Tormey, P., & Barry, M.A. (1998). Effect of a manager training program on sanitary conditions in restaurants. *Public Health Reports*, 113, 353 – 358.
- Eagly, A. H., & Chaiken, S. (1998). Attitude structure and function. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 1, pp. 269-322). New York: McGraw-Hill.
- Food and Drug Administration. (1999). *Food Code 1999*. Springfield, VA: National Technical Information Service.
- Food and Drug Administration. (2000). Report of the FDA retail food program database of foodborne illness risk factors. Retrieved June 21, 2002 from the World Wide Web: <http://vm.cfsan.fda.gov/~dms/retrsk.html>
- Food and Drug Administration. (2004). FDA report on the occurrence of foodborne illness risk factors in selected institutional foodservice, restaurant, and retail food store facility types. Retrieved June 21, 2002 from the World Wide Web: <http://www.cfsan.fda.gov/~acrobot/retrsk2.pdf> .
- Gregoire, M. B., & Spears, M. C. (2007). *Foodservice Organizations: A Managerial and Systems Approach*. New Jersey: Prentice Hall
- Giampaoli, J, Sneed, J., Cluskey, M., & Koenig, H. F. (2002). School foodservice directors' attitudes and perceived challenges to implementing food safety and HACCP programs. *The Journal of Child Nutrition & Management*. Retrieved June 21, 2002 from the World Wide Web: <http://www.asfsa.org/childnutrition/jcnm/02spring/giampaoli1/>



- Howes, M., McEwen, S., Griffiths, M., & Harris, L. (1996). Food Handler certification by home study: Measuring changes in knowledge and behavior. *Dairy, Food, and Environmental Sanitation, 16*, 737-744.
- Hwang, J. H., Almanza, B. A., & Nelson, D. C. (2001). Factors influencing Indiana school foodservice directors/managers' plans to implement a hazard analysis critical control point (HACCP) program. *The Journal of Child Nutrition & Management, 25*, 24-29.
- Kneller, P., & Bierma, T. (1990). Food service certification measuring the effectiveness of a state program. *Journal of Environmental Health, 52*(2), 292-294.
- McElroy, D. M., & Cutter, C. N. (2004). Self-report changes in food safety practices as a result of participation in a statewide food safety certification program. *Food Protection Trends, 24*, 150-161.
- Mead, P. S., Slutsker, L., Dietz, V., McCaig, L. F., Bresee, J. S., Shapiro, C., Griffin, P. M., & Tauxe, R.V. (1999, September). Food-related illness and death in the United States. *Center for Disease Control and Preventing Emerging Infectious Diseases, 5* (5), 1-38. Retrieved Sept 1, 2004 from the World Wide Web:  
<http://www.cdc.gov/ncidod/eid/vol5no5/mead.htm>.
- Merriam-Webster. (2008). Merriam-Webster Online Dictionary. Retrieved November 20, 2007 from the World Wide Web: <http://www.merriam-webster.com/>
- Morgan, D. L. (1998). *The Focus Group Guidebook*. Thousand Oaks, CA: Sage Publications.
- National Restaurant Association (2008). *Restaurant Industry Forecast*. Washington, DC: National Restaurant Association

National Restaurant Association Educational Foundation (2004). *ServSafe Coursebook* (3rd ed.). Chicago: National Restaurant Association Educational Foundation.

Roberts, K. R., Barrett, B. B., Howells, A. D., Shanklin, C. W., Pilling, V. K., & Brannon, L. A. (2008). Food safety training and foodservice employees' knowledge and behavior. *Food Protection Trends*.

Roberts, K. R., & Sneed, P. J. (2003). An assessment of the status of prerequisite and HACCP programs in Iowa Restaurants. *Food Protection Trends*, 23(10), 808-816.

Schilling, B. J., O'Connor, J. & Hendrickson, V. (2002). *State-mandated food safety certification requirements for restaurants: A 2002 review of states*. New Brunswick, NJ: Rutgers, The State University of New York: Food Policy Institute.

Wikipedia.com. (2007). Chain restaurants. Retrieved April 16, 2007, from [http://en.wikipedia.org/wiki/Chain\\_restaurant](http://en.wikipedia.org/wiki/Chain_restaurant)

## **CHAPTER 2 - REVIEW OF LITERATURE**

This chapter summarizes current and relevant literature related to the objectives of this study and concepts pertinent to the study are reviewed. The purpose of this study was to investigate restaurant managers' willingness to support food safety training for their employees. This review of literature discusses food safety, food safety issues in restaurants, the importance of food safety research and relevant findings, and the study's conceptual model: the theory of planned behavior.

### **MAGNITUDE OF THE FOOD SAFETY ISSUE**

Restaurants and other retail and institutional foodservice operations have become an integral part of today's fast-paced society. The National Restaurant Association (NRA) (2008) reports that more than 70 billion meal and snack occasions will be eaten daily in restaurants and cafeterias each year. Dining out or purchasing food to go or ready to prepare has become routine for most Americans. Forty-five percent of all food consumed away from home is prepared in a restaurant, deli, cafeteria, or institutional foodservice operation (Payne-Palacio & Theis, 2005). The NRA (2008) predicts that commercial eating establishments' sales in 2008 will exceed \$558 billion. This is a significant increase from 1995 sales of \$295.7 billion and \$42.8 billion in 1970 (Ebbin, 1999).

As a result, the cost of foodborne illness has increased. Annual costs to affected individuals, the industry, and the public have been estimated to be between \$6.5 to \$35 billion (Buzby & Roberts, 1997; Buzby, Roberts, Jordon-Lin, & MacDonald, 1996). A single foodborne illness outbreak could cost an operation \$75,000, an estimate that increases exponentially if the illness causes long-term injury or death (Lynn, 1996). A single outbreak in a

foodservice operation could result in an operation paying costly legal fees, medical and laboratory fees, hospitalization, medication, and increased insurance premiums, often causing business closure (Cochran-Yantis, et al., 1996).

Even though the number of people eating in restaurants is dramatically increasing, consumer confidence in the ability of restaurateurs to assure the safety of food being consumed has decreased. The public is currently more aware of foodborne illnesses than at any other time in history. In 1995, 50% of the public surveyed believed in the restaurant industry's ability to ensure the well being of customers (Allen, 2000). In 2007, that number had declined to 43% (Food Marketing Institute Research, 2007). Compared to other industries, such as food processing and meat and poultry packing, the restaurant industry has decreased the most in consumer confidence. Concerns over food safety as a health related issue also is increasing. Fifty-two percent of consumers agreed that food safety has become more important to them than it was the year before (Featsent, 1998). When selecting a restaurant, customers ranked food quality and cleanliness to be at the top of their list of priorities (Wilson, 1991). In 2006, Worsfold conducted a study of 110 consumers and found that 99% of respondents indicated that hygiene standards were either very important or important to them when deciding where to dine. Hygiene standards were ranked as a more important consideration than the type of food, service, location, and price.

This increase in interest related to food safety among consumers can be attributed to negative media coverage of food safety outbreaks linked to restaurants (Allen, 2000). However, news reports fail to mention that foodborne illnesses rates are declining and the Center for Disease Control and Prevention (CDC) report that, with the exception of a slight increase in 2006, the incidence of foodborne illness has declined since 1999 (CDC, 2000, 2001, 2002, 2003,

2007). Yet, more consumers trust information from investigative news reports (87%) than from government health officials (74%) (Featsent, 1998). Due to the majority of reported foodborne illnesses being traced back to commercial eating establishments, for a commercial restaurant operation to maintain a competitive advantage, food safety and sanitation must be a priority (Lynch, Elledge, Griffith, & Boatright, 2005).

### **INCIDENCE OF FOODBORNE ILLNESSES**

Foodborne disease should be a global concern for foodservice operators as well as public health officials, researchers, and consumer groups (Notermans & Hooenbom-Verdegall, 1992; Roberts & Sneed, 2003). Accurate estimates of foodborne disease incidences are often hard to obtain due to non-reporting and the fact that it is difficult to definitively associate an illness with a specific food (Flint et al., 2005). Within the United States, the Foodborne Diseases Active Surveillance Network (FoodNet) is used by the Center for Disease Control's (CDC) Emerging Infectious Diseases Program to track the rate of foodborne illnesses. In the United States, the CDC has estimated that foodborne-related illnesses cause approximately six to 76 million illnesses, 325,000 hospitalizations, and approximately 5,000 deaths each year (Mead, et al., 1999).

Both known and unknown agents attribute to the wide estimate range. From those illnesses caused by known agents, Norwalk and Norwalk-like viruses are estimated to be the most common viral foodborne pathogen (Mead, et al., 1999). Norwalk-like viruses are estimated to cause two-thirds of all food-related illnesses, making it not only the most common foodborne pathogen, but the most unreported pathogen (Bresee, Widdowson, Monroe, & Glass, 2002). Some of these foodborne illnesses are mild and result in 24-hour flu-like symptoms, but many other cases have been severe enough to require hospitalization or cause death. The leading

pathogenic causes of death are *Salmonella*, *Listeria*, and *Toxoplasma*, which account for 75% of foodborne related deaths (Table 2.1). Collins (1997) noted that the discrepancy between foodservice and home foodborne illnesses could be attributed to lack of reporting among those who become ill after consuming food prepared at home. Foodborne illness outbreaks in food production and manufacturing facilities are more likely to garner the attention of public health authorities, the media, and the general public (Knabel, 1995).

**Table 2.1: Estimated Incidents Per Year of the Leading Viral, Bacterial, and Parasitic Causes of Foodborne Disease**

Microorganism	Estimated Incidence Per Year		Deaths Attributed to Incidences from Food
	Total	From Food	
Norwalk-Like Viruses	23,000,000	9,200,000	124
Rotavirus	3,900,000	39,000	0
Astrovirus	3,900,000	39,000	0
<i>Campylobacter</i> spp.	2,453,929	1,963,141	99
<i>Giardia lamblia</i>	2,000,000	200,000	1
<i>Salmonella</i> , nontyphoidal	1,412,498	1,341,873	553
<i>Shigella</i> spp	448,240	89,648	14
<i>Cryptosporidium parvum</i>	300,000	30,000	7
<i>Clostridium perfringens</i>	248,520	248,520	7
<i>Toxoplasma gondii</i>	225,000	112,500	375
<i>Staphylococcus</i>	185,060	185,060	2
<i>Yersinia enterocolitica</i>	96,368	86,731	2
Hepatitis A	83,391	4,170	4
<i>Escherichia coli</i> O157:H7	73,480	62,458	52
<i>Bacillus cereus</i>	27,360	27,360	0
<i>Listeria Monocytogenes</i>	2,518	2,493	499

Note: From “Food-related illness and death in the United States.” By P.S. Mead, L. Slutsker, V. Dieta, LF. McCaig, J.S. Bresee, C. Shapiro, P.M. Griffin, and R.V. Tauxe, 1999, *Emerging infectious Diseases*, 105, [Online]. Available at: <http://www.cdc.gov/ncidod/eid/vol5no5/mead.htm>

In 1993, an outbreak of *E. coli* O157:H7 from under-cooked ground beef resulted in at least 700 cases of foodborne illnesses, four of which resulted in death. Since that time, the food industry has worked to improve the safety of food served to the public and has done more to educate the public and media on the causes of foodborne illnesses (Knabel, 1995; Woodburn & Raab, 1997). While the government's efforts at education had worked for the most part and declines were seen in the overall number of foodborne illness cases, including *E. coli* O157:H7, in 2005 and 2006, the number of cases reported actually increased. Additionally, the *E. coli* O157:H7 outbreaks in 2006 attributed to contaminated spinach and lettuce illustrates the need for increased educational efforts (CDC, 2007).

#### **CAUSES/SOURCES OF FOODBORNE ILLNESSES IN FOODSERVICE OPERATIONS**

The causes of foodborne illness attributed to U.S. foodservice establishments have been reviewed since the early 1970s. Bean and Griffin (1990) indicated that the most significant causes of foodborne illness outbreaks in U.S. foodservice establishments from 1972 - 1982 were associated with improper cooling, lapses of 12 or more hours between preparation and eating, infected persons handling food, inadequate re-heating, improper holding, purchasing or receiving foods from unsafe sources, improper cleaning of equipment and utensils, and inadequate cooking.

Bryan (1988) conducted a meta-analysis of CDC reports and other food safety articles from 1977 to 1982 and explored the factors that contributed to the occurrence of foodborne disease outbreaks. Bryan reported the top ten factors that led to foodborne illnesses were: (1) improper cooling (40%), (2) intervals of 12 or more hours between preparation and eating (25%),

(3) contaminated raw food/ingredients (23%), (4) food from unsafe sources (18%), (5) infected persons handling foods (15%), (6) inadequate cooking (14%), (7) improper reheating (9%), (8) improper hot-holding (9%), (9) cross contamination (4%), and (10) improper cleaning of equipment and utensils (4%). Bryan noted that the percentage totals exceed 100% due to multiple factors contributing to outbreaks.

Bean, Griffin, Goulding, and Ivey (1990) found that in each year from 1983 to 1987, the food preparation practice that most often resulted in foodborne disease was improper storage/holding temperatures of potentially hazardous foods followed by poor personal hygiene. Subsequent CDC reports exploring outbreaks from 1988 – 1992 and 1993 – 1997 (Table 2.2) found that improper holding temperatures, poor personal hygiene, improper cooking temperatures, foods from unsafe sources, and contaminated equipment were the practices that contributed to the majority of outbreaks (Bean, Goulding, Lao, & Angulo, 1996; Olsen, MacKinon, Goulding, Bean, & Slutsker, 2000). While cross contamination was not directly identified in their study, contaminated equipment was found to be the fourth most frequent cause of foodborne illnesses and is considered one aspect of cross contamination.

Collins (1997) reported results of a Food and Drug Administration (FDA) study of 900 foodservice facilities to determine the most common risk factors that cause foodborne diseases and illnesses. Again, improper holding times, cross contamination, and poor personal hygiene were the three most frequent, but are practices that can be controlled by foodservice employees and managers.

The FDA's first attempt to develop baseline data on compliance of risk factors that cause foodborne illness specifically in foodservice facilities was the *Report of the FDA Retail Food Program Database of Foodborne Illness Risk Factors* (FDA, 2000).



**Table 2.2: Specific Causes of Foodborne Illness Outbreaks**

Year	Cause of Outbreak				
	Improper Holding Time/Temperature	Poor Personal Hygiene	Inadequate Cooking	Contaminated Equipment	Food From Unsafe Sources
1988	159	118	70	36	118
1989	154	101	80	49	101
1990	177	115	92	50	115
1991	209	110	89	50	110
1992	149	70	70	44	70
1993	208	32	59	80	32
1994	217	124	60	99	124
1995	210	94	63	75	94
1996	149	90	44	60	90
1997	154	100	48	36	100
<b>Total</b>	<b>1786</b>	<b>954</b>	<b>675</b>	<b>579</b>	<b>954</b>

Note: from “The annual food safety audit trend report” By Steritech, Inc. 2004. [Online]. Available at: <http://www.steritech.com/FSreport04/SteritechTrendReport04.pdf>

The report summarized observations of risk factors for each segment of the foodservice industry: hospitals, nursing homes, elementary schools, quick service restaurants, full service restaurants, etc. For their study, the FDA utilized 20 food safety specialists who conducted five random inspections of full service and quick service restaurants. Visits were intended to be observational rather than regulatory and a state or local official accompanied each FDA specialist to ensure compliance with the inspection.

The FDA focused on the five major risk factors that contribute to foodborne illness. The five areas explored were: (1) foods from unsafe sources, (2) inadequate cooking, (3) improper

holding, (4) contaminated equipment, and (5) poor personal hygiene. For each factor, the Food Code (FDA, 1997, 2002) was used as the guide to develop the observation form and to determine what would be considered “in compliance” and what was considered “out of compliance” (Table 2.3 and 2.4).

Full-service restaurants were found to be 60% in compliance and quick service restaurants 74% in compliance for major risk factors. This represents lower compliance rates than for hospitals (80%), nursing homes (82%), and elementary schools (80%). The FDA found that 53.4% of full service restaurants were out of compliance with personal hygiene standards and 63.2% for violations of holding time and temperature standards. For quick service operations, those percentages were 36.6% and 49.2%, respectively. The follow-up study by FDA (2004) found that 42.7% of full service restaurants were out of compliance for poor personal hygiene, and 63.8% for violations of improper holding times and temperatures. The percentages of fast food restaurants out of compliance with these risk factors were lower at 31.2%, and 41.7%, respectively.

Between the 2000 and the 2004 FDA studies, the greatest improvement in quick service restaurants was in ready-to-eat, potentially hazardous food date marked after 24 hours. The out of compliance observations decreased 30%, which was the highest overall improvement in quick and full service operations. In the quick service sector, those operations out of compliance with surfaces/utensils cleaned/sanitized actually increased 13%. For full service operations, the greatest improvement was noted in the prevention of hand contamination (minimizing bare hand contact with ready-to-eat foods); where the out of compliance rate decreased 19% in the four years. However, the out of compliance rate for proper, adequate handwashing increased 20% during the same period.

**Table 2.3: “Out of Compliance” Observations for Full Service Restaurants by Year**

Factor	2000			2004			% Overall Change
	Number of Observations “Out of Compliance”	Total Observations	% Out of Compliance	Number of Observations “Out of Compliance”	Total Observations	% Out of Compliance	
Ready to eat, potentially hazardous food date marked after 24 hours	68	90	76	69	93	74	-2
Potentially hazardous food cold held at 41°F or below	83	102	81	77	99	78	-3
Prevention of hand contamination	79	105	75	53	93	57	-18
Good hygienic practices	34	104	33	33	97	34	1
Proper, adequate handwashing	55	103	53	72	99	73	20
Surfaces/utensils clean/sanitized	73	105	70	56	99	57	-13
Poisons/toxins identified, stored, and used properly	40	105	38	38	99	38	0

Note: Compiled from “Report of the FDA retail food program database,” Food and Drug Administration, 2000, [Online]. Available at: <http://www.cfsan.fda.gov/~acrobat/retrsk.pdf> and “FDA report on the occurrence of foodborne illness risk factors in selected institutional foodservice, restaurant, and retail food store facility types” Food and Drug Administration, 2000, [Online]. Available at: <http://www.cfsan.fda.gov/~acrobat/retrsk2.pdf>.

**Table 2.4: “Out of Compliance” Observations for Quick Service Restaurants by Year**

Factor	2000			2004			% Overall Change
	Number of Observations “Out of Compliance”	Total Observations	% Out of Compliance	Number of Observations “Out of Compliance”	Total Observations	% Out of Compliance	
Ready to eat, potentially hazardous food date marked after 24 hours	41	58	71	24	59	41	-30
Potentially hazardous food cold held at 41°F or below	53	101	62	61	108	57	-5
Prevention of hand contamination	59	102	58	53	105	51	-7
Good hygienic practices	34	104	33	23	104	22	-11
Proper, adequate handwashing	55	103	53	56	104	53	0
Surfaces/utensils clean/sanitized	38	101	38	55	108	51	13
Poisons/toxins identified, stored, and used properly	36	103	35	34	108	31	-4

Note: Compiled from “Report of the FDA retail food program database,” Food and Drug Administration, 2000, [Online]. Available at: <http://www.cfsan.fda.gov/~acrobat/retrsk.pdf> and “FDA report on the occurrence of foodborne illness risk factors in selected institutional foodservice, restaurant, and retail food store facility types” Food and Drug Administration, 2000, [Online]. Available at: <http://www.cfsan.fda.gov/~acrobat/retrsk2.pdf> .

In a study exploring food safety practices of independent restaurant operations, Roberts and Sneed (2003) surveyed 131 restaurant managers to determine the number of operations that had food safety programs. Of the operations surveyed, 74% of managers indicated they had procedures in place to check final internal cooking temperatures of food, 81% a policy on glove use, and 71% a handwashing policy.

In 2005, Green, et al. (2005) conducted a random telephone survey to determine food handling practices among foodservice employees. Results indicated that of the 484 respondents, 47% used a thermometer to determine the doneness of food, yet they also indicated using visual cues, touch, and timers. Approximately 77% indicated washing hands when working with food products and 66% changed their gloves between products. However, only 40% reported wearing gloves when working with ready-to-eat foods.

Roberts, Barrett, and Sneed (2005) surveyed sanitation inspectors to ascertain the same information. Respondents indicated only 32% of independent operations and 64% of chain operations had procedures in place for checking the end-point cooking temperature of foods. Moreover, sanitation inspectors reported that within independent operations, only 17% and 12% had written policies for handwashing and the use of gloves, respectively. In contrast, sanitation inspectors noted that the majority of chain operators had written policies for handwashing (61%) and for use of gloves (56%).

## **PREVENTION OF FOODBORNE ILLNESSES**

The restaurant industry has an ethical and moral obligation to serve customers food that is safe. Improper holding time/temperature, poor personal hygiene, and cross contamination are

risk factors that are directly related to food handling practices of foodservice employees and are preventable if proper food safety practices are followed.

To assure the safety of food, specific procedures must be followed including time and temperature control, good personal hygiene maintenance, and minimizing cross contamination. The National Restaurant Association Educational Foundation (NRAEF) (2004) indicated that microorganisms grow fastest between temperatures of 41°F to 135°F, therefore, when heating, cooling, or holding foods prior to service the potential is great for bacteria to multiply if not heated to the proper temperature, held at the proper temperature, or if held too long at unsafe temperatures.

Potentially hazardous foods must be cooked to the United States Department of Agriculture (USDA) recommended temperatures. Those temperatures include 135°F for commercially processed hot foods; 145°F for fish, fresh shell eggs that will be served immediately, and whole red meat items; 155°F for ground or injected meats; and 165°F for poultry, stuffed meats, and any food cooked in a microwave oven. Once cooked, hot food must be held at an internal temperature of 135°F or higher and cooled to 41°F within four hours (NRAEF, 2004).

Another aspect of maintaining a food safety program is to monitor the time and temperature of food as it flows through the operation. Food that is being held should be checked with a calibrated thermometer at least every four hours to assure the product is maintained at the proper temperature. Also, thermometers must be calibrated regularly within  $\pm 2^\circ\text{F}$  to assure their validity (NRAEF, 2004) and to ensure compliance with the 2000 Food Code.

Hillers, Medeiros, Kendall, Chen, and DiMascola (2003) utilized a four-stage Delphi technique to determine what behaviors experts in food safety believed were the most important

to decrease the incidence of foodborne illnesses among consumers. Twenty-four experts in epidemiology, food microbiology, food safety education, and food safety policies participated in the study. The experts indicated that time/temperature control or using a thermometer to check that the minimum internal temperature of food was reached prior to eating was listed as the most important practice in combating 11 major foodborne illnesses: *Bacillus cereus*, *Clostridium perfringens*, *Staphylococcus aureus*, *Campylobacter jejuni*, *Eschericia coli* 0157:H7, *Salmonella* Enteritidis, *Salmonella* spp., *Toxoplqwmq gondii*, *Yersinia enterocolitica*, *Vibrio* spp., and Noroviruses.

Good personal hygiene also is essential in preventing foodborne illnesses. To assure good personal hygiene, a foodhandler must wash his/her hands frequently and properly. The NRAEF (2004) indicated that handwashing is one of the fundamental practices that decreases the spread of foodborne illnesses. The CDC indicated that hands are the cause of most enteric virus transmissions (LeBaron, et al., 1990). While it may seem like a basic practice in foodservice establishments, research has shown that as many as 60% of foodhandlers do not wash their hands often enough or properly (Snyder, 1998). Proper handwashing includes using water at least 100°F, applying enough soap to build a good lather, vigorously scrubbing hands together for a minimum of 20 seconds assuring that you scrub under your nails and between fingers, rinsing thoroughly under running water, and drying with a single use paper towel or warm air dryer. Handwashing should always be completed after using the restroom; touching raw foods; touching the hair, face or body; sneezing, coughing, or using a tissue; smoking, eating, or chewing gum or tobacco; handling chemicals; taking out or handling trash; busing or cleaning a table; touching clothing or aprons; and touching anything else that may contaminate hands (NRAEF, 2004).

A foodservice operation's personal hygiene program should include policies about proper handwashing, wearing clean clothing, sanitary eating and personal habits, such as smoking and chewing tobacco (NRAEF, 2004). Other recommended safe food handling practices include keeping fingernails trimmed and clean, covering cuts and other open wounds, and wearing disposable, plastic gloves (Bryan, 1992). Hair must be washed often because oily hair carries disease that causes bacteria. The average person loses about 100 hairs from his/her head each day, which can become problematic in overall sanitation of the establishment (Hayes, 1992). Hair restraints should be worn to assure that hair is not contaminating food. Bean and Griffin (1990) estimated that poor personal hygiene was attributed to 88% of Streptococcus Group A, 100% Streptococcus Group D, and 78% of Norwalk virus outbreaks.

Another aspect of a well-designed food safety program is to minimize cross contamination. Cross contamination is defined as the point where "microorganisms are transferred from one surface or food to another. A foodborne illness can result if cross contamination is allowed to occur in any of the following ways: raw contaminated ingredients added to food that receives no further cooking, food-contact surfaces not properly cleaned and sanitized before touching cooked or ready-to-eat food, and raw food allowed to touch or drip fluids onto cooked ready-to-eat food" (NRAEF, 2004, P. 1-11).

With more than 12.2 million individuals employed in the foodservice industry, the potential for foodborne illness outbreaks is significant if employees do not follow proper food safety practices (NRA, 2007a). Restaurant employees need to believe that serving safe food is a necessity to ensure their long-term employment (Cochran-Yantis, Belo, Giampaoli, McProud, Everly, & Gans, 1996). Food safety training has been identified as a way to increase proper food



handling practices within the operation (Kassa, Harrington, Biesesi, Khuder, 2001; Hwang, Almanza, & Nelson, 2001; Metts & Rodman, 1993a; Matts & Rodman, 1993b).

## **WORKPLACE TRAINING**

Over the last decade, the United States government has made a substantial effort to increase the quality of education in the American school system. The amount of research and governmental reforms, such as the *No Child Left Behind Act*, has had a substantial affect on the quality of education in the United States. Not only were these educational programs aimed at traditional schools, they also sought to improve education within the workplace, creating a “nation of students,” focusing on programs that support and promote adult learning (Mirel, 2001). However, in the United States, the amount of workplace training did not increase between 1970 and 2000 (Stern, Song, & O’Brien, 2004).

Stern, Song, and O’Brien (2004) identified that workplace training can be conducted in one of four ways: formal training, informal training, embedded learning, and innovation. Formal training can be defined as classroom learning, where a trainer usually delivers the material to the learner. Informal training, the most common form of training, is on-the-job training, where one is coached by co-workers or supervisors while doing their work. For embedded training, the learner is forced to learn on their own through the use of training manuals or trial-and-error. Innovation is a form of learning where the employee develops a new process or technique that improves performance or productivity that was not known before. The majority of the literature related to workplace training has focused on formal or informal training, since they are most visible and easiest to measure.

Training research has shown that there is a positive relationship between the size of a business and the amount of formal training conducted. The size of the establishment also affects who does the training – larger establishments often have the capital to hire trainers for formal training, and smaller establishments generally rely on managers or supervisors to conduct the training (Barron, Black, & Lowenstein, 1987; Lynch, 1992). The amount of formal training increases in large unionized manufacturing establishments; at operations with multiple establishments; when the employee uses expensive machinery; and in jobs where the skills learned are not useful at other operations within the community (Bishop, 1991).

Compared to general business, the hospitality literature has published very little research about training (Barrows, 2000; Conrade, Woods, & Ninemeier, 1994). Training in hospitality operations is generally unstructured, consisting primarily of on-the-job training where new employees shadow experienced employees, usually for a short period of time. Within the process, the new hire eventually will either succeed or fail, which shows the need for a more concentrated effort related to formal training within hospitality operations (Clements & Josiam, 1994).

Research has shown that training in the hospitality industry contributes to reduced turnover and increased customer satisfaction (Furunes, 2005; Hogan, 1990); reduced legal liability (Robin, 1991); increased productivity and quality; reduced overhead and labor costs; and improved employee skills, self awareness, and job satisfaction (Conrade, Woods, & Ninemeier, 1994). Yet, the hospitality industry lags far behind other U.S. businesses in expenditures and employee work time devoted to training (Conrade, Woods, & Ninemeier, 1994).

## FOOD SAFETY TRAINING

There are several formal food safety certification and training programs available to foodservice operators. The two most frequently used are ServSafe®, from the National Restaurant Association Educational Foundation (2004), and Serving-It-Safe, sponsored by U.S. Department of Agriculture (USDA). Previous research has found that food safety training is effective in increasing overall sanitation inspection scores (Cotterchio, et al, 1998; Kneller & Bierma, 1990), the microbiological quality of food (Cohen, Reichel, and Schwartz, 2001), and self-reported changes in food safety practices (McElroy & Cutter, 2004). However, other research has found that even when foodservice employees are trained in proper food handling practices and have the knowledge to perform proper food safety practices, the knowledge does not always transfer to actual behavior in the foodservice operation (Casey & Cook, 1979; Clingham, 1976; Kneller & Bierma, 1990; Shanklin, et al, 2007; Wright & Feun, 1986).

Casey and Cook (1979) compared the general effectiveness of a sanitation training course on post-course sanitation evaluations of establishments. They utilized a pre- and post-test design with a control and experimental group. They concluded that there was no significant increase in sanitation scores for the experimental group after the training. Casey and Cook also found that scores on the exam were not a significant predictor of post-exam sanitation scores. The best predictor was the operation's sanitation score on the inspection immediately prior to the training.

Wright and Feun (1986) also evaluated the effect of food service manager certification on inspection scores. They employed a pre- and three post-test research design to evaluate the effectiveness of the certification program long-term on a control and experimental group (N=57). The first two post-tests were conducted shortly after the certification program and the third six months later. They found that between the two groups there were no significant improvements

in knowledge between pre- and post-tests, however, there was a significant improvement in the attitudes about health regulations and health department inspectors. They also found that increased inspection frequency had a positive correlation to the overall sanitation in the operation. They concluded that managers' attitudes about training employees in food safety had increased, but the actual training of employees did not increase. Kneller and Bierma (1990) explored the effectiveness of a food safety certification class in improving inspection scores. They compared 483 pre- and 539 post-certification inspection scores and found that after certification, total inspection scores increased 3.8 points ( $p \leq .01$ ).

Mathias, Sizio, Hazelwood, & Cocksedge (1995) studied Canadian food handlers who were educated in food safety and compared the results of reported inspection violations against those who had no education. Results indicated that the number of food handlers trained in food safety had no significant effect on food safety inspection violations.

Powell, Attwell and Massey (1997) conducted a study in the United Kingdom of 12 foodservice establishments and found no significant differences in the levels of knowledge between trained and untrained staff. They also reported no relationship between the level of knowledge of staff and the hygiene standards within the operation.

Cotterchio, Gunn, Coffill, Tormey, and Barry (1998) compared the inspection scores pre- and post-sanitation class interventions. Utilizing routine restaurant inspection reports, they compared pre- and post-training scores for 94 restaurants falling into one of three categories: mandated (manager's attendance for these particular operations was mandated by the board of health), voluntary (managers attended the training voluntarily), and a control group (no staff attended the training program). Results found that for those managers who were mandated to take a food safety class (due to either a foodborne illness in their operation or a serious sanitation

infraction on their last inspection) their inspection scores improved an average of 14.7 points. For those who voluntarily took the class, scores improved an average of 7.5 points, and for the control group the scores remained consistent with previous inspections. “This study provides support for the hypothesis that food manager certification training programs can have a positive effect on the sanitary conditions of restaurants” (Cotterchio, et al., 1998, p. 358).

McElroy and Cutter (2004) examined the effect of participation in a food safety certification program on self-reported food safety practices. While their sample was largely comprised of commercial foodservice managers (37%), it also included those who work in retail groceries, convenience stores, delis, catering services, etc. They found that after completing a training program, 93% of respondents indicated they were “very likely” to practice food safety, a statistically significant increase compared to 85% prior to the training. They also explored challenges to implementing food safety programs and found the top challenges identified by these managers were employees who were resistant to change (25%), lack of time (17%), lack of money for new equipment (12%), management not understanding the need for change (5%), and managers not enforcing new rules/procedures (5%).

The FDA (2004) explored the impact of certification on the control of foodborne illness risk factors within foodservice establishments. They observed production in 99 full-service and 108 quick-service establishments. Of the operations, 50 full-service operations had managers who were certified, while 71 quick-service operations had a certified manager. Two categories within the full-service segment, personal hygiene and contaminated equipment/protection from contamination, showed significant differences between operations with a certified manager versus those with non-certified managers. Operations that had certified managers were 18.8% above personal hygiene compliance rates of non-certified managers and 9.8% above compliance

rates for contaminated equipment/protection from contamination. Within quick-service operations, they noted statistical differences between two categories, improper holding/time and temperature and contaminated equipment/protection from contamination. Employees of operations with certified managers outperformed those operations with non-certified managers by 21.4% for improper holding/time and temperature and 16.8% for contaminated equipment/protection from contamination. While all of these differences are noteworthy, many basic food safety practices, including assuring that food is procured from safe sources, proper cooking, and chemical control did not increase significantly.

A study completed by Roberts, et al. (2008) utilized a systematic random sample of 19 restaurants, including 294 employees in both independent and chain restaurants. They conducted a pre- and post-test survey and observation of foodservice employees to determine if food safety training improves overall food safety knowledge and behaviors. Independent samples t-tests revealed that when the means were compared for the composite scores of cross contamination, time and temperature abuse, and use of thermometers, only *knowledge* increased significantly for handwashing ( $p \leq .001$ ). Pre- and post-observation in-compliance percentages were compared and the overall in-compliance percentage for the behaviors increased significantly ( $p \leq .001$ ). When the behavioral compliance percentages were examined independently for each of the three behaviors, the in-compliance percentage for handwashing behavior was the only one that increased significantly ( $p \leq .001$ ) between pre- and post-training behaviors.

Pilling, Brannon, Roberts, Shanklin, and Howells (2008) found that employees perceive many barriers to implementing food safety programs. Employees noted that lack of time, training, and resources, along with employee attitude, availability of hand sinks, and inconveniently located resources were barriers to handwashing within a foodservice operation.

In the use of thermometers, employees cited lack of time, thermometers, and training as barriers to using thermometers to check the end-point cooking temperatures of food. Lack of time, training, space, and resources and a poor attitude among employees were noted as barriers to properly washing and sanitizing work surfaces.

In an attempt to discover the best training methods for food safety programs, Costello, Gaddis, Tamplin, and Morris (1997) compared the effectiveness of food safety training via lecture and computer for quick service restaurant workers using a pre- and two post-test design. Questionnaires were administered to 43 quick service restaurant employees one week prior to the intervention and one week after, to gauge retention among those who were trained. An additional retention test was administered one week later. Pre-test scores showed no significant differences between the control, lecture, or computer-trained groups. Initial post-test results indicated the lecture training method was most effective, because there was a 29% increase in knowledge between pre- and post-tests. Computer trained counterparts' scores were 19.5% higher than on the pre-test, and the control group scored 3.6% higher. However, when the retention test was administered, scores of employees' who were trained by lecture decreased approximately 4.5%, while scores for those who participated in the computer training did not change

Howes, McEwen, Griffiths, and Harris (1996) conducted a study with 69 university foodservice employees to determine the effectiveness of a home study course on food safety and then measured change in knowledge and behavior. Researchers employed a pre- and post-test control group design and found that the home study course was effective at increasing general knowledge of foodservice workers, but workers lacked some of the specific knowledge related to time/temperature abuse. Importantly they noted there was no significant change in handwashing

behaviors for employees taking the home study course. This is an indication that even though employees had the necessary knowledge about food safety, they failed to implement the knowledge gained within the operation.

Bryan (1990) surmised that training courses usually are short in duration and the information is used only to the degree that the foodservice worker understands it and is motivated to use it. Often, the worker goes back to work with people who do not understand and do not accept the new skills or procedures that the trainee has gained from the class. Cochran-Yantis Belo, Giampaoli, McProud, Everly, and Gans (1996) concluded, “education is a critical factor in implementing food safety programs” (p. 127). But, only those who internalize what they have learned and those operators who recognize the importance of food safety, HACCP, and prerequisite programs will implement effective food safety programs. Moreover, these facts bring into question the effectiveness of food safety training programs and why food safety training is not more prevalent among commercial foodservice operations in the United States.

### **Attitudes, Perceived Controls, Subjective Norms and Food Safety**

Attitudes and manager perceptions about food safety programs have been well researched. Attitudes of managers about food safety will impact the success of food safety programs and attitudes are an important consideration when looking at decreasing foodborne illness outbreaks (Howes, McEwen, Griffith, & Harris, 1996). Giampaoli, Sneed, Cluskey, and Koenig (2002) studied food safety attitudes among school foodservice managers and found that food safety education among managers and employees is perceived as an important issue. Yet, many managers cited that they did not have basic food safety programs in place.

In a study of 36 restaurants that received unfavorable scores on their previous inspection, Cochran-Yantis et al., (1996) reported that restaurant managers who had a favorable attitude



about food safety were more likely to score higher on inspection reports, than for those who did not have a favorable attitude. They also found that only 23% of the restaurants surveyed had a manager or employee certified in food safety. Of the 36 restaurants surveyed that received favorable scores, 44% had an employee certified in food safety.

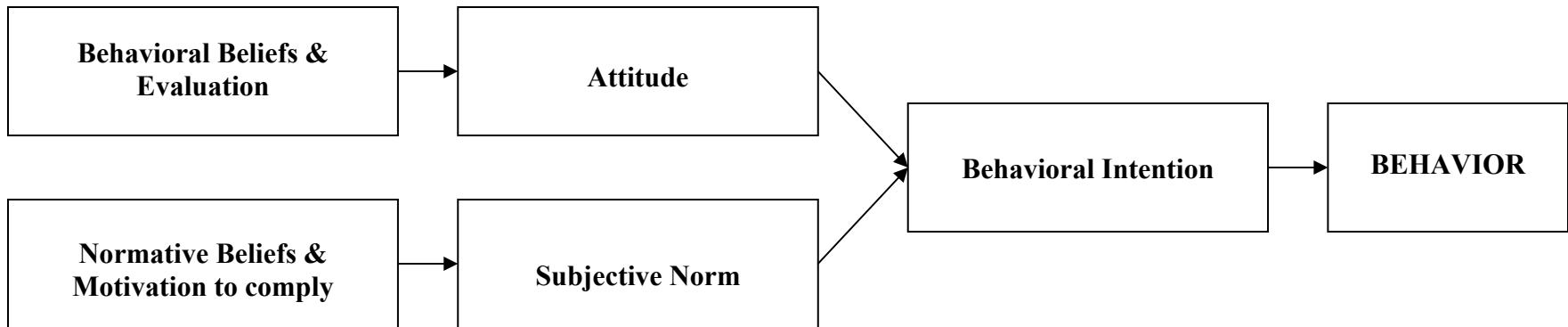
Giampaoli, Sneed, Cluskey, and Koenig (2002) conducted focus groups with school foodservice directors and found training and education of employees and employees' comfort level with their ability to practice food safety were essential to implementing successful food safety and HACCP programs. Cochran-Yantis et al. (1996) concluded that “education is a critical factor in implementing food safety programs,” (p. 127). But, only those who truly internalize what they have learned and those operators who recognize the importance of food safety will practice it. Hwang, Almanza, and Nelson (2001) extended this idea into school foodservice and found knowledge, training, and practice led managers to be more favorable about implementing a Hazard Analysis and Critical Control Point (a food safety program) system in their operation.

A study conducted at Kansas State University found that even if food safety training is required by state and local health codes and the training is free to employers, managers are reluctant to allow employees to participate in the training. In fact, of the three states where researchers were conducting training, less than 2% of restaurants in each state agreed to participate in the training (Shanklin, Roberts, Brannon, Barrett, Pilling, & Howells, 2007). There is a paucity of research exploring training in the workplace and barriers to training among restaurant managers. Specifically, research is needed to explore what impedes managers from providing food safety training to their employees, including assessing their attitudes, perceived controls, and subjective norms.

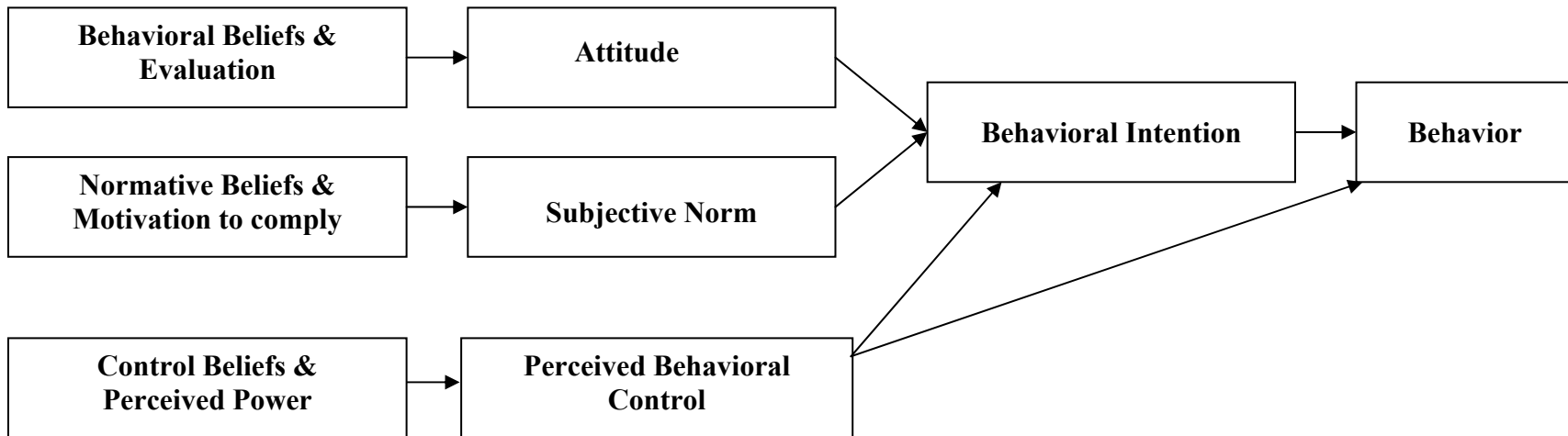
## **THE THEORY OF PLANNED BEHAVIOR**

The Theory of Planned Behavior (TpB) can be used to identify barriers that prevent individuals from performing behaviors. TpB is a widely used psychological model that examines factors that influence behavior. It is based on the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1977, 1980; Fishbein & Ajzen, 1975). The TRA (Figure 2.1) states that the best predictor of a person's behavior is his or her intention to perform the behavior. Although the original theory behind the TRA was not health related, it has been used extensively to explain the link between health beliefs and behaviors (Maddux, 1993; McCarty, Henrikus, Lando, & Vessey, 2001; Murphy & Brubaker, 1990; Sheppard, Hartwick, & Warsaw, 1988; Sheeran & Silverman, 2002; James, Tripp, Parcel, Sweeney, & Gritz, 2002; Wallston & Wallston, 1984; Weinstein, 1993; Quine, Rutter, & Arnold, 2001). The TRA posits that a behavior intention is based on the attitude toward the behavior and a subjective norm, which is one's perception that those who are important to the person think he/she should or should not perform the behavior in question (Ajzen & Fishbein, 1980).

The difference between the TRA and the TpB is the inclusion of perceived behavioral control in the TpB. Liska (1984) argued that most behaviors range from either requiring no skill and social cooperation to requiring considerable skill and social cooperation. He contended that if a behavior requires no skill or social cooperation, the TRA would reasonably explain behavioral intention, but for those behavioral intentions that require skill or social cooperation, the TRA would not be useful. Barriers exist because health related behaviors generally require prerequisite knowledge, resources, and/or cooperation of others (Gilbert, Fiske, & Lindzey,



**Figure 2.1: The Theory of Reasoned Action (Ajzen & Fishbein, 1980)**



**Figure 2.2: The Theory of Planned Behavior (Ajzen, 1985)**

1998). Therefore, the TpB includes perceived behavioral control, which refers to a persons' appraisal of his/her ability to perform a behavior or barriers which prevent one from performing the behavior. A person's behavioral intention is based upon three antecedents: his or her attitude, subjective norm, and perceived behavioral control (Figure 2.2) (Ajzen & Fishbein, 1980, Fishbein & Ajzen, 1975).

The TRA and TpB have been the basis of research in a wide variety of fields, including those predicting human behavior. It has been used to explore teachers' intentions to teach physically active physical education classes (Martin, Kulinna, Eklund, & Reed, 2001), test persuasive interventions to increase helmet use among school-age cyclists, study attitudes and beliefs on exceeding the speed limit (Parker, Stradling, & Manstead, 1996), predict mothers' intention to limit frequency of infants sugar intake (Beale & Manstead, 1991), develop smoking cessation interventions (Black & Babrow, 1991), predict and develop interventions to increase condom use (Williams, Bowen, Timpson, Ross, & Atkinson, 2006), understand glove use among physicians (Godin, Naccache, & Fortin, 1998), and explore ethical decision making in the medical profession (Randall & Gibson, 1991).

Godin, Naccache, and Fortin (1998) explored physicians' intentions to wear gloves to control the spread of infectious diseases. In their sample of 667 physicians, they found that perceived behavioral control, subjective norms, and attitudes were all significant ( $p \leq .0001$ ) components that determined a physician's intention to wear gloves when dealing with body fluids or blood. The researchers found that the most important determinant in a physician's intention to wear gloves was the subjective norm followed by attitudes and perceived behavioral control.

Black and Babrow (1991) studied participation in a stepped smoking cessation intervention for college students. Using a sample of 191 college students, they determined that the strongest predictor of interest in the program was attitude, followed by control beliefs and subjective norms, respectively. They concluded that attitude and control beliefs were the most consistent predictors of college students' interest in the smoking cessation program across their study. Normative beliefs were important, but were less consistent throughout the study.

Martin, Kulinna, Eklund, & Reed (2001) explored teachers' intentions to teach physically active physical education classes to elementary, middle, and high school students. Utilizing a sample of 197 teachers, they found strong support for the use of attitudes and subjective norms. Together, these two variables accounted for 55% of the behavioral intention variance. However, they failed to find support that perceived behavioral control contributed to the prediction of perceived behavioral intention. Martin, et al. elaborated on this finding indicating that most teachers felt they were in control of their classrooms and that they had the necessary knowledge to teach such courses.

### **TRA AND TPB CONSTRUCTS**

Usually, TRA and TpB are discussed at two levels. The first level explains indirect measures in terms of behavioral, normative and control. At the next level, behavioral intentions are explained in terms the direct measures of attitude, subjective norms, and perceived behavioral control.

A meta-analysis conducted by Armitage and Conner (2001) (Table 2.5) of 185 studies using TpB found that the average correlation between behavioral belief and attitude was  $R = .50$ , between normative belief and subjective norm was  $R = .50$ , and between control belief and

perceived behavioral control was  $R = .27$ . Each was significant at  $p < .001$ . In the following sections, each of these relationships will be discussed.

### **Behavioral Beliefs and Attitude**

Attitude is a psychological tendency that is expressed by “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question” (Ajzen, 1991, p188). Due to the various ways in which people respond to their inherent attitude concerning an object, all aspects of responses are encompassed in attitude formation and include: emotions, cognitions, and behavior (Eagly & Chaiken, 1998). Attitude toward behavior is determined by beliefs that the individual holds about the behavior. An attitude is generally an evaluative response on a continuum from favorable to unfavorable (Eagly & Chaiken, 1998; Ajzen, 2002). A behavioral belief refers to an individual’s idea that the behavior will lead to a certain outcome (Ajzen & Fishbein, 1980). If a person holds a negative attitude about a behavior, he/she will be less likely to partake in the behavior compared to one who has a positive attitude about the behavior. Ajzen and Fishbein (1980) indicate that the strength of each behavioral belief ( $bb_i$ ) is multiplied by the evaluation of its consequence ( $be_i$ ), and attitude is a summation of the cross products (Ajzen & Fishbein, 1980). The following equation outlines the calculation of attitude:

$$\text{Attitude} = \sum_i bb_i be_i$$

There is a substantial amount of research investigating the relationship between attitudes and behavioral intentions; many of these studies have found that attitude is one of the best predictors of behavioral intention. Sheppard, Hartwick, and Warshaw (1988) (Table 2.5)

discovered that the average correlation between behavioral intention and attitude toward the behavior was .67 ( $p < .001$ ). Armitage and Conner's (2001) found the average correlation between behavioral intention and attitude was .49 ( $p < .001$ ). Both concluded that attitude is the strongest indicator of behavioral intention.

### **Normative Beliefs and Subjective Norm**

The TRA and TpB posit that the subjective norm is a function of a set of beliefs concerned with the likelihood that important individuals, such as spouse, parents, or friend, would approve or disapprove of the behavior (Ajzen & Madden, 1986). Ajzen and Fishbein (1980) explained that the subjective norm summarizes the beliefs of other people (co-workers, managers, etc.) concerning how the individual should behave in the situation (normative beliefs) and how motivated the individual is to comply with those individuals (motivation to comply).

To obtain an estimate of the subjective norm, Ajzen and Fishbein (1980) explained that each important individual ( $nb_i$ ) to the person is first multiplied by his/her motivation to comply with this person ( $mc_i$ ). Then, cross products are summed for all important individuals. Thus, subjective norm can be illustrated as:

$$\text{Subjective Norm (SN)} = \sum_i nb_i mc_i$$

**Table 2.5: Variable Relationships for Studies Using the TRA and the TpB**

Relationship	Number of Tests	Average Correlation (R)*	Variance (R <sup>2</sup> )
<i>Sheppard, Hartwick, and Warshaw's (1988) Meta-analysis of TRA studies</i>			
Behavioral Intention - Behavior correlation	87	.53	
Multiple correlation (Attitude + Subjective Norm) with Behavioral Intention	87	.66	
Attitude – Behavioral Intention correlation	87	.67	
Subjective Norm – Behavioral Intention correlation	87	.62	
<i>Armitage &amp; Conner's (2001) Meta-analysis of TPB studies</i>			
Multiple correlation (Behavioral Intention + Perceived Behavioral Control) with behavior	63	.52	.27
Behavior Intention - Behavior correlation	48	.47	.22
Perceived Behavioral Control - Behavior correlation	60	.37	.13
% Variance added by Perceived Behavioral Control to Behavior	66	.14	.02
Multiple correlation (Attitude + Subjective Norm + Perceived Behavioral Control) with Behavioral Intention	154	.63	.39
Attitude - Behavioral Intention correlation	115	.49	.24
Subjective Norm - Behavioral Intention correlation	137	.34	.12
Perceived Behavioral Control - Behavioral Intention correlation	144	.43	.18
% Variance added by Perceived Behavioral Control to Behavioral Intention	136	.24	.06
Behavioral belief - Attitude Correlation	42	.50	.25
Normative belief - Subjective Norm Correlation	34	.50	.25
Control belief – Perceived Behavioral Control Correlation	18	.27	.27

\* $p < .001$

Note: from Lee, M. J. (2005). Effects of attitude and destination image on association members' meeting participation intentions: Development of meeting participation model. Unpublished dissertation: Kansas State University.



Sheppard, Hartwick, and Warshaw's (1988) (Table 2.5) meta-analysis discovered that the average correlation between behavioral intentions and subjective norms toward behavior was .62 ( $p < .001$ ), while Armitage and Conner's (2001) meta-analysis found the average correlation to be .34 ( $p < .001$ ).

### **Control Beliefs and Perceived Behavioral Control (PBC)**

According to Ajzen (1985) human behavior also is guided by beliefs about factors that can either help or hinder performance of the behavior and the perceived power of these factors (control beliefs). Perceived behavioral control is a function of these control beliefs (Ajzen, 1991). According to the Ajzen (1985), internal factors include individual differences, information, skills, abilities, and emotion, while external factors involve time, cooperation of others, and financial limitations. To estimate the perceived behavior control, each control belief ( $cb_i$ ) is multiplied by the perceived power of the control factor ( $pp_i$ ). Cross products are then summed across all control beliefs. Perceived behavioral control can be expressed in terms of the following equation:

$$\text{Perceived Behavioral Control (PBC)} = \sum_i^n cb_i pp_i$$

According to TpB, perceptions of behavioral control influence behaviors either directly or indirectly. People do not intend to engage in behaviors they do not believe they can perform. Therefore, perceptions of behavioral control can influence behavior indirectly by their influence on behavioral intentions. On the other hand, people can intend to perform a behavior that they are incapable of doing, and behavioral control then influences behavior directly (Ajzen, 1991). Armitage and Conner (2001) found the correlation between perceived behavioral control and

behavioral intention was .43 ( $p < .001$ ) and the correlation between perceived behavioral control and behavior was .37 ( $p < .001$ ). They indicated perceived behavioral control adds, on average, 6% to the prediction of behavioral intention, showing the effectiveness of perceived behavioral control in the predication of a future behavior.

### **BEHAVIORAL INTENTION**

TRA and TpB state that behavioral intention is a combination of a persons' attitude toward the behavior in question, subjective norm, and perceived behavioral control. Ajzen and Fishbein (1980) indicate that behavioral intention in the TpB is illustrated as follows:

$$\text{Behavioral Intention} = \text{Attitude (A)} + \text{Subjective Norm (SN)} + \\ \text{Perceived Behavior Control (PBC)}$$

Although formulated outside the food safety domain, the TpB has been used extensively in health beliefs and health behaviors research to uncover barriers. It has not been used to understand beliefs restaurant managers' have about providing food safety training to employees. Therefore, once these primary beliefs have been identified, they can be targeted for change.

### **SUMMARY**

This chapter discussed the importance of food safety training and education as it applies to restaurant operations. The theoretical underpinning of this research is provided by use of the Theory of Planned Behavior (Ajzen, 1985). This research centers on the application of the theory to the food safety domain. Recognizing the need for training programs that are accessible and relevant to restaurant managers and employees, this research seeks to determine what

prevents restaurant managers from allowing employees to participate in food safety training.

Chapter 3 discusses research methodology used in this study.

## REFERENCES

- Allen, R. L. (2000, Oct. 30). Study shows shrinking consumer confidence in food-safety practices. *Nation's Restaurant News*, 1, 87.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11-39). New York: Springer-Verlag.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50, 179-211.
- Ajzen, I. (2002). Behavioral intentions based on the theory of planned behavior. Retrieved November 1, 2003 from the World Wide Web:  
<http://www-unix.oit.umass.edu/~aizen/pdf/tpb.intervention.pdf>
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84, 888-918.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Ajzen, I., & Madden, T. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22, 453-474.
- Armitage, D., & Conner, M. (2001) Efficacy of the theory of planned behavior: A meta-analysis review. *British Journal of Social Science*, 40(4), 471-499.
- Barron, J. M., Black, D. A., & Lowenstein, M. A. (1987). Employer size: The implications for search, training, capital investment, starting wages and wage growth. *The Journal of Labor Economics*, 7(1), 76-89.

- Barrows, C. W. (2000). An exploratory study of food and beverage training in private clubs. *International Journal of Contemporary Hospitality Management*, 12(3), 190-197.
- Beale, D. A., & Manstead, A. S. R. (1991). Predicting mothers' intentions to limit frequency of infants' sugar intake: Testing the theory of planned behavior. *Journal of Applied Social Psychology*, 21, 409-431
- Bean, N. H., & Griffin, P. M. (1990). Foodborne disease outbreaks in the United States, 1973-1987: Pathogens, vehicles, and trends. *Journal of Food Protection*, 53, 804-817.
- Bean, N. H., Griffin, P. M., Goulding, C. B., & Ivey, C.B. (1990). Foodborne disease outbreaks, 5-year summary, 1983-1987. *Morbidity and Mortality Weekly Report*, 39(SS-1). 15-23. *Morbidity and Mortality Weekly Report*, 39(SS-5). 15-23.
- Bean, N. H., Goulding, J. S., Lao, C., & Angulo, F. J. (1996). Surveillance for foodborne-disease outbreaks – United States, 1988-1992. *Morbidity and Mortality Weekly Report*, 45(SS-5). 1-55.
- Bishop, J. (1991). *What we know about employer-provided training: A review of literature*. Center for Advanced Human Resource Studies. Cornell University: Ithaca, NY.
- Black D. R., & Babrow, A. S. (1991). Identification of campaign recruitment strategies for a stepped smoking cessation intervention for a college campus. *Health Education Quarterly*, 18(2), 235-247.
- Bresee, J., Widdowson, M., Monroe, S., & Glass, R. (2002). Foodborne viral gastroenteritis: Challenges and opportunities. *Clinical Infectious Diseases*, 29, 107-116.
- Bryan, F. L. (1988). Risks of practices, procedures and processes that lead to outbreaks of foodborne disease. *Journal of Food Protection*, 51, 663-673.

- Bryan, F. L. (1990). Hazard Analysis Critical Control Point (HACCP) Systems for retail food and restaurant operations. *Journal of Food Protection*, 53, 978-983.
- Bryan, F. L. (1992). *Applied foodservice sanitation: A certificate coursework*. Chicago, IL: The Educational Foundation of the National Restaurant Association.
- Buzby, J. C., & Roberts, T. (1997). Economic costs and trade impacts of microbial foodborne illness. *World Health Statistics Quarterly*, 50, 57-66.
- Buzby, J. C., Roberts, T., Jordon-Lin, C. T., & MacDonald, J. M. (1996). Bacterial foodborne disease: Medical costs and productivity losses. *Agricultural Economics Report*, 741, 100.
- Casey, R., & Cook, C. (1979). Assessment of a food service management sanitation course. *Journal of Environmental Health*, 41(5), 281-284.
- Center for Disease Control and Prevention. (2000). Preliminary FoodNet Data on the incidence of foodborne illnesses – Selected sites, United States, 1999. *Morbidity and Mortality Weekly Report*, 49(10), 201-205.
- Center for Disease Control (2001). Preliminary FoodNet Data on the incidence of foodborne illnesses – Selected sites, United States, 2000. *Morbidity and Mortality Weekly Report*, 50(13), 241-246.
- Center for Disease Control and Prevention. (2002). Preliminary FoodNet Data on the incidence of foodborne illnesses – Selected sites, United States, 2001. *Morbidity and Mortality Weekly Report* 51(15), 325-329.
- Center for Disease Control and Prevention. (2003). Preliminary FoodNet Data on the incidence of foodborne illnesses – Selected sites, United States, 2002. *Morbidity and Mortality Weekly Report* 52(15), 340-343.

- Center for Disease Control and Prevention (2007). Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food – 10 States, 2006. *Morbidity and Mortality Weekly Report*, 56 (14), 336-339.
- Clements, C. J., & Josiam, B. M. (1994). Training: Quantifying the financial benefits. *International Journal of Contemporary Hospitality Management*, 7(1), 10 – 21.
- Clingman, C. D. (1976). Ohio evaluated effects of food certification training. *Journal of Environmental Health*, 38(4), 235-236.
- Cochran-Yantis, D., Belo, P., Giampaoli, J., McProud, L., Everly, V., & Gans, J. (1996). Attitudes and knowledge of food safety among Santa Clara County, California restaurant operators. *Journal of Foodservice Systems*, 9, 117-128.
- Cohen, E., Reichel, A., & Schwartz, Z. (2001). On the efficacy of an in-house food sanitation training program: Statistical measurements and practical conclusions. *Journal of Hospitality and Tourism Research*, 25(1), 5-16.
- Collins, J. E. (1997). Impact of changing lifestyles on the emergence/reemergence of foodborne pathogens. *Emerging Infectious Diseases*, 3, 471-479.
- Conrade, G., Woods, R., & Ninemeier, J. (1994). Training in the U.S. lodging industry: Perception and reality. *The Cornell Hotel & Restaurant Administration Quarterly*, 35(5), 16 – 21.
- Costello, C., Gaddis, T., Tamplin, M., & Morris, W. (1997). Evaluating the effectiveness of two instructional techniques for teaching four food safety principles to quick service employees. *Journal of Foodservice Systems*, 10(1), 41-50.

- Cotterchio, M., Gunn, J., Coffill, T., Tormey, P., & Barry, M. A. (1998). Effect of a manager training program on sanitary conditions in restaurants. *Public Health Reports, 113*, 353 – 358.
- Eagly, A. H., & Chaiken, S. (1998). Attitude structure and function. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 1, pp. 269-322). New York: McGraw-Hill.
- Ebbin, R. (1999, February). A quarter century of growth. *Restaurants USA*. Retrieved March 10, 2005 from the World Wide Web: <http://www.restaurant.org/rusa/magArticle.cfm?ArticleID=339>
- Featsent, A. W. (1998). *Food Fright! Consumers' Perceptions of Food Safety Versus Reality*. Restaurants USA. Retrieved June 21, 2002 from the World Wide Web: <http://www.restaurant.org/rusa/magArticle.cfm?ArticleID=302>
- Flint, J., Van Duynhoven, Y., Angulo, F., DeLong, D., Braun, P., & Kirk, M. et al. (2005). Estimating the burden of acute gastroenteritis, foodborne disease, and pathogens commonly transmitted by food: An international review. *Center for Infectious Disease, 41*, 698-704.
- Fishbein, H. A., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Food and Drug Administration. (1997). *Food Code 1997*. Springfield, VA: National Technical Information Service.
- Food and Drug Administration. (2000). Report of the FDA retail food program database of foodborne illness risk factors. Retrieved June 21, 2002 from the World Wide Web: <http://vm.cfsan.fda.gov/~dms/retrsk.html>



- Food and Drug Administration. (2002). Food Code 2001. Springfield, VA: National Technical Information Service. Retrieved June 21, 2002 from the World Wide Web: <http://www.cfsan.fda.gov/~dms/fc01-a5.html>.
- Food and Drug Administration. (2004). FDA report on the occurrence of foodborne illness risk factors in selected institutional foodservice, restaurant, and retail food store facility types. Retrieved June 26, 2005 from the World Wide Web: <http://www.cfsan.fda.gov/~acrobat/retrsk2.pdf>.
- Food Marketing Institute Research. (2007). *U.S. Grocery shopper Trends 2007*. Crystal City, VA: Author.
- Furunes, T. (2005). Training paradox in the hotel industry. *Scandinavian Journal of Hospitality & Tourism, 5*, 231-248.
- Giampaoli, J, Sneed, J., Cluskey, M., & Koenig, H. F. (2002). School foodservice directors' attitudes and perceived challenges to implementing food safety and HACCP programs. *The Journal of Child Nutrition & Management*. Retrieved June 21, 2002 from the World Wide Web: <http://www.asfsa.org/childnutrition/jcnm/02spring/giampaoli1/>
- Gilbert, D. T., Fiske, S. T., & Lindzey, G. (Eds.). (1998). *The handbook of social psychology*. (4th edition). New York: McGraw Hill.
- Godin, G., Naccache, H., & Fortin, C. (1998). Understanding physicians' intention to use a simple infection control measure: Wearing gloves. *American Journal of Infection Control, 26*, 413-417.
- Green, L., Selman, C., Banjeree, A., Marcus, R., Medus, C., & Angulo, F. et al. (2005). Food service workers' self-reported food preparation practices: An EHS-net study. *International Journal of Hygiene and Environmental Health, 208*, 27-35.

- Hayes, P. R. (1992). *Food Microbiology and Hygiene (2<sup>nd</sup> Ed)*. Essex, England: Elsevier Science Publishers, Ltd.
- Hillers, V. N., Medeiros, L., Kendall, P., Gang, C., & DiMascola, S. (2003). Consumer food-handling behaviors associated with prevention of 13 foodborne illnesses. *Journal of Food Protection*, 66, 1893-1899.
- Hogan, J. J. (1990). Turnover – and what to do about it. *The Cornell Hotel & Restaurant Administration Quarterly*, 22(1), 40-45.
- Howes, M., McEwen, S., Griffiths, M., & Harris, L. (1996). Food Handler certification by home study: Measuring changes in knowledge and behavior. *Dairy, Food, and Environmental Sanitation*, 16, 737-744.
- Hwang, J. H., Almanza, B. A., & Nelson, D. C. (2001). Factors influencing Indiana school foodservice directors/managers' plans to implement a hazard analysis critical control point (HACCP) program. *The Journal of Child Nutrition & Management*, 25, 24-29.
- James, A. S., Tripp, M. K., Parcel, G. S., Sweeney, A., & Gritz, E. R. (2002). Psychosocial correlates of sun-protective practices of preschool staff toward their students. *Health Education Research Theory & Practice*, 17(3), 305-314.
- Kassa, H., Harrington, B., Bisesi, M., & Khuder, S. (2001). Comparisons of microbiological evaluations of selected kitchen areas with visual inspections for preventing potential risk of foodborne outbreaks in food service operations. *Journal of Food Protection*, 64, 509-513.
- Knabel, S. J. (1995). Foodborne illness: Role of home food handling practices. *Food Technology*, 19(4), 119-130.

- Kneller, P., & Bierma, T. (1990). Food service certification measuring the effectiveness of a state program. *Journal of Environmental Health, 52*(2), 292-294.
- LeBaron, C. W., Furutan, N. P., Lew, J. F., Allen, J. R., Gouvae, V., Moe, C., & Monroe, S. S. (1990). Viral agents of gastroenteritis: public health importance and outbreak management. *Morbidity and Mortality Weekly Report, 39*, 1-24.
- Liska, A. E. (1984). A critical examination of the causal structure of the Ajzen/Fishbein attitude-behavior model. *Social Psychology Quarterly 47*, 61-74.
- Lynch, R. A., Elledge, B. L., Griffith, C.C., & Boatright, D. J. (2005). A comparison of food safety knowledge among restaurant managers, by source of training and experience, in Oklahoma County, Oklahoma. *Journal of Environment Health, 66*(2), 9-14.
- Lynch, L. (1992). Private sector training and the earnings of young workers. *American Economic Review, 82*, 299-312.
- Lynn, J. (1996, September). *Better safe than sorry: Training food handlers protects everyone*. Restaurants USA. Retrieved June 21, 2002 from the World Wide Web: <http://www.restaurant.org/rusa/magArticle.cfm?ArticleID=182>
- Maddux, J. E. (1993). Social cognitive models of health and exercise behavior: An introduction and review of conceptual issues. *Journal of Applied Sport Psychology, 5*, 116-140.
- Martin, J. J., Kulinna, P. H., Eklund, R. C., & Reed, B. (2001). Determinants of teachers' intentions to teach physically active physical education classes. *Journal of Teaching in Physical Education, 20*, 129 – 143.

- Mathias, R.G., Sizio, R., Hazelwood, A., & Cocksedge, W. (1995). The effects of inspection frequency and food handler education on restaurant inspection violations. *Canadian Journal of Public Health, 86*(1), 46-50.
- McCarty, M. C., Hennrikus, D. J., Lando, H. A., & Vessey, J. T. (2001). Nurses' attitudes concerning the delivery of brief cessation advise to hospitalized smokers. *Preventive Medicine, 33*, 674-681.
- McElroy, D. M., & Cutter, C. N. (2004). Self-report changes in food safety practices as a result of participation in a statewide food safety certification program. *Food Protection Trends, 24*, 150-161.
- Mead, P. S., Slutsker, L., Dietz, V., McCaig, L. F., Bresee, J. S., Shapiro, C., Griffin, P. M., & Tauxe, R.V. (1999, September). Food-related illness and death in the United States. *Center for Disease Control and Preventing Emerging Infectious Diseases, 5* (5), 1-38. Retrieved Sept 1, 2004 from the World Wide Web:  
<http://www.cdc.gov/ncidod/eid/vol5no5/mead.htm>.
- Metts, A., & Rodman, V. (1993a). A guideline for evaluating the effectiveness of foodservice worker training/certification. *Dairy, Food and Environmental Sanitation, 13*, 565-567.
- Metts, A. & Rodman, V. (1993b). Improving inspection scores through training/certification of foodservice workers. *Dairy, Food and Environmental Sanitation 13*, 450-453.
- Mirel, J. (2001, October). *The Evolution of the New American Schools*. Retrieved February 23, 2007, from <http://www.edexcellence.net/doc/evolution.pdf>
- Murphy, W. G., & Brubaker, R. G. (1990). Effects of a brief theory-based intervention on the practice of testicular self-examination by high school males. *Journal of School Health, 60*(9), 459-462.

- Notermans, S., & Hooenboom-Verdegall, A. S. (1992). Existing and emerging foodborne diseases. *International Journal of Food Microbiology*, 15, 197-205.
- National Restaurant Association (2008). *Restaurant Industry Forecast*. Washington, DC: National Restaurant Association
- National Restaurant Association Educational Foundation (2004). *ServSave Coursebook* (3rd ed.). Chicago: National Restaurant Association Educational Foundation.
- Olsen, S. J., MacKinon, L. C., Goulding, J. S., Bean, N. H., Slutsker, L. (2000). Surveillance for foodborne disease outbreaks – United States, 1993- 1997. *Morbidity and Mortality Weekly Report*, 49(SS-5). 1-51.
- Parker, D., Stradling, S. G., & Manstead A. S. B. (1996). Modifying beliefs and attitudes to exceeding the speed limit: An intervention study based on the Theory of Planned Behaviour. *Journal of Applied Social Psychology*, 26(1), 1-19.
- Payne-Palacio, J., & Theis, M. (2005). *West and Wood's Introduction to Foodservice* Upper Saddle River, NJ: Prentice Hall.
- Pilling, V. K., Brannon, L, Roberts, K. R., Shanklin, C. W., & Howells, A. (2008). Using the Theory of Planned Behavior to Elicit Restaurant Employee Beliefs about Food Safety: Using Surveys versus Focus Groups. *Journal of Foodservice business Research*.
- Powell, S. C., Attwell, R. W., & Massey, S. H. (1997). The impact of training on knowledge and standards of food hygiene: A pilot study. *International Journal of Environmental Health Research*, 7, 329-334.

- Quine, L., Rutter, D. R., & Arnold, L. (2001). Persuading school-age cyclists to use safety helmets: Effectiveness of an intervention based on the Theory of Planned Behavior. *British Journal of Health Psychology*, 6(4), 327-345.
- Randall, D. M., & Gibson, A. M. (1991). Ethical decision making in the medical profession: An application of the Theory of Planned Behavior. *Journal of Business Ethics*, 10(2), 111-116
- Roberts, K. R, Barrett, B., & Sneed, J. (2005). Health department sanitarians perception of food safety practices in restaurants. *Food Protection Trends*, 25(9), 694-700.
- Roberts, K. R., Howells, A. D., Shanklin, C. W., Pilling, V., & Brannon, L., (2008). Food Safety Training and Foodservice Employees' Knowledge and Behavior. *Food Protection Trends*.
- Roberts, K. R., & Sneed, P.J. (2003). An assessment of the status of prerequisite and HACCP programs in Iowa Restaurants. *Food Protection Trends*, 23(10), 808-816.
- Robin, G. D. (1991). Alcohol service liability – what the courts are saying. *The Cornell Hotel & Restaurant Administration Quarterly*, 31(4), 100-105.
- Shanklin, C. W., Roberts, K. R., Brannon, L. A., Barrett, E. B., Pilling, V. K., & Howells, A. (2007). [Summary of Food Safety Project Results Unpublished raw data].
- Sheeran, P. & Silverman, M. (2002). Evaluation of three interventions to promote workplace health and safety: Evidence for the utility of implementation intentions. *Social Science & Medicine*, 56, 2153-2163.
- Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A Meta analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15(3), 325-343.

- Snyder, O. P. (1998). Hand washing for retail food operations: A review. *Food and Environmental Sanitation, 18*(3), 149-162.
- Stern, D., Song, Y., & O'Brien, B. (2004). Company training in the United States 1970 – 2000: What have been the trends over time. *International Journal of Training and Development, 8*(3), 191- 209.
- Wallston, B. S., & Wallston, K. S. (1984). Social psychological models of health behavior: An examination and integration. In A. Baum, S.E. Taylor, & j. Singer (Eds), *Handbook of psychology and health* (Vol. 4, pp 23-53). Hillside, NJ: Erlbaum.
- Weinstein, N. D. (1993). Correct and incorrect interpretations of correlations between risk perceptions and risk behaviors. *Health Psychology, 12*, 235-245.
- Wilson, A. (1991). Twenty first century nutrition. *Restaruant Business, 19*(9), 64.
- Williams, M., Bowen, A., Timpson, S., Ross, M., & Atkinson, J. (2006). HIV prevention and male sex workers: Evaluation of brief interventions to increase condom use during paid sexual encounters. *AIDS Education and Prevention, 18*, 204-215.
- Woodburn, M. J., & Raab, C. A. (1997). Household food preparers' food safety knowledge and practices following widely publicized outbreaks of foodborne illness. *Journal of Food Protection, 60*, 1105-1109.
- Wright, J., & Feun, L. (1986). Food service manager certification: An evaluation of its impact. *Journal of Environmental Health, 49*(1), 12-15.

## **CHAPTER 3 - METHODOLOGY**

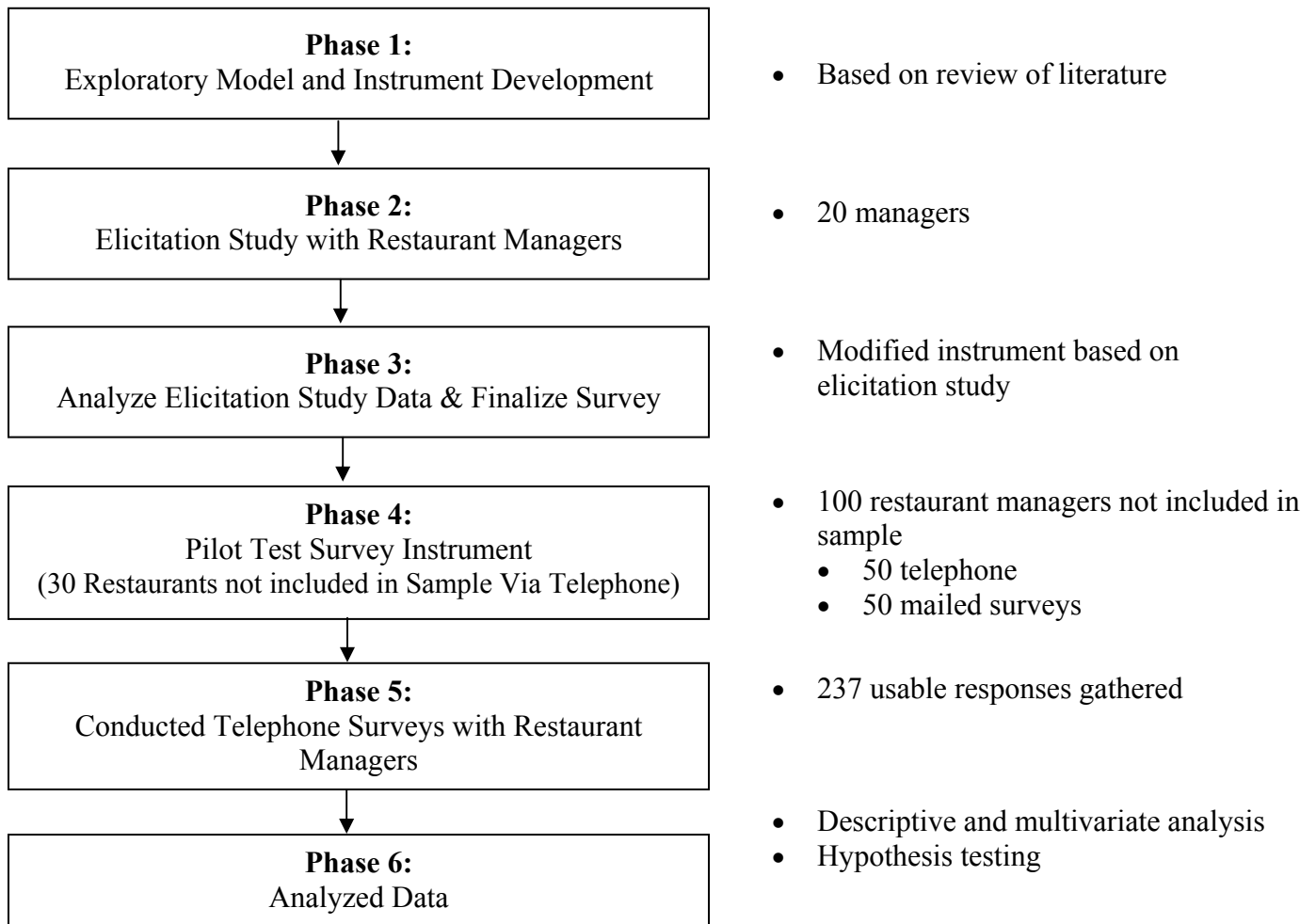
### **INTRODUCTION**

This chapter describes the research design and the data analysis procedures used to accomplish the research objectives. The purpose of this study was to investigate the antecedents that affect restaurant managers' willingness to support food safety training for their employees. A flow chart of the research procedures is presented in Figure 3.1. The first section describes the population and sampling frame, the second details each step of the methodology, and the last presents the statistical analysis procedures utilized.

### **POPULATION AND SAMPLE**

The population for this study included managers of the 7,558 operations licensed to sell food in Kansas. However, from the 7,558 operations, convenience stores, supermarkets, banquet facilities, healthcare operations, nursing homes, retirement communities, schools, and other institutional foodservice operations were excluded to yield a total of 5,486 operations. The sample consisted of both independent and chain restaurants since food safety training may vary significantly between these. From the edited listing of 5,486 operations (less 100 operations that were included in the pilot study), 25% were drawn utilizing a systematic random sample to obtain a list of 1,347 operations. Once the 1,347 operations were selected, further refinement was conducted using online yellow page research to remove any additional operations that were not classified as commercial foodservice operations. The final sample totaled 1,321 operations.





**Figure 3.1: Research Design**

### QUESTIONNAIRE DEVELOPMENT

A primary requirement of this study was the development of a research instrument that would accurately measure each construct. The survey instrument was based on research conducted by Roberts, Howells, Shanklin, Pilling, and Brannon (2008) and Lee (2005).

### **Exploratory Model Development & Elicitation Study with Managers**

Attitude, subjective norm, and perceived behavioral control can be assessed directly, by asking respondents to rate each construct on a set of scales (Ajzen, 2002b). These predictors also can be measured indirectly using corresponding beliefs. Direct measures produce measures with low reliability (Ajzen, 2002b). By utilizing predictor variables through the beliefs subjects hold, researchers can understand why people hold certain attitudes, subjective norms, and perceptions of behavioral control (Ajzen, 2002a). Another benefit of using the belief-based measures is that reliability is not a concern because predictor variables are combined into a single composite score that represents the construct (Ajzen, 2002a).

Attitudes, subjective norms, and perceived behavioral controls are assumed to be based on corresponding sets of beliefs; therefore Ajzen (2002a, 2002b) suggests an elicitation study to identify the behavioral, normative, and control beliefs. Through an elicitation study, a list of commonly held beliefs is developed and used as the basis for constructing a standard questionnaire.

In an elicitation study of this research, focused interviews were conducted with 20 restaurant managers in a Midwestern college town. Managers were selected utilizing a convenience sample from both chain and independent operations.

The elicitation study design was based on guidelines suggested by Ajzen (2002b). Participants responded to five open-ended questions that asked about offering food safety training to their employees. Specific questions are displayed in Table 3.1.

**Table 3.1: Focus Interview Discussion Questions for Each TpB Construct**

---

**Behavioral Beliefs**

- Can you please describe some good things that could result from offering food safety training to your employees?
- What are some bad things that could result from offering food safety training to your employees?

**Normative Beliefs**

- List all the people you think care (either approve or disapprove) about whether or not you offer food safety training to your employees.

**Control Beliefs**

- What makes (or would make) it easier for you (or other managers) to offer food safety training to your employees?
  - What makes it difficult for you (or other managers) to offer food safety training to your employees?
- 

The elicitation study provided similar results that were found in other studies (Cochran-Yantis et al., 1996; Giampaoli, Sneed, Cluskey, and Koenig, 2002; Howes, McEwen, Griffith, & Harris, 1996; McElroy & Cutter, 2004), but also yielded some new ideas. Table 3.2 summarizes the results of the elicitation study.

The most often mentioned positive behavioral beliefs included increasing employee knowledge and understanding of food safety, increasing employee satisfaction, and ensuring quality safe food for the customer. Negative behavioral beliefs mentioned most often included extra time, costs, employees not practicing what they learn on-the-job, and employees who just don't care.

Control beliefs that would make offering food safety training easier included more time, more cost effective methods for training, and more opportunities for in-house

**Table 3.2: Focus Group Behavioral Beliefs: Results of the Elicitation Study (N=20)**

	<b>Beliefs</b>	<b>Frequency</b>
<b>BEHAVIORAL BELIEFS</b>		
<b>POSITIVE</b>	Increase employee knowledge and understanding	17
	Increase employee satisfaction	17
	Ensure quality, safe food	15
	Not published in the paper	4
	No lawsuits	3
	Maintain reputation of the operation and don't lose business	3
	Prolong shelf life and reduce food waste	2
	Help with development of production staff	1
	Save money	1
	Follow the health code	1
	Keep employees healthy	1
	Benefits everyone	1
<b>NEGATIVE</b>	Extra time	13
	Costs	10
	Employees don't practice what they learn in the class when they get back on-the-job.	4
	Employees don't care – so it is a waste of money	4
	Takes people longer to do things	3
	Employee participation is low	2
	No one in house that can offer	2
	It is taught with a negative tone	1
	May learn some information incorrectly.	1
	May lead to more food waste	1
<b>CONTROL BELIEFS</b>		
<b>EASIER</b>	More time	16
	More cost effective means to train/more money	13
	More opportunities for training – in house	9
	Sessions more frequently and shorter duration that can be held in-house	4
	Better facilities	3
	Less turnover	1
	If the health department wasn't viewed in an adversarial role	1
	Specific consequences for employees if they don't follow food safety practices	1
	"Outsiders" are not viewed as credible among employees	1

**Table 3.2: Focus Group Behavioral Beliefs: Results of the Elicitation Study (Continued)**

<b>Beliefs</b>		<b>Frequency (%)</b>
<b>CONTROL BELIEFS (Continued)</b>		
<b>DIFFICULT</b>	Lack of time – manager’s	12
	Lack of money	10
	Getting employees together at the same time	9
	Lack of time – employees’	8
	Bonuses reduced, we won’t hit financial goals due to training costs	5
	No one to conduct the training	5
	Not simplistic – employees don’t need to know all of the information in ServSafe	4
	Too many other issues that are more important	2
	Build relationship with the inspector	2
	No facilities in which to conduct training	1
	Turnover	1
	Employees & other managers don’t care	1
	Managers aren’t on the same page as far as food safety is concerned	1
<b>Normative Beliefs</b>		
	Employees - Short / Long term	19
	Customers	18
	Health Inspector	15
	Vendors	10
	Area/regional/corporate director	8
	Owner	5
	General manager	5
	Other foodservice operations	1

training. Control beliefs that made training more difficult included lack of manager’s time, lack of money, and difficulties getting all employees together at one time. For normative beliefs, others included employees, customers, and the health inspector.

### **Pilot Study**

The initial research instrument, developed based on the review of literature and the elicitation study, was tested for response rate and understandability of questions. Prior to the actual pilot study, face validity was assured through a focus group (n=5) which included three graduate students with food safety and foodservice experience and two restaurant managers. The focus group made recommendations for questionnaire wording and flow.

The pilot study was administered via telephone and mail to determine response rates using each methodology. One hundred restaurants were chosen from the listing provided by the Kansas Department of Health and Environment. Every other restaurant chosen was assigned to either the telephone sample or the mailed questionnaire sample.

Those restaurants receiving a copy of the mailed questionnaire were initially sent a cover letter, questionnaire (which included a pilot test survey and feedback form), and self-addressed return envelope (Appendix A). After one and a half weeks, operations were then mailed a reminder postcard (Appendix A). At this point no operation had returned the questionnaire. After the reminder postcard, only one of the 50 operations had returned the questionnaire for a response rate of 2%. Initial plans included sending another cover letter, questionnaire, and self-addressed return envelope after two weeks. However, due to the low response rate the final mailing was cancelled.

Restaurant managers whose operation was selected to be contacted via telephone were sent an advance letter approximately one week prior to calling. Managers were then contacted by undergraduate research assistants and asked to participate in the study. If there were no answer or the manager was unavailable, the manager was contacted again at a later time or date. A call tracking form (Appendix B) was used to gauge the time and date of each call and to track the number of attempts to contact each operation. Each operation was contacted six times before being labeled as a no response. A total of 19 of the 50 operations completed the questionnaire for a 38% response rate.

## **QUESTIONNAIRE**

Based on the results of the pilot test focus group and study, minor changes in the questionnaire design and wording were made. The final version of the instrument included 85

questions to measure eight constructs and respondent and operational demographic information (Appendix C).

The instrument was administered via telephone, but data was entered electronically as it was collected. The online version of the instrument included scripting to assure data was uniformly collected (Appendix C).

### **Indirect Measurements**

Both direct and indirect belief measures were identified through a review of relevant literature and the elicitation study. Each construct is outlined below.

#### ***Behavioral Beliefs***

Nine behavioral beliefs (customer satisfaction, ensuring safe food, ensuring food quality, reducing food waste, increasing employees food safety awareness, maintaining the operations reputation, employee satisfaction, reducing the likelihood of lawsuits, improving food safety practices of employees) were drawn from the literature and elicitation study. As behavioral beliefs are the overall sum of the belief strength multiplied by the outcome evaluation

( $\sum_i bb_i be_i$ ) for each of the nine beliefs, two questions were asked, one that addressed the behavioral belief ( $bb_i$ ) and one measured the associated outcome evaluation ( $be_i$ ).

Behavioral beliefs were measured by asking the respondent to rate the strength of his/her belief about each of the nine beliefs on a 7-point scale from (1) *extremely unlikely* to (7) *extremely likely*. Outcome evaluations were measured by asking the respondents to rate how good or bad each of the beliefs were to them and were rated on a 7-point scale from (-3) *extremely bad* to (3) *extremely good*.

### ***Normative Beliefs***

Six referent groups/individuals (supervisors, long-term employees, short-term employees, customers, health inspectors, and vendors) were identified through the literature review and elicitation study. Normative beliefs, which represent the overall sum of the belief strength multiplied by motivation to comply ( $\sum_i nb_i mc_i$ ), were measured by asking two questions, one for each normative belief and one for motivation to comply. Normative beliefs ( $nb_i$ ) were measured by asking the respondent to rate how likely each referent group/individual is to think that they should offer food safety training to their employees on a 7-point scale from (-3) *extremely likely* to (3) *extremely unlikely*. Motivation to comply ( $mb_i$ ) was addressed by having respondents evaluate how much they care what the referent group/individual thinks on a 7-point scale from (1) *not at all* to (7) *very much*. For both normative beliefs and motivation to comply, a “not applicable” choice was offered since if the owner responded, he/she would not have a supervisor.

### ***Control Beliefs***

Eight control beliefs (employee availability, managers’ time, financial resources, lack of off-site food safety training availability, lack of on-site food safety training availability, lack of targeted training materials, employees not following what they learn from food safety training, and the time commitment required for food safety training) were identified in the literature and through the elicitation study. Control beliefs ( $cb_i$ ) were measured by asking managers to rate their agreement that the belief makes food safety training difficult on a 7-point scale ranging from *strongly disagree* (-3) to *strongly agree* (3). The perceived power ( $pp_i$ ) of those control



beliefs was measured by asking the respondents how often not having enough of the variable affects the offering of food safety training to their employees. Respondents rated perceived power on a 7-point scale from *very rarely* (1) to *very frequently* (7). The belief based perceived behavioral control then represents the sum of the control beliefs multiplied by the perceived power ( $\sum_i cb_i pp_i$ ).

### **Direct Measurements**

Direct measures of attitudes, perceived behavioral control, subjective norms, and behavioral intention were measured on a 7-point scale. Ajzen (2002b) suggested that researchers explicitly describe the behavior for the respondents. Therefore, in this study, the behavior was stated as “offering (action) food safety training (target) to your employees (context) within the next year (time).

#### ***Attitude***

The managers’ attitudes were measured on a set of five semantic scales. Each of the scales appeared after the following statement: “For me to offer food safety training to my employees within the next year is \_\_\_\_\_.” The semantic scales included *good/bad*, *worthless/valuable*, *difficult/easy*, *unpleasant/pleasant*, and *unimportant/important*. These included the three separable components suggested by Ajzen (2002b): instrumental (*useful/useless*, *valuable/worthless*), experiential (*unpleasant/pleasant*, *foolish/wise*), and evaluative (*good/bad*).

### ***Subjective Norm***

Three items measured subjective norms by asking managers if their important referents would approve or disapprove of their offering food safety training to employees. A 7-point disagree-agree scale anchored by (1) strongly disagree and (2) strongly agree was used.

### ***Perceived Behavioral Control***

Perceived behavioral control was gauged by two questions. These questions were developed to explain the managers' confidence about offering food safety training to their employees and captured both the self-efficacy ("I am able to send my employees to food safety training if I choose") and controllability issues ("It is my choice whether I offer food safety training to my employees within the next year") noted by Ajzen (2002b). A 7-point disagree-agree scale anchored by (1) strongly disagree and (2) strongly agree was used.

### ***Behavioral Intention***

Intention, or the likelihood that the manager will offer food safety training to employees within the next year, was measured with three items. These three items included: "I will try to offer," "I intend to offer," and "I plan to offer" food safety training within the next year. A 7-point disagree-agree scale anchored by (1) strongly disagree and (2) strongly agree was used.

### **Demographic Variables**

Thirteen questions requested demographic information about the restaurant (seating capacity; the number of full-time and part time employees; type of operation (chain/independent); management organization; service classification; if the restaurant had an individual knowledgeable in food safety practices per state health code requirements; if the restaurant had an individual responsible for implementing food safety practices; if a food safety

training program was offered to employees within the last year; how many were trained if food safety training was offered, and if they did offer training, the annual costs associated with food safety training. Ten questions requested information about the restaurant manager, such as: gender; age; educational level; food safety certification status; if certified, which certification; job title; years employed in foodservice operations; years employed within the restaurant industry; years employed in current position; and professional memberships.

### **Additional Measures**

Respondents also were asked two open ended questions. “What would motivate you to provide food safety training to your employees?” and “How do your employees get information about proper food safety practices?” These allowed managers to provide any additional comments about food safety training.

## **SURVEY ADMINISTRATION**

Utilizing a telephone survey, 1,321 operations were contacted to speak with the manager on duty. Since it only was possible to call approximately 188 operations, including all follow-up calls, within one week, the 1,321 operations were divided into seven groups. Advance letters were mailed to all operations within a group five business days prior to initiating the calling of a group. The advance letters introduced the purpose of the research, the subjects’ rights, information about the data collection procedure, and methods for contacting the researchers. The subjects were informed that their responses would be kept confidential, the results of the study presented in summary form only, and they could decline participation at any time.

Following Dillman’s (1978) recommendations a call tracking form was developed (Appendix A) to document the number of attempted calls for each operation. Each operation

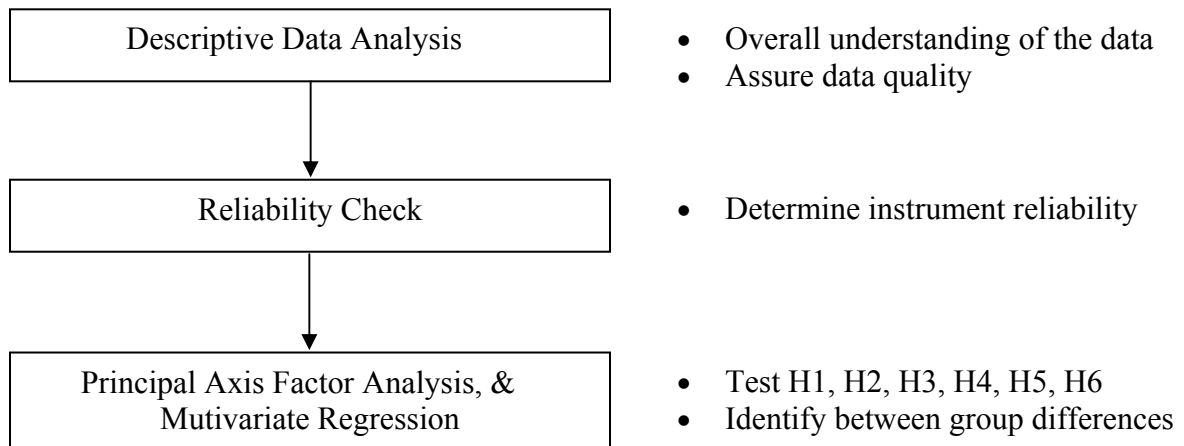
was contacted six times before being labeled a no response. K-State students were employed to call operations for data collection.

### Use of Human Subjects in Research

The research protocol was approved by the Kansas State University Institutional Review Board. The IRB approval letter is located in Appendix D.

### STATISTICAL ANALYSIS

All data analysis utilized the Statistical Package for the Social Sciences (SPSS) (version 11.5, 2002, SPSS, Inc., Chicago: IL). The procedures of data analysis employed in this study are summarized in Figure 3.2. Descriptive statistics computed included frequencies, means, and standard deviations. Cronbach's alpha (1951) was used to determine construct reliability. A threshold of .70 was used to demonstrate consistency.



**Figure 3.2: Data Analysis Procedures**

Regression analysis was used to examine the relationship among the dependent variable (behavioral intentions) and the independent variables (attitudes, subjective norms, and perceived

behavioral controls). T-Tests were used to examine differences among item means and categorical data.

## REFERENCES

- Ajzen, I. (2002a). Behavioral intentions based on the theory of planned behavior.  
Retrieved November 1, 2003 from the World Wide Web:  
<http://www-unix.oit.umass.edu/~aizen/pdf/tpb.intervention.pdf>
- Ajzen, I. (2002b). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Ajzen, I. (2006). Theory of planned behavior: Frequently asked questions.  
Retrieved April 17, 2007 from the World Wide Web:  
<http://www-unix.oit.umass.edu/~aizen/faq.html>
- Cochran-Yantis, D., Belo, P., Giampaoli, J., McProud, L., Everly, V., & Gans, J. (1996). Attitudes and knowledge of food safety among Santa Clara County, California restaurant operators. *Journal of Foodservice Systems*, 9, 117-128.
- Dillman, D. A. (1978). *Mail and telephone surveys: The tailor design method*. New York, New York: John Wiley & Sons, Inc.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests [Abstract]. *Psychometrika*, 16, 297-334. Abstract retrieved May 21, 2006 from Springerlink database.
- Giampaoli, J., Sneed, J., Cluskey, M., & Koenig, H. F. (2002). School foodservice directors' attitudes and perceived challenges to implementing food safety and HACCP programs. *The Journal of Child Nutrition & Management*. Retrieved June 21, 2002 from the World Wide Web: <http://www.asfsa.org/childnutrition/jcnm/02spring/giampaoli1/>

- Howes, M., McEwen, S., Griffiths, M., & Harris, L. (1996). Food Handler certification by home study: Measuring changes in knowledge and behavior. *Dairy, Food, and Environmental Sanitation*, 16, 737-744.
- Lee, M. J. (2005). Effects of attitude and destination image on association members' meeting participation intentions: Development of meeting participation model. Unpublished dissertation: Kansas State University.
- McElroy, D. M., & Cutter, C. N. (2004). Self-report changes in food safety practices as a result of participation in a statewide food safety certification program. *Food Protection Trends*, 24, 150-161.

## **CHAPTER 4 - BELIEFS UNDERLYING THE INTENTION TO OFFER FOOD SAFETY TRAINING TO EMPLOYEES**

### **ABSTRACT**

Training is an important aspect of food safety programs in commercial restaurants and is integral part of assuring that safe food is served. Managers must train their employees and this includes allowing them to attend or participate in food safety training.

The primary purposes of this research were to explore the beliefs, attitudes, subjective norms, and perceptions of control of restaurant managers about providing employees the opportunity to attend food safety training, and to determine how these differ between independent and chain restaurants and managers with and without food safety certification.

A telephone survey was utilized to contact 1,321 foodservice operations, yielding a total of 237 usable responses. Results determined that overall intention to offer food safety training to employees was high. Restaurant managers had a positive attitude about food safety, placed importance on the beliefs of individuals they consider important, and felt they were in control about offering food safety training to their employees.

Certified managers had more positive attitudes about offering food safety training and placed more emphasis on those individuals whom they considered to be important in their lives (subjective norms), but also perceived they had less control about offering food safety training to their employees. Most importantly, those managers who were certified had a higher intention to train employees than managers who did not have food safety certification. When comparing behavioral, normative, and control beliefs between chain and independent restaurant managers,



only behavioral (specific attitudes) and normative beliefs (specific individuals whom they considered important) differed.

**Key Words:** Theory of Planned Behavior, Food Safety, Restaurants, Managers.

## INTRODUCTION

Foodborne illnesses continue to be a major public health concern in the United States. The federal government has identified the reduction of foodborne illnesses by 2010 as a major health goal (Department of Health and Human Services, 2000). However, each year approximately 76 million people fall ill to a foodborne illness. Another 325,000 individuals are hospitalized and 5,000 die after contracting a foodborne illness (Mead, et al., 2000). Buzby, Frenzen, and Rasco (2001) report that of all hospitalizations in the United States, foodborne disease accounts for one out of every 100 illnesses and one out of every 500 deaths. A large number of foodborne illnesses are often traced to restaurant operations (Council for Agriculture Science and Technology, 1994; Economic Research Service, 1996; Riben, et al., 1994).

Of all foodborne illnesses reported to FoodNet in 2005, 59% were associated with restaurants (Center for Disease Control & Prevention, 2006). In 1997, Collins (1997) found that among the 900 foodservice facilities studied, the most common risk factors leading to foodborne diseases and illnesses were improper holding times, cross contamination, and poor personal hygiene; all of which are practices that can be controlled by employees and managers within the foodservice operation.

In 2000 and 2004, the Food and Drug Administration (FDA) conducted studies to assess the most prevalent practices that were out of compliance with the Food Code (Food & Drug Administration, 1999). The initial study in 2000 found that 26% of quick-service restaurants and 40% of full service restaurants were out of compliance with identified standards. These out of compliance rates were among the highest in the study. Specifically, in the quick service sector, the highest out of compliance rates were related to holding time/temperature (49.2%), personal hygiene (36.6%), and contaminated equipment/protection from contamination (14.6%). Risk

factors in full service restaurants that had the highest out of compliance rates included holding time/temperature (63.2%), personal hygiene (63.4%), and contaminated equipment/protection from contamination (43.6%), all of which have been identified as the top factors leading to foodborne illnesses in the United States (Bean, Goulding, Lao, & Angulo, 1996; Collins, 1997; Olsen, MacKinon, Goulding, Bean, & Slutsker, 2000).

The 2004 follow up study by the FDA (2004) found that among quick service restaurants, out of compliance percentages for holding time/temperature decreased 7.5%; personal hygiene 5.4%, and contaminated equipment/protection from contamination increased 7.3%. Overall, full service operations showed greater improvement than their quick service counterparts with personal hygiene and contaminated equipment/protection from contamination improving by 21.7% and 6.3%, respectively, and holding time/temperature increasing by 0.6%.

The 2002 and 2004 FDA reports set goals to improve the safety of food served to the U.S. public. The overall in compliance percentage goal to reach by the year 2010 for quick service restaurants is 81%. The FDA has set a slightly lower goal for full service at 80% of total observations in compliance (FDA, 2000, 2004).

To assist in achieving this goal, the FDA has required all operations to have at least one person on staff during normal business hours who can demonstrate knowledge of food safety or one person who can show that they have successfully completed food safety certification training. Food safety training programs have been found to increase sanitation inspection scores (Cotterchio, et al, 1998; Kneller & Bierma, 1990), the microbiological quality of food (Cohen, Reichel, and Schwartz, 2001), and self-reported food safety practices (McElroy & Cutter, 2004). However, other research has found the opposite to be true noting that even when foodservice employees are trained in proper food handling practices and have the knowledge to perform

proper food safety practices, the knowledge does not always transfer to actual behavior in the operation (Casey & Cook, 1979; Clingham, 1976; Kneller & Bierma, 1990; Roberts, Barrett, Howells, Shanklin, Pilling, and Brannon, 2008; Wright & Feun, 1986).

A study completed by Roberts, et al. (2007) utilized a systematic random sample of 19 restaurants, including 294 employees in both independent and chain restaurants. They conducted a pre- and post-test survey and observation of foodservice employees to determine if food safety training improves overall food safety knowledge and behaviors. Independent samples t-tests discovered that, only *knowledge* and *behavior* increased significantly for handwashing ( $p \leq .001$ ). Neither knowledge nor behavior increased for factors related to time and temperature abuse or thermometer use.

The FDA (2004) explored the impact of certification on the control of foodborne illness risk factors within foodservice establishments. Their sample included 99 full-service and 108 quick-service establishments, of those 50 full-service operations had managers who were certified, while 71 quick-service operations had a certified manager. Within full-service restaurants, they found that personal hygiene and contaminated equipment/protection from contamination scores were significantly different between operations with a certified manager versus those with non-certified managers. The certified manager group scored 18.8% above personal hygiene compliance rates of non-certified managers and 9.8% above compliance rates for contaminated equipment/protection from contamination. Within quick-service operations, they noted statistical differences between two categories, improper holding/time and temperature and contaminated equipment/protection from contamination. The group of certified managers outperformed those operations with non-certified managers by 21.4% for improper holding/time and temperature and 16.8% for contaminated equipment/protection from contamination. While

all of these differences are noteworthy, many basic food safety practices, including assuring that food is procured from safe sources, proper cooking, and chemical control did not increase significantly.

Research also has been conducted that explores the number of food safety programs in chain and independent restaurant operations. Roberts, Barrett, and Sneed (2005) surveyed sanitarians and found that in all 32 practices, chain operations outperformed their independent counterparts.

Training is an important aspect in any overall food safety program. Therefore, managers must train their employees accordingly, and this includes allowing them to attend or participate in food safety training classes. ServSafe® is the most widely used food safety training program. The National Restaurant Association has estimated that approximately two million food handlers have been trained in ServSafe® since its inception. While two million people have been trained, this equates to less than 16% of the 12.8 million employed in the restaurant industry.

This indicates that many foodservice employees have not been trained, yet no research to date has been conducted to explain the managers' beliefs about implementing training or providing training to their employees. To design an effective training program that is not only useful to restaurant managers, but would be used by them, it is necessary to explore the factors that underlie their intention to train employees, including the impact that manager food safety certification has on the intention to train employees. Additionally, it is necessary to explore the specific needs for chain and independent restaurants, as beliefs to training might be different between the two groups.

One way to explore behavioral intention and the cognitive beliefs underlying the formation of intention is through the use of the Theory of Planned Behavior (TpB). The TpB

states that behavior intention is based on a person's attitude (one's evaluation of the behavior), subjective norm (one's perception that those who are important to the person think he/she should or should not perform the behavior), and perceived behavioral control (one's ability to perform a behavior or barriers which would prevent one from performing a behavior) (Ajzen, 1991; Ajzen & Fishbein, 1980).

Attitude, subjective norm, and perceived behavioral control can be assessed using direct measures by asking respondents to rate each overall construct on a set of scales (Ajzen, 2002a). These can also be measured indirectly by asking respondents specifically about their beliefs. By utilizing predictor variables through the beliefs subjects hold, it is possible to understand why people hold certain overall attitudes, subjective norms, and perceptions of behavioral control (Ajzen, 2002b). Additionally, by using belief-based measures, reliability is not a concern because predictor variables are combined into a single composite score that represents the construct (Ajzen, 2002b).

The goal of this research was to explore what beliefs restaurant managers have about offering food safety training to employees by exploring the antecedents of behavioral intention (beliefs, attitudes, subjective norms, and perceptions of control). Specific objectives were to 1) determine what the beliefs, attitudes, subjective norms, and perceptions of control managers have about offering food safety training to their employees; 2) determine if the beliefs, attitudes, subjective norms, and perceptions of control differ based on ownership structure (chain or independent); and 3) determine if certification status (certified vs. non-certified) has any impact on the beliefs, attitudes, subjective norms, and perceptions of control of the managers.

## **METHODOLOGY**

### **Sample**

Commercial foodservice operations within the state of Kansas were the targeted population for this study. A listing of operations licensed to sell food within the state was obtained from the Kansas Department of Health and Environment. Of the 7,558 operations licensed, 5,468 operations were selected as meeting the predefined criteria of being a commercial foodservice operation. Of those, 100 operations were chosen for a pilot test. From the remaining, 1,347 operations were systematically selected to participate in the study. Utilizing online research to determine which operations did not meet the commercial foodservice classification; further refinement of the sample was conducted, removing 26 operations; yielding a final sample of 1,321 operations.

### **Data Collection**

A telephone survey was utilized to collect the data from the operations. The 1,321 operations were divided into seven different groups; each group of 188 was contacted over the course of the seven week study. Advance letters introducing managers of the operations to the purpose of the study, their rights in the research process, and the researchers' contact information were sent to each operation approximately five days prior to the initial telephone call. The research protocol was approved by the Kansas State University Institutional Review Board.

### **Instrument Development**

The questionnaire was developed based on the Theory of Planned Behavior (TpB) (Ajzen, 1985). The Theory of Planned Behavior (TpB) can be used to identify beliefs that prevent individuals from performing behaviors. In this study, the behavior in question is the offering of food safety training to employees. The TpB posits that a person's behavioral

intention is based upon three antecedents: his or her attitude, subjective norm, and perceived behavioral control (Ajzen & Fishbein, 1980, Fishbein & Ajzen, 1975).

An elicitation study was conducted with a convenience sample of 20 restaurant managers to determine underlying beliefs relative to offering food safety training for their employees. The elicitation study identified the commonly held beliefs which provided the basis for constructing the questionnaire.

The initial questionnaire developed from the literature review and elicitation study was then reviewed by five graduate students and faculty familiar with food safety to assure face validity. Major wording changes were made to the questionnaire and telephone scripting based on this review.

A pilot study was conducted with 100 operations drawn from the sample. The 100 operations were randomly split into two groups, a group of 50 who would receive a mailed questionnaire and another group of 50 who would be contacted via telephone.

Those restaurants receiving a copy of the mailed questionnaire were sent a cover letter, questionnaire (which included a pilot test survey and feedback form), and self-addressed return envelope. After one and a half weeks, operations were then mailed a reminder postcard. After the reminder postcard, only one of the 50 operations had returned the questionnaire for a response rate of 2%. Due to low response rate, the final mailing of a second cover letter and questionnaire was cancelled.

Restaurant managers whose operation was selected to be contacted via telephone were sent an advance letter approximately one week prior to calling. Managers were then contacted by undergraduate research assistants; if there were no answer or the manager was unavailable the manager was contacted again at a later time or date. To track the time, date of each call and the



number of overall attempts to reach a manager, a call tracking form was used. Restaurants were contacted six times prior to being labeled as a no response. A total of 19 of the 50 operations completed the questionnaire for a 38% response rate. The pilot test did not yield any questions or wording that needed to be changed.

The final version of the questionnaire included 85 questions to measure the components of the TpB and demographic information. Part I included nine questions to measure the operational demographic information such as seating capacity, number of employees, types of food safety training offered, etc.

Part II collected direct and indirect measures of the TpB. Direct measures of attitude, perceived behavioral control, subjective norm, and behavioral intention were measured on a 7-point scale. Attitudes were measured on a set of five semantic scales: *good/bad*, *worthless/valuable*, *difficult/easy*, *unpleasant/pleasant*, and *unimportant/important*. Subjective norms were measured by asking managers to rate if their important referents would approve or disapprove of offering food safety training to their employees. For example, “Most people who are important to me think that I should offer food safety training to my employees within the next year.” A 7-point disagree-agree scale anchored by (1) *strongly disagree* and (7) *strongly agree* was used. Perceived behavioral control was measured by two questions: “I am able to send my employees to food safety training if I choose” and “It is my choice whether I offer food safety training to my employees within the next year.” A 7-point disagree-agree scale anchored by (1) *strongly disagree* and (7) *strongly agree* was used. Intention was measured with three items: “I will try to offer,” “I intend to offer,” and “I plan to offer” food safety training within the next year. A 7-point disagree-agree scale anchored by (1) *strongly disagree* and (7) *strongly agree* was used.

Indirect measures included behavioral, normative, and control beliefs. Nine behavioral beliefs were identified in the elicitation study and measured by asking the respondent to rate the strength of his/her belief on a 7-point scale from (1) *extremely unlikely* to (7) *extremely likely*. These beliefs included customer satisfaction, ensuring safe food, ensuring food quality, reducing food waste, increasing employees' food safety awareness, maintaining the operations reputation, employee satisfaction, reducing the likelihood of lawsuits, and improving food safety practices of employees. Outcome evaluations were measured by asking respondents to rate how good or bad each of the beliefs were to them on a 7-point scale from (1) *extremely bad* to (7) *extremely good*, however following the recommendations of the TpB, these were recoded for data analysis from (-3) *extremely bad* to (3) *extremely good*. Overall belief score was then calculated by multiplying the behavioral beliefs scores by the outcome evaluation to compute a total behavioral belief score.

Supervisors, long-term employees, short-term employees, customers, health inspectors, and vendors were identified through the literature review and elicitation study as important normative beliefs. The strength of these beliefs was measured by asking respondents to rate how likely each referent group/individual would think food safety training should be offered to employees. A 7-point scale from (1) *extremely unlikely* to (7) *extremely likely*, however following the recommendations of the TpB, these were recoded for data analysis from (-3) *extremely unlikely* to (3) *extremely likely*. The motivation to comply with those normative beliefs was evaluated by asking respondents how much they care what the referent group/individual thinks on a 7-point scale from (1) *not at all* to (7) *very much*. A total normative belief score was calculated by multiplying the individual normative beliefs by the motivation to comply to derive an overall belief score which was summed across all evaluations.

Employee availability, managers' time, financial resources, lack of off-site food safety training availability, lack of on-site food safety training availability, lack of targeted training materials, employees not following what they learn from food safety training, and the time commitment required for food safety training were identified as control beliefs from the elicitation study. These were measured by asking managers' to rate their agreement with the belief that it makes food safety training difficult on a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7), however following the recommendations of the TpB, these were recoded for data analysis from (-3) *extremely bad* to (3) *extremely good*. Perceived power was measured by asking respondents to rate how often not having the item affects their offering employee food safety training on a 7-point scale from *very rarely* (1) to *very frequently* (7). A total control belief score was then calculated by multiplying the individual control beliefs scores by the power of those control beliefs to derive an overall belief score which was then summed across all evaluations.

Part III included nine questions that obtained information about the demographics of the managers. These questions gathered data about the managers' age, gender, educational level, food safety certification status, and employment characteristics.

### **Data Analysis**

All data analysis procedures utilized the Statistical Package for the Social Sciences (SPSS, Version 11.5). Descriptive statistics, including means, standard deviations and frequencies were calculated. Independent samples t-tests were used to determine the differences between mean item scores based on type of operation and certification status of the manager. Alpha levels of .05 were considered as significant.

## **RESULTS**

A total of 266 managers responded. Due to incomplete and missing data, 237 responses were usable. The final overall response rate was 17.9%. This is comparable to the response rates of Roberts and Sneed (2003) and Cochran-Yantis, et al. (1996) who achieved a response rate of 19% and 20%, respectively.

### **Demographics**

Respondent characteristics and operational data are presented in Tables 4.1 and 4.2, respectively. An approximately equal number of males (50.4%) and female (49.6%) managers participated in the study. This is comparable to Roberts and Sneed (2003) where 53% of the restaurant managers responding were male. The majority of managers in this study were department managers (45.6%), such as back-of-the-house, food and beverage, and/or service managers. All managers had been employed in the industry for more than six years, with 14.8% having working in the industry for more than 26 years.

The majority of operations had a seating capacity less than 100 people (61.2%). Roberts and Sneed (2003) found similar results where greater than 70% of the operations in their sample of restaurants seated less than 100 people. There were an approximately equal number of chain (49.7%) and independent (50.2) restaurants participating. The majority of operations (49.4%) had less than 15 employees.

Most managers in this study had food safety certification (68.3%) which is slightly higher than the national sample in an FDA (2004) study where 58.4% of surveyed managers were certified in food safety. The majority of operations utilized off-site training (74.6%) and had only trained 25% or less of their total staff (45.9%). Over half of the managers (51.6%) were unsure of how much money they spent per employee annually for food safety training.

---

Insert Table 4.1

---

---

Insert Table 4.2

---

### **Overall Analysis**

The direct measures of attitudes, subjective norms, perceived behavioral controls, and behavioral intentions indicated restaurant managers had fairly high intentions to offer food safety training to their employees ( $M = 5.88 \pm 1.59$ ) (Table 4.3). They also had positive attitudes ( $M = 6.26 \pm 0.80$ ), placed emphasis on their subjective norms ( $M = 5.89 \pm 1.39$ ), and perceived a relatively high amount of control ( $M = 5.22 \pm 2.10$ ) over offering food safety training to employees. These results are supported by Giampaoli, Sneed, Cluskey, and Koenig (2002) who also found that managers had a positive attitude toward food safety programs.

For the indirect measures (see Table 4.3), managers generally believed food safety training would ensure safe food ( $M = 18.43 \pm 4.87$ ), increase employees' awareness of food safety ( $M = 17.68 \pm 5.94$ ), and help maintain the operations' reputation ( $M = 17.66 \pm 5.52$ ). Managers also rated the health inspector ( $M = 19.10 \pm 6.00$ ), customers ( $M = 15.8 \pm 8.83$ ), and long-term employees ( $M = 13.04 \pm 9.35$ ) as the top three important others who cared if they offered food safety training to employees. Control beliefs (the items which managers feel they lack control over) that ranked the highest included employee scheduling ( $M = 8.17 \pm 9.30$ ) and manager's time ( $M = 7.38 \pm 9.70$ ). Managers indicated that lack of targeted training materials

( $M = 2.20 \pm 8.64$ ) and lack of on-site training opportunities ( $M = 4.27 \pm 10.31$ ) were the least concerns.

---

Insert Table 4.3

---

### **Ownership Structure**

Independent samples T-tests determined the differences in the direct measures and indirect measures based on whether managers classified their restaurant as an independent or chain operation (Table 4.3). Within the direct measures of attitude, subjective norm, and perceived behavioral control, the only significant difference was found for perceived behavioral controls. Chain operations had significantly lower mean scores than their independent counterparts, indicating that chain operations felt that they were less in control of offering food safety training than independent restaurant managers.

For indirect beliefs, managers in chain operations had significantly more positive beliefs that food safety would improve overall food quality ( $t = -2.071, p = .039$ ) and keep customers satisfied ( $t = -2.668, p = .008$ ). Managers of chain operations also had stronger normative beliefs about the customers ( $t = -3.031, p = .003$ ) and their supervisors ( $t = -6.094, p = .000$ ). There were no differences between the control beliefs of chain and independent restaurant managers.

### **Certification Status**

Independent samples t-tests determined the differences in beliefs between respondents based on certification status (Table 4.4). Results indicated that managers who were certified had

stronger beliefs about subjective norms ( $t = 3.097, p = .002$ ) meaning they were more cognizant of, and placed more importance on, what others around them thought. Those who were certified believed that offering food safety training was not as much in their control, as noted by the significant difference in perceived behavioral controls ( $t = -2.500, p = .013$ ), where non-certified managers had a significantly higher mean score. As to the actual behavioral intention, managers who were certified had significantly higher intentions ( $t = 3.730, p = .000$ ) to train their employees than their non-certified counterparts. This supports other food safety studies which show that certified managers also perform better on health inspections than their non-certified counterparts (Cochran-Yantis, et al., 1996). The FDA (2004) also found similar results reporting that certified managers outperformed operations with non-certified managers.

For indirect beliefs, significant differences were noted in over half of the behavioral beliefs. Managers' who were certified had more positive beliefs that food safety training would ensure safe food ( $t = 2.61, p = .010$ ), increase employees awareness of food safety ( $t = 2.599, p = .011$ ), increase food quality ( $t = 2.71, p = .008$ ), decrease lawsuits ( $t = 2.044, p = .043$ ), and reduce food waste ( $t = 2.105, p = .037$ ).

Certified managers placed greater emphasis on the beliefs of vendors ( $t = 2.522, p = .013$ ) and supervisors ( $t = 2.994, p = .003$ ). Control belief differences indicated that managers who were certified actually perceived less controls related to the lack of off-site training opportunities ( $t = -3.490, p = .001$ ). However, certified managers perceived stronger controls about the time commitment for food safety training ( $t = -2.557, p = .012$ ) and lack of financial resources ( $t = -2.205, p = .029$ ).

## **DISCUSSION & IMPLICATIONS**

This research sought to determine the beliefs of restaurant managers' about offering food safety training to their employees. Overall, the results of the direct measures indicated that intention to offer food safety training to employees was high. Restaurant managers had a positive attitude about food safety and rated their subjective norms high, which indicates that they do care about others' opinions as it relates to food safety training. Overall, managers' indicated that their perception of control was high, and therefore, are able to offer food safety training to their employees if they choose.

The indirect measures related to the TpB provided insight into the reasons why food safety training is not being provided for restaurant employees. Behavioral beliefs, which included ensuring safe food, increasing employee awareness of food safety, and maintaining the operation's reputation were ranked high and thus are important reasons managers choose to offer food safety training for employees. The most important normative beliefs included the health inspector, customers, and long term employees; however short term employees had little impact. Therefore, it is imperative that the health inspector discuss the importance of food safety training for employees with the management team and stress the need for employee training and its impacts on overall food safety practices. Even though customers were not ranked as high as health inspectors, their opinions are still important to foodservice managers. When training managers, food safety educators should reinforce the importance of serving safe food to customers and maintaining the operation's reputation as primary reasons for providing employee training. Health inspectors also may want to discuss and reinforce these issues with managers during the inspection process.



Control beliefs, which were not ranked as high as behavioral and normative beliefs, can still provide insight into why managers are not providing food safety training. These beliefs included employee scheduling, manager's time, and the overall time commitment. These issues, while individual in nature relate to financial resources. Training should focus on educating managers about the long-term costs should a foodborne illness occur.

Between chain and independent restaurant managers, perceived behavioral control was the only direct measure where differences were noted. This difference in perception of control among independent versus chain restaurant operators indicated that independent restaurant managers perceive greater control over being able to offer food safety training. This is an indication that while managers of chain operations have more support for food safety from the corporate office, they may be more restricted by company policies and procedures. Managers in chain operations have strict performance and financial goals to meet, which could mean less money available for additional training.

Chain and independent managers differed on behavioral and normative beliefs: that offering food safety training to employees improves food quality, keeps customers satisfied and that customers and supervisors are more important referents because chain operation managers had significantly higher mean scores. One explanation may be that chain operations face greater national exposure and financial losses should a foodborne illness outbreak occur and their success depends on the food quality and customer satisfaction not only in their restaurant, but in all of the chains' restaurants.

For indirect measures, managers who were certified had a higher intention to train employees, placed more emphasis on subjective norms, but also perceived less control. There were several differences in the indirect measures of behavioral, normative, and control beliefs.

Certified managers have greater knowledge about food, therefore rated ensuring safe food, increasing employees' awareness of food safety, improving food quality, decreasing lawsuits, and reducing food waste as more important beliefs than non-certified managers. This would indicate that once certified, managers may be more aware of the serious consequences that can and will result from a foodborne illness outbreak. Most certification programs, including ServSafe®, emphasize this throughout training.

Certified managers also realized that time, lack of off-site training opportunities, and financial resources were greater concerns to offering food safety training. This could be because managers who have gone through the training are more aware of the financial and time requirements necessary to complete a food safety training class, and may be more aware of where to locate off site training classes.

## **CONCLUSIONS & APPLICATIONS**

Overall, the results of this research determined the beliefs of restaurant managers about offering food safety training to their employees. Attitudes, subjective norms, and perceived behavioral controls were all ranked high. Managers felt that food safety training for employees was important, yet this study indicates that there are important barriers, such as difficulty with employee scheduling, lack of management time, and lack of off site training opportunities, that need to be addressed before employee food safety training can become more prevalent. Managers felt training employees was important for ensuring safe food and increasing employees' awareness of food safety. However, they did not feel as strongly that food safety training for employees would aid in the reduction of food waste or increasing employee satisfaction. Managers placed emphasis on the opinions of health inspectors, customers,

supervisors, and long-term employees and were least concerned about the opinions of short-term employees.

There were few differences in beliefs between chain and independent operations; however there were several differences in beliefs among certified and non-certified managers. Certification appears to help managers fully appreciate the impact of food safety training and the effect it can have on the operation. The FDA (1999, 2005) has recommended that states adopt a requirement that a person in charge be knowledgeable about food safety, yet all states have not adopted this policy. Currently, the State of Kansas does not mandate food safety training for foodhandlers. However, this study illustrates many positive changes in manager attitudes and subjective norms once certification has taken place and verifies the importance of certification as an important tool in food safety training.

Sanitarians can use the results of this study in training and inspections to help managers become more aware of the need for employee training. When sanitarians understand the managers' beliefs, they can explain to managers the importance of training. Knowing that managers value the opinions of the health inspectors, customers, long-term employees, and supervisors, sanitarians can stress the importance of training and the relationship between safe food and increased customer satisfaction, the operations' reputation, food quality, and development of long-term employees. Sanitarians should discuss food safety training with owners and general and regional managers to assure that they are stressing food safety training with the store-level management team. Sanitarians and food safety educators may want to schedule shorter, more frequent food safety training sessions at varying times to reduce the barriers related to employee scheduling availability.

A limitation of this study is the sample only included commercial restaurant operations in Kansas. Thus, the results cannot be generalized to other foodservice systems or commercial restaurant operations in other states. Future studies could seek to understand the beliefs of restaurant managers in multiple parts of the United States and use region or location as a basis for comparison. Results could then be compared to state food safety programs in an attempt to uncover methods of food safety training that restaurant managers would be more apt to utilize. Other studies could seek to use the TpB with managers in non-commercial foodservice operations.

Another limitation is the response rate. Even though 237 responses were usable and adequate for data analysis, this only represents 17.9% of the sampling population, and is relatively small. Non-response bias is also a potential limitation. Managers who participated in the study might be more responsive to food safety and therefore responses may be biased.

Another limitation of this research is that it does not explore the relationship between behavioral intention and behavior. While the restaurant managers rated behavioral intention positively, the link between behavior and behavioral intention was not explored within this study. More in-depth research is needed to explore this relationship as restaurant managers perceive it is important, yet anecdotal evidence shows that managers are not conducting training for employees.

## REFERENCES

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11-39). New York: Springer-Verlag.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. (2002a). Behavioral intentions based on the theory of planned behavior. Retrieved November 1, 2003 from the World Wide Web: <http://www-unix.oit.umass.edu/~ajzen/pdf/tpb.intervention.pdf>
- Ajzen, I. (2002b). Constructing a TpB Questionnaire: Conceptual and methodological considerations. Retrieved November 1, 2003 from the World Wide Web: <http://www-unix.oit.umass.edu/~ajzen/pdf/tpb.measurement.pdf>
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Bean, N. H., J. S. Goulding, C. Lao, and F. J. Angulo. 1996. Surveillance for foodborne-disease outbreaks – United States, 1988-1992. *MMWR*. 45(SS-5):1-55.
- Buzby, J., Frenzen, P. and Rasco, B.A. 2001. Product liability and food safety: The resolution of food poisoning laws. In N. Hooker & E. A. Murano (Eds.). *Interdisciplinary Food Safety Research*. (pp. 121-137). Boca Raton, FL: CRC Press

- Center for Disease Control and Prevention. (2006). Preliminary FoodNet data on the incidence of infection with pathogens transmitted commonly through food - 10 states, United States, 2005. *Morbidity and Mortality Weekly Reports*, 55(14). Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5514a2.htm>. Accessed December 28, 2007.
- Casey, R., & Cook, C. (1979). Assessment of a food service management sanitation course. *Journal of Environmental Health*, 41(5), 281-284.
- Clingman, C. D. (1976). Ohio evaluated effects of food certification training. *Journal of Environmental Health*, 38(4), 235-236.
- Cochran-Yantis, D., Belo, P., Giampaoli, J., McProud, L., Everly, V., & Gans, J. (1996). Attitudes and knowledge of food safety among Santa Clara County, California restaurant operators. *Journal of Foodservice Systems*, 9, 117-128.
- Cohen, E., Reichel, A., & Schwartz, Z. (2001). On the efficacy of an in-house food sanitation training program: Statistical measurements and practical conclusions. *Journal of Hospitality and Tourism Research*, 25(1), 5-16.
- Collins, J. E. 1997. Impact of changing lifestyles on the emergence/reemergence of foodborne pathogens. *Emerging Infectious Diseases*. 3:471-479.
- Cotterchio, M., Gunn, J., Coffill, T., Tormey, P., & Barry, M. A. (1998). Effect of a manager training program on sanitary conditions in restaurants. *Public Health Reports*, 113, 353 – 358.
- Council for Agriculture Science and Technology. 1994. Foodborne pathogens: Risks and consequences. Council for Agriculture Science and Technology, Ames, IA.

- Department of Health and Human Services. (2000). *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office.
- Economic Research Service. 1996. Bacterial foodborne disease: Medical costs and productivity losses (Report No. 741). Economic Research Service, Washington DC.
- Fishbein, H. A., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Food and Drug Administration. 1999. Food Code 1999. National Technical Information Service, Springfield, VA.
- Food and Drug Administration. 2005. Food Code 2005. National Technical Information Service, Springfield, VA.
- Food and Drug Administration. (2004). FDA report on the occurrence of foodborne illness risk factors in selected institutional foodservice, restaurant, and retail food store facility types. Retrieved June 26, 2005 from the World Wide Web: <http://www.cfsan.fda.gov/~acrobat/retrsk2.pdf> .
- Giampaoli, J, Sneed, J., Cluskey, M., & Koenig, H. F. (2002). School foodservice directors' attitudes and perceived challenges to implementing food safety and HACCP programs. *The Journal of Child Nutrition & Management*. Retrieved June 21, 2002 from the World Wide Web: <http://www.asfsa.org/childnutrition/jcnm/02spring/giampaoli1/>
- Kneller, P., & Bierma, T. (1990). Food service certification measuring the effectiveness of a state program. *Journal of Environmental Health*, 52(2), 292-294.

- Mead, P. S., Slutsker, L., Dietz, V., McCaig, L. F., Bresee, J. S., Shapiro, C., Griffin, P. M., & Tauxe, R.V. (1999, September). Food-related illness and death in the United States. *Center for Disease Control and Preventing Emerging Infectious Diseases, 5 (5)*, 1-38. Retrieved Sept 1, 2004 from the World Wide Web: <http://www.cdc.gov/ncidod/eid/vol5no5/mead.htm>.
- McElroy, D. M., & Cutter, C. N. (2004). Self-report changes in food safety practices as a result of participation in a statewide food safety certification program. *Food Protection Trends, 24*,150-161.
- Olsen, S. J., L. C. MacKinnon, J. S. Goulding, N. H. Bean, & Slutsker, L. (2000). Surveillance for foodborne disease outbreaks – United States, 1993- 1997. *MMWR. 49(SS-5)*:1-51.
- Riben, P. D., R. G. Mathias, M. Wiens, W. Cocksedge, A. Hazelwood, B. Kirshner, and J. Pelton. 1994. Routine restaurant inspections and education of food handlers: Recommendations based on critical appraisal of the literature and survey of Canadian jurisdictions on restaurant inspections and education of food handlers. *Canadian Journal of Public Health. 85 (Suppl. 1)*, 567-570.
- Roberts, K. R, Barrett, B., & Sneed, J. (2005). Health department sanitarians perception of food safety practices in restaurants. *Food Protection Trends, 25(9)*, 694-700.
- Roberts, K. R., Shanklin, C. W., Pilling, V., Brannon, L., & Howells, A. (2007). The Impact of Food Safety Training on Foodservice Employees' Knowledge and Behavior. Unpublished Manuscript, Kansas State University.
- Roberts, K. R., & Sneed, P.J. (2003). An assessment of the status of prerequisite and HACCP programs in Iowa Restaurants. *Food Protection Trends, 23*, 808-816.



Wright, J., & Feun, L. (1986). Food service manager certification: An evaluation of its impact. *Journal of Environmental Health*, 49(1), 12-15.

**Table 4.1. Characteristics of Managers (N=237)**

<b>Characteristic</b>	<b>n</b>	<b>%<sup>a</sup></b>	<b>Characteristic</b>	<b>n</b>	<b>%<sup>a</sup></b>
<b>Age</b>			<b>Years employed in foodservice</b>		
30 years or younger	81	34.2	5 or less	0	0
31 – 40 years	52	21.9	6 – 15	84	35.4
41 – 50 years	56	23.6	16 – 25	53	22.4
51 – 60 years	38	16.0	26 or more	35	14.8
60 years or older	8	3.4	<b>Years employed in the restaurant industry</b>		
<b>Gender</b>			5 or less	45	19.0
Male	119	50.4	6 – 15	112	47.3
Female	117	49.6	16 – 25	54	22.8
<b>Education</b>			26 or more	24	10.1
Less than high school degree	5	2.1	<b>Years employed in current position</b>		
High School/GED	60	25.3	5 or less	146	61.6
Some College	83	35.0	6 – 15	64	27.0
Associate's Degree	29	12.2	16 – 25	17	7.2
Bachelor's Degree	55	23.2	26 or more	7	2.9
Graduate Degree	3	1.3	<b>Professional Affiliations</b>		
<b>Food Safety Certification</b>			National Restaurant Association	32	13.5
Yes	162	68.4	Kansas Restaurant & Hospitality Association	38	16.0
No	72	30.4	Local Restaurant Association	10	4.2
<b>Which food safety certification</b>			<b>Job title</b>		
ServSafe®	116	71.6	Owner/Co-Owner	81	34.2
Serving-It-Safe	4	2.5	General Manager	37	15.6
Other	42	25.9	Department Manager	108	45.6
			Regional/District Manager	4	1.7

<sup>a</sup>Responses may not equal 100% due to non-response to a question.

**Table 4.2. Characteristics of the Restaurants (N=237)**

<b>Characteristic</b>	<b>Frequency</b>		<b>Characteristic</b>	<b>Frequency</b>	
	<b>n</b>	<b>%<sup>a</sup></b>		<b>n</b>	<b>%<sup>a</sup></b>
<b><i>Seating Capacity</i></b>			<b><i>Number of Full-Time Employees</i></b>		
50 or less	71	30.0	15 or less	189	79.7
51-100	74	31.2	16 - 30	28	11.8
101-150	35	14.8	31 - 60	16	6.8
151-200	25	10.6	Greater than 60	4	1.7
201-250	18	7.6	<b><i>Number of Part-Time Employees</i></b>		
251-300	6	2.5	15 or less	175	73.8
Greater than 300	8	3.4	16 - 30	53	22.4
<b><i>Restaurant Classification</i></b>			31 - 60	8	3.4
Independent	119	50.2	Greater than 60	1	0.4
Chain - franchised	52	21.9	<b><i>Total Number of Employees</i></b>		
Chain - corporate	68	27.8	15 or less	117	49.4
<b><i>Service Classification</i></b>			16 - 30	61	25.7
Quick Service	74	31.2	31 - 60	43	18.1
Quick Casual	73	30.8	Greater than 60	16	6.8
Casual Dining	85	35.9			
Fine Dining	5	2.1			

<sup>a</sup>Responses may not equal 100% due to non-response.

**Table 4.2. Characteristics of the Restaurants (N=237) (Continued)**

		Frequency				Frequency			
Characteristic	n	% <sup>a</sup>	Characteristic	n	% <sup>a</sup>	Characteristic	n	% <sup>a</sup>	
<i>Provided an opportunity to attend a ServSafe® Class within the last year</i>			<i>Percentage of employees knowledgeable in food safety to meet health code regulations</i>						
Yes	122	51.5	25% or less	65	27.4				
No	114	48.1	26% - 50%	58	24.5				
<i>If yes, where was the training conducted?</i>			51% - 75%	17	7.2				
In-House	31	25.4	76% - 100%	63	26.6				
Off-Site	91	74.6	Greater than 100%	11	4.6				
<i>Percentage of total employees who were trained?</i>			Don't Know/Unsure	23	9.7				
25% or less	56	45.9	<i>Operation has a person whose primary responsibility is food safety</i>						
26% - 50%	18	14.8	Yes	179	75.5				
51% - 75%	6	4.9	No	58	24.5				
76% - 100%	16	13.1							
Greater than 100%	6	4.9							
Don't Know/Unsure	20	16.4							
<i>Estimated Annual Costs for Training/Employee</i>									
\$10 or less	14	11.5							
\$11 - \$20	9	7.4							
\$21 - \$30	3	2.5							
\$31 - \$40	4	3.3							
\$50 or greater	10	8.2							
Don't Know/Unsure	63	51.6							

<sup>a</sup>Responses may not equal 100% due to non-response.

**Table 4.3: TpB Direct and Indirect Belief Comparisons Between Chain and Independent Restaurant Operations**

	Overall (N=237)			Independent Operations (n=119)			Chain Operations (n=118)			t	Sig.
	Mean	Lower Quartile	Upper Quartile	Mean	Lower Quartile	Upper Quartile	Mean	Lower Quartile	Upper Quartile		
<b>Direct measures<sup>a</sup></b>											
Attitude	6.26	5.40	6.55	6.24	5.40	6.60	6.29	5.60	6.60	-0.537	0.592
Subjective Norm	5.89	5.00	7.00	5.82	5.00	7.00	5.95	5.67	7.00	-0.742	0.459
Perceived Behavioral Control	5.22	4.00	7.00	5.68	5.00	7.00	4.76	2.00	7.00	3.432	0.001*
Behavioral Intention	5.88	5.33	7.00	5.84	5.25	7.00	5.91	5.33	7.00	-0.310	0.757
<b>Indirect Measures<sup>b</sup></b>											
<b>Behavioral Beliefs</b>											
Ensuring safe food	18.43	18.00	21.00	17.90	18.00	21.00	18.97	18.00	21.00	-1.678	0.095
Increase employees' awareness of food safety	17.68	14.00	21.00	17.66	17.25	21.00	17.71	14.00	21.00	-0.070	0.945
Help maintain to operations' reputation	17.66	15.00	21.00	17.47	14.00	21.00	17.85	18.00	21.00	-0.534	0.594
Increase food safety practices of employees	17.42	14.00	21.00	17.39	14.00	21.00	17.44	12.00	21.00	-0.075	0.940
Better food quality	17.16	14.00	21.00	16.34	12.00	21.00	17.98	15.00	21.00	-2.071	0.039*
Decrease lawsuits	16.83	14.00	21.00	16.34	14.00	21.00	17.34	14.00	21.00	-1.086	0.279
Keeping customers satisfied	16.36	12.00	21.00	15.23	12.00	21.00	17.50	15.00	21.00	-2.668	0.008*
Reduce food waste	12.78	6.00	21.00	12.66	6.00	21.00	12.89	5.00	21.00	-2.090	0.835
Increase employee satisfaction	12.67	5.00	21.00	11.87	5.00	21.00	13.48	10.00	21.00	-1.581	0.115

**Table 4.4: TpB Direct and Indirect Belief Comparisons Between Chain and Independent Restaurant Operations**

	Overall (N=237)			Independent Operations (n=119)			Chain Operations (n=118)			t	Sig.
	Mean	Lower Quartile	Upper Quartile	Mean	Lower Quartile	Upper Quartile	Mean	Lower Quartile	Upper Quartile		
<b>Indirect Measures<sup>b</sup></b>											
<i>Normative Beliefs</i>											
Health inspector	19.10	0.00	21.00	18.61	21.00	21.00	19.59	21.00	21.00	-1.271	0.205
Customers	15.85	12.00	21.00	14.16	7.00	21.00	17.58	21.00	21.00	-3.031	0.003*
Long-term employees	13.04	6.50	21.00	12.70	6.00	21.00	13.39	7.00	21.00	-0.569	0.570
Vendors	12.57	5.00	21.00	11.92	5.00	21.00	13.23	5.00	21.00	-1.037	0.301
Supervisor	13.24	0.00	21.00	9.59	0.00	21.00	16.92	14.00	21.00	-6.094	0.000*
Short-term employees	5.81	0.00	18.00	5.82	0.00	21.00	5.79	0.00	14.00	0.019	0.985
<i>Control Beliefs</i>											
Employee scheduling	8.17	1.25	18.00	8.68	2.00	21.00	7.66	2.00	15.00	0.844	0.399
Managers' time	7.38	0.00	18.00	8.28	0.00	21.00	6.49	0.00	12.00	1.420	0.157
Time commitment for food safety training	6.52	0.00	12.00	7.50	0.00	14.00	5.54	-2.00	12.00	1.764	0.079
Lack of off-site training opportunities	5.53	-3.00	12.00	6.48	-3.00	18.00	4.56	-3.00	12.00	1.491	0.137
Financial resources	4.99	-3.00	12.00	5.57	-3.00	14.00	4.41	-3.00	12.00	0.953	0.342
Employees don't follow what they learn	5.83	0.00	12.00	5.54	-0.25	12.00	6.12	0.00	14.00	-0.474	0.636
Lack of on-site training opportunities	4.27	-3.00	12.00	4.61	-3.00	12.00	3.92	-3.00	12.00	0.510	0.610
Lack of targeted training materials	2.20	-3.00	5.00	1.44	-3.00	5.00	2.96	-3.00	5.00	-1.349	0.179

<sup>a</sup> Direct measures range from 1 to 7, with higher numbers indicating more positive attitudes and subjective norms or higher perceived control and intention.

<sup>b</sup> Indirect measures range from -21 to 21. Measures represent mean of the the belief multiplied by the evaluation of that belief.

\* Indicates that the item is significant

**Table 4.4: TpB Direct and Indirect Belief Comparisons Between Certified and Non-Certified Managers**

	Overall (N=237)			Certified Managers (n=162)			Non-Certified Managers (n=73)			t	Sig.
	Mean	Lower Quartile	Upper Quartile	Mean	Lower Quartile	Upper Quartile	Mean	Lower Quartile	Upper Quartile		
<b>Direct measures<sup>a</sup></b>											
Attitude	6.26	5.40	6.55	6.32	5.60	6.60	6.14	5.25	6.40	1.589	.115
Subjective Norm	5.89	5.00	7.00	6.08	5.66	7.00	5.44	4.33	7.00	3.097	.002*
Perceived Behavioral Control	5.22	4.00	7.00	5.00	3.50	7.00	5.67	5.12	7.00	-2.500	.013*
Behavioral Intention	5.88	5.33	7.00	6.16	5.66	7.00	5.22	4.00	7.00	3.730	.000*
<b>Indirect Measures<sup>b</sup></b>											
<b><i>Behavioral Beliefs</i></b>											
Ensuring safe food	18.43	18.00	21.00	19.03	21.00	21.00	17.11	12.00	21.00	2.610	.010*
Increase employees' awareness of food safety	17.68	14.00	21.00	18.39	18.00	21.00	16.00	12.00	21.00	2.599	.011*
Help maintain to operations' reputation	17.66	15.00	21.00	17.94	18.00	21.00	16.93	12.00	21.00	1.210	.229
Increase food safety practices of employees	17.42	14.00	21.00	17.91	18.00	21.00	16.19	12.00	21.00	1.926	.057
Better food quality	17.16	14.00	21.00	17.89	18.00	21.00	15.35	10.5.00	21.00	2.720	.008*
Decrease lawsuits	16.83	14.00	21.00	17.50	18.00	21.00	15.29	12.00	21.00	2.044	.043*
Keeping customers satisfied	16.36	12.00	21.00	16.57	15.00	21.00	15.69	12.00	21.00	0.908	.366
Reduce food waste	12.78	6.00	21.00	13.56	7.00	21.00	10.99	4.25	21.00	2.105	.037*
Increase employee satisfaction	12.67	5.00	21.00	12.94	9.00	21.00	11.83	5.00	21.00	0.971	.333

**Table 4.4: TpB Direct and Indirect Belief Comparisons Between Certified and Non-Certified Managers**

	Overall (N=237)			Independent Operations (n=119)			Chain Operations (n=118)			t	Sig.
	Mean	Lower Quartile	Upper Quartile	Mean	Lower Quartile	Upper Quartile	Mean	Lower Quartile	Upper Quartile		
<b>Indirect Measures<sup>b</sup></b>											
<i>Normative Beliefs</i>											
Health inspector	19.10	0.00	21.00	19.12	21.00	21.00	18.97	21.00	21.00	0.162	.872
Customers	15.85	12.00	21.00	15.58	12.00	21.00	16.22	14.00	21.00	-0.489	.626
Long-term employees	13.04	6.50	21.00	13.90	7.00	21.00	11.10	5.00	21.00	1.878	.063
Vendors	12.57	5.00	21.00	13.76	6.00	21.00	10.06	0.00	21.00	2.522	.013*
Supervisor	13.24	0.00	21.00	14.59	5.00	21.00	10.16	0.00	21.00	2.994	.003*
Short-term employees	5.81	0.00	18.00	6.34	0.00	21.00	4.43	0.00	19.25	1.156	.250
<i>Control Beliefs</i>											
Employee scheduling	8.17	1.25	18.00	7.85	2.00	18.00	8.68	0.25	17.25	-0.635	.526
Managers' time	7.38	0.00	18.00	6.71	-2.00	18.00	8.64	0.75	18.00	1.398	.164
Time commitment for food safety training	6.52	0.00	12.00	5.52	-2.00	12.00	8.56	3.00	14.00	-2.557	.012*
Lack of off-site training opportunities	5.53	-3.00	12.00	3.96	-3.00	12.00	8.85	0.00	21.00	-3.490	.001*
Financial resources	4.99	-3.00	12.00	4.09	-3.00	12.00	6.81	0.00	12.00	-2.205	.029*
Employees don't follow what they learn	5.83	0.00	12.00	5.69	0.00	12.00	5.94	-1.50	12.00	-0.185	.854
Lack of on-site training opportunities	4.27	-3.00	12.00	3.97	-3.00	12.00	4.79	-3.00	12.00	-0.552	.582
Lack of targeted training materials	2.20	-3.00	5.00	1.76	-3.00	5.00	2.79	-3.00	6.75	-0.823	.412

<sup>a</sup> Direct measures range from 1 to 7, with higher numbers indicating more positive attitudes and subjective norms or higher perceived control and intention.

<sup>b</sup> Indirect measures range from -21 to 21. Measures represent mean of the the belief multiplied by the evaluation of that belief.

\* Indicates that the item is significant



# **CHAPTER 5 - EXPLORING RESTAURANT MANAGERS' BELIEFS ABOUT FOOD SAFETY TRAINING: AN APPLICATION OF THE THEORY OF PLANNED BEHAVIOR**

## **ABSTRACT**

Understanding restaurant managers' perceptions and reasons to participate, or not, in food safety training is integral to assuring food safety education is provided to all food handlers. Little research has been conducted that applies a theoretical framework to explore restaurant managers' beliefs about food safety training. The goal of this study was to investigate the antecedents that affect restaurant managers' willingness to support food safety training for their employees by using in-depth research to determine the food safety attitudes, subjective norms, and perceived behavioral controls of foodservice managers. The results reveal that subjective norms and perceived behavioral control play a key role in determining if a manager or supervisor will offer training to their employees. Implications for the research and model development are discussed.

**Key Words:** Theory of Planned Behavior, Food Safety, Restaurants, Managers.

## INTRODUCTION

Americans will consume greater than 70 billion meals and snacks in 2008, the majority of which will be consumed in restaurants or cafeterias (National Restaurant Association [NRA], 2008). Therefore, managers of foodservice operations should take the utmost care in assuring their employees are trained in and follow proper food safety behaviors. The National Restaurant Association estimates that there are two million people certified in ServSafe®, a food protection certification program (NRA, 2007). Yet, with an estimated 12.8 million people employed just in restaurants, assuming those trained are still employed in the foodservice industry, less than 16% of food handlers are trained in food safety.

A single foodborne illness outbreak could cost an operation \$75,000; if the illness causes long-term injury or death, that figure increases substantially (Lynn, 1996). A single outbreak in a foodservice operation could result in an operation paying costly legal fees, medical and laboratory fees, hospitalization, medication, and increased insurance premiums, often forcing the operation to close (Cochran-Yantis, et al., 1996).

The general public is more aware of foodborne illnesses than at any other time in history. This increased interest among consumers can be attributed to negative media coverage of food safety outbreaks, especially those traced to restaurants (Allen, 2000). Outbreaks of *Escherichia coli* O157:H7, including highly publicized outbreaks associated with lettuce consumed at Mexican restaurants in the Midwest and Northeastern United States in 2006 and ground beef recalls in 2007 (Brasher, 2008; Center for Disease Control & Prevention, 2006; Minnesota Department of Health, 2007), have only increased public concern about food safety in restaurants. In 2006, Worsfold reported that of 110 consumers surveyed, 99% of respondents indicated that hygiene standards were either “very important” or “important” to them when

deciding where to dine. Hygiene standards were found to be more important to consumers than type of food, service, location, and price. In 2007, only 43% of the American public believed in the ability of the restaurant industry to protect consumers from foodborne illness (Food Marketing Institute Research, 2007).

Given the cost of foodborne illness and the already low consumer perceptions of food safety in restaurant operations, the restaurant industry should be committed to serving customers food that is 100% safe. Yet, factors that are directly related to the food handling practices of foodservice employees are found to be the leading causes of foodborne illness outbreaks within the United States. Time/temperature abuse, poor personal hygiene, and cross contamination are leading causes of foodborne illnesses and are preventable risk factors that are directly related to employees' food handling practices.

In 2000, the Food and Drug Administration (FDA) issued the *Retail Food Program Database of Foodborne Illness Risk Factors* exploring the major foodborne illness risk factors among different types of foodservice operations (FDA, 2000). Major risk factors included improper holding temperatures, food from unsafe sources, inadequate cooking, contaminated equipment, and poor personal hygiene. Full-service restaurants were found to be in compliance with 60% of risk factors and quick service restaurants 74% in compliance. Both full and quick service restaurants' compliance rates were lower than for hospitals (80%), nursing homes (82%), and elementary schools (80%). The FDA found 53.4% of full service restaurants out of compliance with personal hygiene standards and 63.2% had violations for holding time and temperature standards. Quick service operations' compliance rates were 36.6% and 49.2% respectively. The follow-up study by the FDA (FDA, 2004) found that 42.7% of full service restaurants were out of compliance with poor personal hygiene standards, and 63.8% for

improper holding times and temperatures. The percentages of fast food restaurants out of compliance with these risk factors were lower at 31.2%, and 41.7%, respectively. To assure that restaurant employees and managers are in compliance with identified standards, several food safety training programs are available for their use.

ServSafe®, administered by the National Restaurant Association Educational Foundation and Serving-It-Safe, sponsored by U.S. Department of Agriculture (USDA) are the two most commonly used food safety training programs in the foodservice industry. Previous research has found that food safety training is effective in increasing overall sanitation inspection scores (Cotterchio, et al, 1998; Kneller & Bierma, 1990), the microbiological quality of food (Cohen, Reichel, and Schwartz, 2001), and self-reported changes in food safety practices (McElroy & Cutter, 2004).

Even though food safety training would improve knowledge and sanitation within the operation, and is required by the current health code, a study conducted at Kansas State University found that managers are reluctant to allow employees the opportunity to participate in training even if it is provided free of charge. Of the three states where researchers were conducting training, less than 2% of restaurants in each state allowed their employees to participate in the training (Roberts, Barrett, Howells, Shanklin, Pilling, & Brannon, 2008).

A way to identify and understand the food safety training behaviors of restaurant managers is to study their underlying beliefs about offering an opportunity for employees to participate in food safety training. Attitudes and manager perceptions about food safety programs have been well researched, and it has been found that managers' attitudes impact the success of food safety programs and decreasing the number of foodborne illness outbreaks (Howes, McEwen, Griffith, & Harris, 1996). Giampaoli, Sneed, Cluskey, and Koenig (2002)

studied food safety attitudes among school foodservice managers and found that food safety education among managers and employees is perceived as an important issue.

In a study of 36 restaurants that received unfavorable scores on their previous inspection, Cochran-Yantis et al. (1996) reported that restaurant managers who had a favorable attitude about food safety were likely to score higher on inspection reports than those who did not have a favorable attitude. They also found that only 23% of the restaurants surveyed had a manager or employee certified in food safety. Of the 36 restaurants surveyed that received favorable scores, 44% had an employee certified in food safety.

Giampaoli, Sneed, Cluskey, and Koenig (2002) conducted focus groups with school foodservice directors and found training and education of employees and employees' comfort level with their ability to practice food safety were essential to implementing successful food safety and HACCP programs. Cochran-Yantis et al. (1996) concluded that “education is a critical factor in implementing food safety programs,” (p. 127). But, only those who truly internalize what they have learned and those operators who recognize the importance of food safety will practice it. Hwang, Almanza, and Nelson (2001) extended this idea into school foodservice and found knowledge, training, and practice led managers to be more favorable about implementing a Hazard Analysis and Critical Control Point (a food safety program) system in their operation.

No studies have explored the attitudes of restaurant managers about providing food safety training opportunities for employees. Research is needed to explore what impedes managers from offering food safety training to their employees. Therefore, this study used the Theory of Planned Behavior to assess managers' attitudes, perceived controls, and subjective norms

simultaneously in an attempt to understand the antecedents of their behavior to offer food safety training to their employees.

The Theory of Planned Behavior (TpB) is a widely used psychological model that examines the factors influencing behavior. The TpB (Figure 5.1) states that the best predictor of a person's behavior is his or her intention to perform the behavior. Behavior intention is based on the three separate antecedents: attitude, subjective norm, and perceived behavioral control. Attitude is indicated by persons appraisal of the behavior (Ajzen, 1991). Subjective norms represent one's perception that those who are important to the person think he/she should or should not perform the behavior (Ajzen & Fishbein, 1980).

---

Insert Figure 5.1

---

The inclusion of perceived behavioral control in the TpB is what separates the TpB from its precursor, the Theory of Reason Action (Ajzen & Fishbein, 1977, 1980). Perceived behavioral control represents one's ability to perform a behavior or barriers which would prevent one from performing a behavior which they would otherwise do. Barriers to behavior are present when they require prerequisite knowledge, resources, and/or the cooperation of others (Gilbert, Fiske, & Lindzey, 1998). If a behavior required no skill or social cooperation, the TRA would explain the behavioral intention. However, for those behavioral intentions where skill or social cooperation is required, the TpB is used.

The TpB has been the basis of research in a wide variety of fields. It has been used to explore teachers' intentions to teach physically active physical education classes (Martin, Kulinna, Eklund, & Reed, 2001), test persuasive interventions to increase helmet use among

school-age cyclists, study attitudes and beliefs on exceeding the speed limit (Parker, Stradling, & Manstead, 1996), predict mothers' intention to limit frequency of infants sugar intake (Beale & Manstead, 1991), develop smoking cessation interventions (Black & Babrow, 1991), predict and develop interventions to increase condom use (Williams, Bowen, Timpson, Ross, & Atkinson, 2006), understand glove use among physicians (Godin, Naccache, & Fortin, 1998), and explore ethical decision making in the medical profession (Randall & Gibson, 1991).

No previous research has been found that addressed food safety beliefs in a restaurant setting. Therefore, it is important to explore the attitudes, perceived controls, and subjective norms of managers simultaneously in an attempt to better understand the antecedents of their behavior relative to offering food safety training to their employees. The overall goal of this study was to assess the TpB model in predicting restaurant managers' intention to provide an opportunity for employees to attend food safety training. Specific hypothesis included:

- Hypothesis 1: Managers' attitudes about food safety training are not significantly associated with their behavioral intentions to train employees.
- Hypothesis 2: Managers' subjective norms about food safety training are not significantly associated with their behavioral intentions to train employees.
- Hypothesis 3: Managers' perceived behavioral controls of food safety training are not significantly associated with their behavioral intentions to train employees.
- Hypothesis 4: Behavioral beliefs about food safety training are not significantly associated with attitude toward food safety training.
- Hypothesis 5: Normative beliefs toward food safety training are not significantly associated with subjective norms about food safety training.

- Hypothesis 6: Control beliefs related to food safety training are not significantly associated with managers' perceived behavioral control.

## **METHODOLOGY**

A primary requirement of this study was the development of a research instrument that accurately measured each construct. The questionnaire was developed through a combination of literature review and an elicitation study. The items that were noted from the literature were combined with results of the elicitation study. Attitudes, subjective norms, and perceived behavioral controls are assumed to be based on corresponding sets of beliefs, therefore Ajzen (2002a, 2002b) suggested an elicitation study to identify the behavioral, normative, and control beliefs. Through the elicitation study, a list of commonly held beliefs was developed, and those beliefs provided the basis for constructing the questionnaire. In the elicitation study, focused interviews were conducted with a convenience sample of 20 restaurant managers in a midwestern college town and followed guidelines suggested by Ajzen (2002a).

The initial questionnaire developed from the literature review and pilot study was then further refined with a focus group of three graduate students and two restaurant managers to assure face validity. The focus group made recommendations for questionnaire wording and flow.

A pilot study was administered via telephone. Restaurant managers whose operation was selected were sent an advance letter approximately one week prior to calling and then contacted to participate in the study. If there were no answer or the manager was unavailable, the manager was contacted again at a later time or date. Each operation was called six times before being labeled as a no response. A total of 19 of the 50 operations responded for a response rate of 38%. All respondents indicated that questions and wording were clear.



The final version of the instrument included 85 questions to measure eight constructs, including direct and indirect measures, and respondent and operational demographics. Indirect measures included behavioral, normative, and control beliefs. Nine behavioral beliefs (customer satisfaction, ensuring safe food, ensuring food quality, reducing food waste, increasing employees food safety awareness, maintaining the operations reputation, employee satisfaction, reducing the likelihood of lawsuits, improving food safety practices of employees) were measured by asking the respondent to rate the strength of his/her belief on a 7-point scale from (1) *extremely unlikely* to (7) *extremely likely*. Outcome evaluations were measured by asking respondents to rate how good or bad each of the beliefs were to them on a 7-point scale from (1) *extremely bad* to (7) *extremely good*, however following the recommendations of the TpB, these were recoded for data analysis from (-3) *extremely bad* to (3) *extremely good*. The individual behavioral beliefs were then multiplied by the outcome evaluation to derive an overall belief score which was then summed across all evaluations to compute a total behavioral belief score.

Six referent groups/individuals (supervisors, long-term employees, short-term employees, customers, health inspectors, and vendors) were identified through the literature review and pilot study. Normative beliefs were measured by asking the respondent to rate how likely each referent group/individual would think food safety training should be offered to employees on a 7-point scale from (1) *extremely unlikely* to (7) *extremely likely*, however following the recommendations of the TpB, these were recoded for data analysis from (-3) *extremely unlikely* to (3) *extremely likely*. Motivation to comply was addressed by asking respondents to evaluate how much they care what the referent group/individual thinks on a 7-point scale from (1) *not at all* to (7) *very much*. For both normative beliefs and motivation to comply, a “not applicable” choice was offered since the owner of a restaurant would not have a supervisor. The individual

normative beliefs were multiplied by the motivation to comply to derive an overall belief score which was summed across all evaluations to compute a total normative belief score.

Eight control beliefs (employee availability, managers' time, financial resources, lack of off-site food safety training availability, lack of on-site food safety training availability, lack of targeted training materials, employees not following what they learn from food safety training, and the time commitment required for food safety training) were measured by asking managers' to rate their agreement that the belief makes food safety training difficult on a 7-point scale from (1) *strongly disagree* to (7) *strongly agree*, however following the recommendations of the TpB, these were recoded for data analysis from (-3) *strongly disagree* to (3) *strongly agree*. The perceived power of those control beliefs was measured by asking respondents how often not having the item affect their offering employee food safety training. Respondents rated the perceived power on a 7-point scale from *very rarely* (1) to *very frequently* (7). The individual control beliefs scores were then multiplied by the power of those control beliefs to derive an overall belief score which was summed across all evaluations to compute a total control belief score.

Direct measures of attitude, perceived behavioral control, subjective norm, and behavioral intention were measured on a 7-point scale. Measures for each direct measure were presented in the terms Ajzen (2002a) suggested in terms of action, target, context, and time.

The managers' attitudes were measured on a set of five semantic scales. Each of the scales appeared after the statement: "For me to offer food safety training to my employees within the next year is \_\_\_\_\_." The semantic scales included *good/bad*, *worthless/valuable*, *difficult/easy*, *unpleasant/pleasant*, and *unimportant/important*. This included the three separable components suggested by Ajzen (2002a): instrumental (*valuable/worthless*,

*unimportant/important*), experiential (*difficult/easy, unpleasant/pleasant*) and evaluative (*good/bad*).

Subjective norms were measured by asking managers if their important referents would approve or disapprove of the managers offering food safety training to their employees. A 7-point disagree-agree scale anchored by (1) strongly disagree and (7) strongly agree was used. Questions measuring subjective norms included “Most people who are important to me think that I should offer food safety training to my employees within the next year; It is expected that I will offer food safety training to my employees within the next year; and The people in my life whose opinions I value would approve of offering food safety training to my employees within the next year.”

Perceived behavioral control was measured by two questions. These questions were developed to measure the managers’ confidence that they can offer food safety training to their employees. Questions were included to capture both the self-efficacy (“I am able to send my employees to food safety training if I choose”) and controllability issues (“It is my choice whether I offer food safety training to my employees within the next year”) noted by Ajzen (2002a). A 7-point disagree-agree scale anchored by (1) strongly disagree and (7) strongly agree was used.

Intention, or the likelihood that the manager will offer food safety training to employees within the next year, was measured with three items. A 7-point disagree-agree scale anchored by (1) strongly disagree and (7) strongly agree was used. These three items included: “I will try to offer,” “I intend to offer,” and “I plan to offer” food safety training within the next year.

Demographic information about the managers and the operations was collected and included for the restaurant: seating capacity; the number of full-time and part time employees;

type of operation; management organization; service classification; if the restaurant had an individual knowledgeable in food safety practices per state health code requirements; if the restaurant had an individual responsible for implementing food safety practices; if a food safety training program was offered to employees within the last year; how many were trained if food safety training was offered, and if they did offer training, the annual costs for food safety training). Ten questions asked about the restaurant manager (gender; age; educational level; food safety certification status; if certified, which certification; job title; years employed in foodservice operations; years employed within the restaurant industry; years employed in current position; professional memberships).

### **Sample Population**

The population for this study included commercial foodservice operations in Kansas which included 7,558 operations licensed to sell food. A list of operations was acquired from the Kansas Department of Health and Environment. However, from the 7,558 operations, convenience stores, supermarkets, banquet facilities, healthcare operations, nursing homes, retirement communities, schools, and other institutional foodservice operations were excluded, yielding a total of 5,486 operations. From the edited listing of 5,486 operations (less 100 operations that were included in the pilot study), 25% were drawn from the listing using a systematic random sample to obtain the sample population of 1,347 operations. Once the 1,347 operations were pulled, further refinement of the list was conducted using online yellow page research that removed any additional operations not classified as a commercial foodservice operation. The final sample population included 1,321 operations.

### **Data Collection**

Utilizing a telephone survey, 1,321 operations (divided into seven groups) were contacted to speak with the manager on duty. Five business days prior to calling a group, advance letters were mailed to operations, introducing the purpose of the research, the subjects' rights, information about the data collection procedure, and methods for contacting the researchers. The subjects were informed that their responses would be kept confidential, the results of the study would be presented in summary form only, and they could decline participation at any time. Six attempts were made to contact each operation prior to labeling the operation as a no response. The research protocol was approved by Kansas State University's Institutional Review Board.

### **Data Analysis**

All data analysis procedures used the Statistical Package for the Social Sciences (SPSS) (Version 11.5). Descriptive statistics were computed including: frequencies, means, and standard deviations.

Cronbach's alpha (1951) was used to determine construct validity. A threshold of .70 was used to demonstrate consistency. Principal Axis Factor Analysis was conducted on the indirect measures of normative, behavioral, and control beliefs and the direct measures of attitude, subjective norm, perceived behavioral control, and behavioral intention to minimize the effects of multicollinearity. Regression analysis was used to determine the relationship between behavioral intention and the antecedents of behavioral intention: attitude, subjective norm and perceived behavioral control. Regression was used to explore the relationship among the behavioral beliefs and the direct measures of each construct.

## **RESULTS**

A total of 266 managers responded to the questionnaire. Due to incomplete and missing data, a total of 237 (17.9%) responses were usable.

### **Respondent Characteristics**

The majority of restaurant managers (34.2%) was 30 years of age and had been employed in the foodservice industry from six to 15 years (35.4%), yet the majority of respondents had been in their current position for five years or less (61.6%). Gender make-up of this sample was approximately equal with 50.4% male and 49.6% female.

Approximately 70.4% of respondents had some college education or held a degree, 25.3% had completed high school, and 2.1% had no high school degree. Only 68.4% had food safety certification, the majority of those (71.6%) had received certification through the National Restaurant Association Educational Foundation's ServSafe® Program.

### **Operational Characteristics**

Most of the restaurants in this study were relatively small, with approximately 30% seating 50 people or less, while only 24.1% of restaurants seated in excess of 150. Based on the size of the restaurants in this study, it was not surprising that 49.4% had fewer than 15 total employees.

Of the restaurants surveyed, 51% indicated they had provided opportunities for their employees to attend food safety training within the past year. Of those, the majority (91%) utilized off site-training and 75.5% of restaurants said that they had an employee whose primary responsibility was food safety.

### **Item Analysis**

#### ***Direct Measures***

Cronbach's alpha (1951) was used to determine construct reliability among the direct measures. A threshold of .70 was used to demonstrate consistency. Results indicated that all direct measures had reliabilities that were acceptable. The reliability coefficients are presented in Table 5.1. Initial results for the reliability of attitude indicated that the alpha would increase from .70 to .73 with removal of the question asking if the respondent thought offering food safety training was difficult/easy. Since removal of the item would increase reliability and was actually a measure of perceived control, the item was removed from further analysis. All reliability coefficients were greater than .70, indicating that the scales used in this study can successfully measure the constructs of interest.

---

Insert Table 5.1

---

For the five items developed to measure the construct of attitude, respondents had positive attitudes toward food safety. Overall, respondents indicated that they thought food safety was extremely important ( $M = 6.64 \pm .89$ ) and extremely valuable ( $M = 6.54 \pm .85$ ).

Responses to subjective norms indicated that respondents thought that those people in their life whose opinions they value would approve of their offering food safety training to their employees ( $M = 6.27 \pm 1.36$ ). However, the overall responses were slightly lower when asked if it were expected they offer food safety training to their employees within the next year ( $M = 5.67 \pm 1.89$ ).

Perceived behavioral control responses indicated that managers were not as positive that they could offer food safety training to their employees ( $M = 5.07 \pm 2.37$ ). Likewise, they were

not as confident they would be able to send their employees to food safety training ( $M = 5.37 \pm 2.12$ ).

For items related to behavioral intentions, respondents generally rated their intentions as high. Managers planned to offer food safety training to their employees within the next year ( $M = 6.15 \pm 1.44$ ) and intended to offer food safety training to their employees ( $M = 5.79 \pm 1.79$ ).

Principal axis factor analysis with varimax rotation was conducted on the attitude, perceived behavioral control, subjective norm, and behavioral intention constructs independently. Based on a minimum eigenvalue of 1.0 each factor analysis yielded one construct.

Multiple linear regression was then used to test the hypotheses and the relationships between the behavioral intention mean composite score (dependent variable) and the mean composite scores of attitude (Hypothesis 1), subjective norm (Hypothesis 2), and perceived behavioral control (Hypothesis 3) as independent variables.

The resulting model was significant ( $F=139.932, p \leq .000$ ) (Table 5.2). The significant independent variables in the model were the attitude mean composite score ( $\beta=0.106, p \leq .038$ ) and the subjective mean composite score ( $\beta = 0.727, p \leq .000$ ). Both attitudes (Hypothesis 1) and subjective norms (Hypothesis 2) made significant contributions to the prediction of offering food safety programs for employees ( $R^2 = .64$ ) and were rejected. Perceived behavioral control was not significant, in the prediction of behavioral intention and therefore hypothesis three is supported. This is also similar to what Martin, Kulinna, Eklund, & Reed (2001) found in their TpB study of physical education that when people feel in control and had the necessary knowledge, perceived behavioral control was not an important determinant in behavior.



---

Insert Table 5.2

---

### ***Indirect Measures***

Responses to all indirect measures are presented in Table 5.3. Overall, respondents' attitude beliefs about offering food safety training for employees within the next year were high. Managers' believed offering food safety training to their employees within the next year would ensure safe food (18.43), help maintain the operations reputation (17.66), and increase their employees' awareness of food safety (17.68). Keeping customers satisfied (16.36), reducing food waste (12.78), and increasing employee satisfaction (12.66) were rated lowest in terms of attitude.

---

Insert Table 5.3

---

Managers indicated that the health inspector (19.10) and customers (15.85) were the most important referent groups when discussing food safety training. Short-term employees had the least influence on managers when deciding to offer food safety training (5.81).

Employees scheduling availability (8.17) and the managers' time (7.39) were the highest ranked control beliefs and therefore are the greatest barriers to food safety training. Lack of on-site food safety training availability (4.26) and lack of targeted training materials (2.20) were the lowest control beliefs.

Principal axis factor analysis with varimax rotation was conducted on behavioral, normative, and control beliefs independently. Factors were based on a minimum eigenvalue of

1.0. For the factor analysis on behavioral beliefs, one factor was extracted. The factor analysis on normative beliefs extracted two factors; internal and external (Table 5.3). Normative beliefs included within the internal factor included long-term employees, vendors, supervisors, and short-term employees. Those included in the external factor included the health inspector and customers. The Cronbach alphas for the factors (internal and external) were .78 and .74, respectively. For both factors, the item-total statistics showed that deleting any item would decrease the alpha. The factor analysis for control beliefs yielded two factors named operation and training. Control beliefs included within the operational factor included employee scheduling availability, managers' time, employees who not following what they learn in food safety training, time commitment for food safety training classes, and financial resources. Those items included in the training factor included lack of off-site and on-site food safety training availability, and lack of targeted training materials. These items are shown in Table 5.3. The Cronbach alphas for the factors (operational and training) were .74 and .76, respectively.

Three multiple regression models were used to examine the relationships between the attitudes (Hypothesis 4), subjective norms (Hypothesis 5), and perceived behavioral controls (Hypothesis 6) as dependent variables and the factors for their indirect measures as independent variables. Of the three simple linear regression models, only two were significant. The regression of the behavioral belief factors ( $\sum_i bb_i be_i$ ) on attitude composite score (Hypothesis 4) ( $F=141.49, p \leq .000$ ) (Table 5.4) and the regression of normative belief factors ( $\sum_i nb_i mc_i$ ) on the subjective norm composite score (Hypothesis 5) ( $F=28.39, p \leq .000$ ) (Table 5.5) were significant and thus hypothesis four and five were rejected. The regression of control beliefs

$(\sum_i cb_i pp_i)$  on perceived behavioral control showed no significance and hypothesis six was supported.

---

Insert Table 5.4

---

---

Insert Table 5.5

---

Results of testing behavioral belief in the regression model indicated that behavioral belief was a strong indicator of attitude ( $\beta=0.618, p \leq .000$ ). In the regression model testing normative belief factors and subjective norms, both internal ( $\beta=0.358, p \leq .000$ ) and external ( $\beta=0.141, p \leq .041$ ) factors, were significant.

## **DISCUSSION & IMPLICATIONS**

The primary objective of this research was to assess the TpB model in predicting managers' intentions to provide an opportunity for employees to attend food safety training. The results suggest that the Theory of Planned Behavior can be a useful tool in predicting the intention of restaurant managers to offer food safety training to their employees. Multiple linear regression indicated that managers' attitudes and subjective norms were positively associated with intention to offer food safety training opportunities for employees. Therefore, hypothesis one and two were rejected. It was found that both attitude and subjective norms in this study were significantly associated with the behavioral intention to train employees. Perceived behavioral control among the managers was not found to be a significant predictor of the intention to offer training, therefore hypothesis 3 was supported. This could be because

restaurant managers may feel they are in control of their operations and have the necessary food safety knowledge needed to train employees on-the-job, therefore food safety training classes would not be as imperative.

Of the three predictor variables (attitude, subjective norms, and perceived behavioral control) subjective norms had a greater relative effect on behavioral intention ( $\beta = .727$ ). Ajzen (1991) indicated that control beliefs represent one's perception of the difficulty or ability of performing a behavior. Obviously, managers would be more likely to offer training if their supervisors or important others support food safety training. This result verifies the importance of supervisors, employees, and vendors persuading the manager to provide training or to offer their employees the opportunity to attend training programs. Ajzen and Fishbein (1980) indicated that the subjective norm is generally more important when the behavior requires the cooperation of others. Restaurant managers who have a multitude of tasks and responsibilities must work closely with their supervisors, employees, and vendors. Therefore, they are more likely to evaluate the opinions of important others, and perform tasks which those people view as important. Means of the six normative beliefs (health inspector, customers, long-term employees, vendors, supervisors, and short-term employees) indicated that the health inspector, customers, and long-term employees have more influence on the managers than their supervisors and short-term employees (Table 5.3). Thus, it is important that the health inspector discuss with the manager the importance of offering food safety training to employees. Additionally, if customers who are aware notify the manager on-duty when employees are not using appropriate food safety practices, it may influence the manager to offer food safety training for employees.

Attitude was also found to be a significant predictor of behavioral intention ( $\beta = .727$ ). Obviously, if a manager has positive attitudes about food safety, they will more likely initiate the behavior.

The descriptive summaries of the eight predictor variables of perceived behavioral control (presented in Table 5.5) indicated that employee scheduling availability for training, managers' time, and the time commitment required for training classes are important barriers when deciding to offer food safety training classes for employees. Therefore, those involved in offering training can influence whether or not a manager intends to offer food safety training by having training sessions at times when employees are more available for training and by making sessions shorter so employees can attend before or after shifts.

The results of this study reaffirmed the strong relationships between the direct measures of attitude and subjective norms and their belief-based aggregates. This research is further evidence that attitude is truly a measure of the beliefs about the consequences of behavior and that subjective norms are derived from the beliefs about the normative expectations of others because in this study both indirect measures were found to be significant predictors. The relationship between perceived behavioral control and its belief-based aggregate exploring factors that would facilitate or impede the offering of food safety programs was not significant. Oh and Hsu (2001) indicated that because control beliefs measure different aspects, they are often questioned. For example, in the context of offering food safety training to employees, managers may have the financial resources but lack time for employees to attend training. Other managers may have limited financial resources to send employees but an ample amount of time for employees to attend. Therefore, the control beliefs construct needs to be further explored to

find a more acceptable model for assessing the relationship between control beliefs and perceived behavioral control.

### **LIMITATIONS AND FUTURE RESEARCH**

Using the TpB to explore managers' barriers to providing an opportunity to attend food safety training has been useful in predicting their intention. However, it is not without its limitations, which leads to the exploration of future research implications.

One limitation of this study is the sample is limited to commercial restaurant operations in the state of Kansas. Thus, the results cannot be generalized to other foodservices such as school, healthcare, and university foodservice operations and restaurants beyond Kansas.

A second limitation is the lack of relationship between perceived behavioral control and its belief-based aggregate. To better understand the relationship between the indirect and direct construct, further research is needed.

A third limitation is that this research did not address non-response bias. The managers who responded may be more supportive of food safety training and food safety training programs, therefore would have more positive attitudes and perceive less barriers to training than those managers who elected not to participate in the study. Therefore, the results might be biased.

Finally, this research does not explore the relationship between behavioral intention and behavior. While behavioral intention is a strong predictor of behavior, this research did not measure behavior of the managers. Further research should seek to explore this relationship in an attempt to fully understand the antecedents to providing an opportunity for employees to participate in food safety training.

### **CONCLUSIONS**

This study examined restaurant managers' intention to provide an opportunity for their employees to participate in food safety training. Overall, the Theory of Planned Behavior was useful in determining restaurant manager's intention to offer training to employees. Managers had high intention to offer food safety training to their employees and while the results indicated that perceived behavioral control was not a significant predictor of intention, attitudes and subjective norms were found to be significant determinants.

This research extends the current body of food safety training literature by applying a behavior based theoretical model to explore antecedents to behavioral intention. Therefore, this research begins to build the foundation of exploring managers' intention to offer food safety training and allows other researchers to explore ways in which managers' can be persuaded to increase participation of employees in training, and ultimately improve the overall safety of food served in American restaurants.

## REFERENCES

- Allen, R. L. (2000, Oct. 30). *Study shows shrinking consumer confidence in food-safety practices*. Nation's Restaurant News. 1, 87.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. (2002a). Behavioral intentions based on the theory of planned behavior. Retrieved November 1, 2003 from the World Wide Web: <http://www-unix.oit.umass.edu/~aizen/pdf/tpb.intervention.pdf>
- Ajzen, I. (2002b). Constructing a TpB Questionnaire: Conceptual and methodological considerations. Retrieved November 1, 2003 from the World Wide Web: <http://www-unix.oit.umass.edu/~aizen/pdf/tpb.measurement.pdf>
- Ajzen, I, & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84, 888-918.
- Ajzen, I, & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Beale, D. A., & Manstead, A. S. R. (1991). Predicting mothers' intentions to limit frequency of infants' sugar intake: Testing the theory of planned behavior. *Journal of Applied Social Psychology*, 21, 409-431.
- Black D. R., & Babrow, A. S. (1991). Identification of campaign recruitment strategies for a stepped smoking cessation intervention for a college campus. *Health Education Quarterly*, 18(2), 235-247.

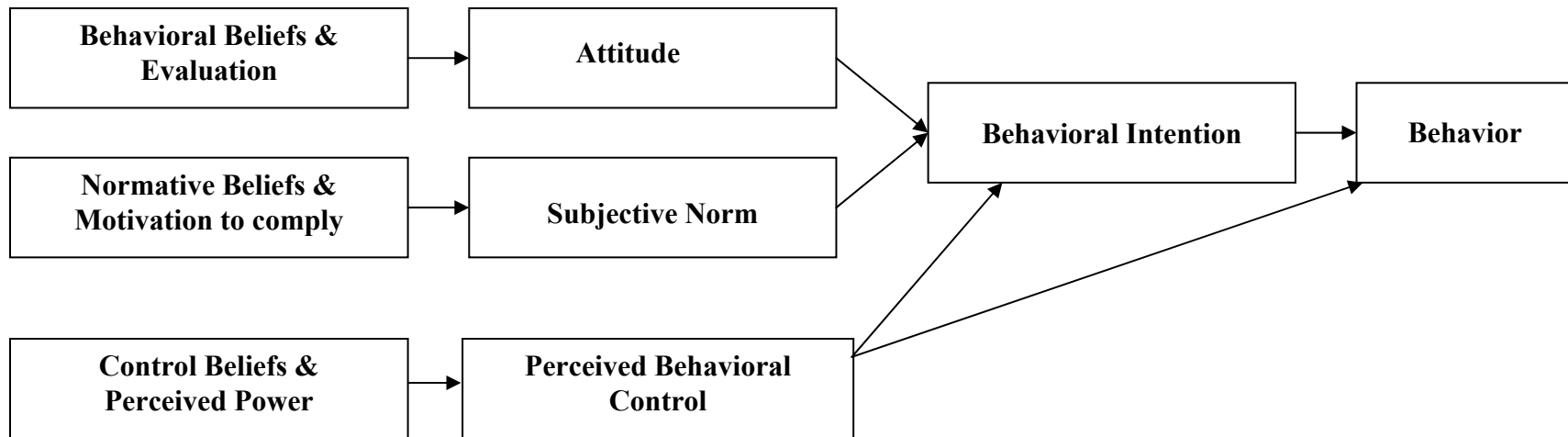


- Brasher, D. (2008, February 24). Big beef recalls test trust of USDA worldwide. *The Des Moines Register*. Retrieved February 25, 2008 from the World Wide Web:  
<http://www.desmoinesregister.com/apps/pbcs.dll/article?AID=/20080224/BUSINESS/802240319/-1/SPORTS01>
- Center for Disease Control and Prevention (2006, December). *Multistate Outbreak of E. coli O157 Infections, November-December 2006*. Retrieved September 23, 2007 from the World Wide Web: <http://www.cdc.gov/ecoli/2006/december/121406.htm>
- Cochran-Yantis, D., Belo, P., Giampaoli, J., McProud, L., Everly, V., & Gans, J. (1996). Attitudes and knowledge of food safety among Santa Clara County, California restaurant operators. *Journal of Foodservice Systems*, 9, 117-128.
- Cohen, E., Reichel, A., & Schwartz, Z. (2001). On the efficacy of an in-house food sanitation training program: Statistical measurements and practical conclusions. *Journal of Hospitality and Tourism Research*, 25(1), 5-16.
- Cotterchio, M., Gunn, J., Coffill, T., Tormey, P., & Barry, M. A. (1998). Effect of a manager training program on sanitary conditions in restaurants. *Public Health Reports*, 113, 353 – 358.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests [Abstract]. *Psychometrika*, 16, 297-334. Abstract retrieved May 21, 2006 from Springerlink database.
- Food and Drug Administration. (2000). Report of the FDA retail food program database of foodborne illness risk factors. Retrieved June 21, 2002 from the World Wide Web: <http://vm.cfsan.fda.gov/~dms/retrsk.html>

- Food and Drug Administration. (2004). FDA report on the occurrence of foodborne illness risk factors in selected institutional foodservice, restaurant, and retail food store facility types. Retrieved June 26, 2005 from the World Wide Web: <http://www.cfsan.fda.gov/~acrobat/retrsk2.pdf>.
- Food Marketing Institute Research. (2007). *U.S. Grocery shopper Trends 2007*. Crystal City, VA: Author.
- Giampaoli, J, Sneed, J., Cluskey, M., & Koenig, H. F. (2002). School foodservice directors' attitudes and perceived challenges to implementing food safety and HACCP programs. *The Journal of Child Nutrition & Management*. Retrieved June 21, 2002 from the World Wide Web: <http://www.asfsa.org/childnutrition/jcnm/02spring/giampaoli1/>
- Gilbert, D. T., Fiske, S. T., & Lindzey, G. (Eds.). (1998). *The handbook of social psychology*. (4th edition). New York: McGraw Hill.
- Godin, G., Naccache, H., & Fortin, C. (1998). Understanding physicians' intention to use a simple infection control measure: Wearing gloves. *American Journal of Infection Control*, 26, 413-417.
- Howes, M., McEwen, S., Griffiths, M., & Harris, L. (1996). Food Handler certification by home study: Measuring changes in knowledge and behavior. *Dairy, Food, and Environmental Sanitation*, 16, 737-744.
- Hwang, J. H., Almanza, B. A., & Nelson, D. C. (2001). Factors influencing Indiana school foodservice directors/managers' plans to implement a hazard analysis critical control point (HACCP) program. *The Journal of Child Nutrition & Management*, 25, 24-29.

- Kneller, P., & Bierma, T. (1990). Food service certification measuring the effectiveness of a state program. *Journal of Environmental Health, 52*(2), 292-294.
- Lynn, J. (1996, September). *Better safe than sorry: Training food handlers protects everyone*. Restaurants USA. Retrieved June 21, 2002 from the World Wide Web: <http://www.restaurant.org/rusa/magArticle.cfm?ArticleID=182>
- Martin, J. J., Kulinna, P. H., Eklund, R. C., & Reed, B. (2001). Determinants of teachers' intentions to teach physically active physical education classes. *Journal of Teaching in Physical Education, 20*, 129 – 143.
- McElroy, D. M., & Cutter, C. N. (2004). Self-report changes in food safety practices as a result of participation in a statewide food safety certification program. *Food Protection Trends, 24*, 150-161.
- Minnesota Department of Health. (2007). *E. coli O157:H7 cases linked to ground beef purchased at Lunds or Byerly's stores since mid-April*. Retrieved September 23, 2007 from the World Wide Web:  
<http://www.health.state.mn.us/news/pressrel/ecoli050807.html>
- National Restaurant Association (2008). *Restaurant Industry Forecast*. Washington, DC: National Restaurant Association
- National Restaurant Association (2007). *What we do*. Retrieved October 12, 2007, from <http://www.restaurant.org/aboutus/initiatives.cfm>.
- Oh, H., & Hsu, C. (2001). Volitional degrees of gambling behaviors. *Annals of Tourism Research, 28*(3), 618-637.

- Parker, D., Stradling, S. G., & Manstead A. S. B. (1996). Modifying beliefs and attitudes to exceeding the speed limit: An intervention study based on the Theory of Planned Behaviour. *Journal of Applied Social Psychology, 26*(1), 1-19.
- Randall, D. M., & Gibson, A. M. (1991). Ethical decision making in the medical profession: An application of the Theory of Planned Behavior. *Journal of Business Ethics, 10*(2), 111-116.
- Roberts, K. R., Howells, A. D., Shanklin, C. W., Pilling, V., & Brannon, L., (2008). Food Safety Training and Foodservice Employees' Knowledge and Behavior. *Food Protection Trends*.
- Williams, M., Bowen, A., Timpson, S., Ross, M., & Atkinson, J. (2006). HIV prevention and male sex workers: Evaluation of brief interventions to increase condom use during paid sexual encounters. *AIDS Education and Prevention, 18*, 204-215.



**Figure 5.1: The Theory of Planned Behavior (Ajzen, 1985)**

**Table 5.1. Summary of Direct Measurement Scales (N=237)**

Measure (Scale)	Mean	SD	Reliability
<b><i>Attitude Toward food Safety<sup>a</sup></i></b>			0.73
Offering food safety training to my employees within the next year is Extremely Unimportant/Extremely Important	6.64	0.89	
Offering food safety training to my employees within the next year is Extremely Worthless/Extremely Valuable	6.54	0.85	
Offering food safety training to my employees within the next year is Extremely Bad/Extremely Good	6.48	0.99	
Offering food safety training to my employees within the next year is Extremely Unpleasant/Extremely Pleasant	5.36	1.35	
<b><i>Subjective Norms<sup>b</sup></i></b>			0.79
The people in my life whose opinions I value would approve of offering food safety training to my employees within the next year.	6.27	1.36	
It is expected that I will offer food safety training to my employees within the next year.	5.67	1.89	
Most people who are important to me think that I should offer food safety training to my employees within the next year.	5.72	1.72	
<b><i>Perceived Behavioral Control<sup>b</sup></i></b>			0.86
I am able to send my employees to food safety training if I choose.	5.37	2.12	
It is my choice whether I offer food safety training to my employees within the next year.	5.07	2.37	
<b><i>Behavioral Intention<sup>b</sup></i></b>			0.92
I plan to offer food safety training to my employees within the next year.	6.15	1.44	
I intend to offer food safety training to my employees within the next year.	5.79	1.79	

<sup>a</sup> Scale value ranges from *Extremely* \_\_\_\_\_ (1) to *Extremely* \_\_\_\_\_ (7).

<sup>b</sup> Scale value ranges from *Strongly Disagree* (1) to *Strongly Agree* (7).

**Table 5.2. Multiple Regression Model for Predicting Behavioral Intention Based on Direct Measures**

<b>Model</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Significance</b>
Regression	379.919	3	126.640	139.932	.000
Residual	209.057	231	.905		
Total	588.977	234			

<b>Standardized Coefficients</b>				
<b>Model</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>	
(Constant)		-.560	.576	
Attitude	.106	2.087	.038	
Subjective Norm	.727	14.014	.000	
Perceived Behavioral Control	.019	.461	.646	

**Table 5.3. Descriptive Summary of Belief Items (N=237)**

<b>Belief Items</b>	<b>Strength Mean<sup>a</sup></b>	<b>Evaluation Mean<sup>b</sup></b>	<b>Overall Beliefs Mean<sup>c</sup></b>
<b><i>Behavioral Beliefs</i> (<math>\alpha=.89</math>)</b>	<i>bb<sub>i</sub></i> *	<i>be<sub>i</sub></i> *	<i>bb<sub>i</sub>be<sub>i</sub></i> *
Ensure safe food	6.48	2.80	18.43
Help maintain the operations' reputation	6.46	2.68	17.66
Increase employees' awareness of food safety	6.60	2.61	17.68
Improve food safety practices of employees	6.46	2.62	17.41
Ensure better food quality	6.35	2.60	17.15
Decrease the likelihood of lawsuits	6.37	2.50	16.83
Keep my customers satisfied	6.06	2.59	16.36
Reduce food waste	5.63	2.05	12.78
Increase employee satisfaction	5.53	2.08	12.66
<b><i>Normative Beliefs</i></b>	<i>nb<sub>i</sub></i> *	<i>mc<sub>i</sub></i> *	<i>nb<sub>i</sub>mc<sub>i</sub></i> *
<b>Internal (<math>\alpha=.78</math>)</b>			
Your long-term employees	6.18	1.94	13.04
Your Vendor(s)	5.94	1.79	12.57
Your supervisor	5.16	1.93	13.24
Your short-term employees (less than 2 years)	5.45	0.75	5.85
<b>External (<math>\alpha=.74</math>)</b>			
Your Health Inspector	6.73	2.79	19.10
Your customers	6.60	2.33	15.85
<b><i>Control Beliefs</i></b>	<i>cb<sub>i</sub></i> *	<i>pp<sub>i</sub></i> *	<i>cb<sub>i</sub>pp<sub>i</sub></i> *
<b>Operational (<math>\alpha=.74</math>)</b>			
Employee scheduling availability	4.84	1.22	8.17
Managers' time	4.53	0.92	7.39
Employees don't follow what they learn from food safety training.	4.45	0.70	5.53
Time commitment for food safety training classes	4.50	0.84	6.52
Financial resources	4.03	0.33	4.99
<b>Training (<math>\alpha=.76</math>)</b>			
Lack of off-site food safety training availability	4.24	0.38	5.53
Lack of on-site food safety training availability	4.19	0.16	4.26
Lack of targeted food safety training materials.	3.54	-0.33	2.20

<sup>a</sup> Strength means were measured on a 1 to 7 scale.

<sup>a</sup> Evaluation means were measured on a -3 to 3 scale.

<sup>c</sup> Overall belief mean represents the mean of the strength of each individual item multiplied by the evaluation of that item.

\* Note: *bb* = Behavioral Beliefs, *be* = Behavioral Beliefs Evaluation, *nb* = Normative Beliefs, *mc* = Motivation to Comply, *cb* = Control Beliefs, *pp* = Perceived Power



**Table 5.4. The Regression of Behavioral Beliefs on Attitude Composite Score**

<b>Model</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Significance</b>
Regression	59.743	1	59.743	141.490	.000
Residual	96.694	229	0.422		
Total	156.437	230			

**Standardized Coefficients**

<b>Model</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>
(Constant)		30.402	.000
Behavioral Beliefs	0.618	11.895	.000

**Table 5.5. The Regression of Normative Beliefs on Subjective Norm Composite Score**

<b>Model</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Significance</b>
Regression	86.424	2	43.212	28.392	.000
Residual	347.005	228	1.522		
Total	433.429	230			

**Standardized Coefficients**

<b>Model</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>
(Constant)		21.028	.000
Internal	0.358	5.224	.000
External	0.141	2.060	.041

## **CHAPTER 6 - SUMMARY AND CONCLUSIONS**

In the final chapter, the major findings of this research are summarized in the context of the research objectives stated in Chapter 1. In addition, several implications for industry professionals and researchers are discussed. Additionally, limitations and future research suggestions are presented.

### **SUMMARY & FINDINGS**

Previous research has found that food safety training is effective in increasing employees' knowledge and attitudes about the importance of food safety (Cotterchio, Gunn, Coffill, Tormey, & Barry, 1998; Kneller & Bierma, 1990). Cochran-Yantis et al. (1996) found that food safety education programs are critical to assure the success of food safety within the operation. Giampaoli, Sneed, Cluskey, and Koenig (2002) indicated that many managers did not have food safety programs in place, even though the same managers perceived food safety training to be an important issue. Recent research shows that managers are reluctant to provide employees the opportunity to participate in food safety training as noted in the study by Roberts, et al. (2008). In their study, free food safety training was offered to all production employees in a foodservice operation, in exchange for participation in a food safety study. Less than 2% of the restaurants contacted agreed to participate in the training. Despite the important role of food safety training in proper food safety practices no research has been conducted to determine restaurant managers' attitude, subjective norm, or perceptions of control about food safety training.

This study and the instrument used were based on the Theory of Planned Behavior (TpB) (Ajzen, 1985, 1991) and designed to assess attitude, perceived behavioral control, and subjective

norms, and restaurant managers' beliefs about providing food safety training to restaurant employees. The TpB states that the best predictor of a person's behavior is his or her intention to perform the behavior. Behavior intention is based on the three separate antecedents: attitude, subjective norm, and perceived behavioral control. Attitude is indicated a persons appraisal of the behavior (Ajzen, 1991). Subjective norm represents the perception that those who are important to the person think he/she should or should not perform the behavior (Ajzen & Fishbein, 1980). Perceived behavioral control represents one's ability to perform a behavior or barriers which would prevent one from performing a behavior which they would otherwise do (Ajzen & Fishbein, 1977, 1980).

The TpB has been utilized in a variety of fields and is useful in predicting human behavior. For example, it has been used to develop interventions to assist people in quitting smoking (Black & Babrow, 1991), predict mothers' intention to limit the frequency of sugar intake among infants (Beale & Manstead, 1991), explore attitudes and beliefs on speeding while driving (Parker, Stradling, & Manstead, 1996), understand physicians' intention to wear gloves (Godin, Naccache, & Fortin, 1998), explore teachers' intentions to teach physically active physical education classes (Martin, Kulinna, Eklund, & Reed, 2001), and to predict and develop interventions to increase condom use (Williams, Bowen, Timpson, Ross, & Atkinson, 2006).

The purpose of this study was to use the Theory of Planned behavior, to test a model that examine the relationships among restaurant managers' attitude, subjective norm, and perceived behavioral control that cause them to support or not support food safety training for their employees. Other objectives included investigating what affects restaurant managers' willingness to support food safety training for their employees and explain those differences by comparing manager food safety certification status and restaurant ownership structure.

Researchers and educators can then develop intervention programs that will help managers implement more frequent training for their employees once these antecedents are determined. Ultimately, this should lead to greater knowledge of food safety among employees and will improve the safety of food served to the public.

A primary requirement of this study was the development of a research instrument that would accurately measure each construct. The questionnaire was developed based on the Theory of Planned Behavior (TpB) (Ajzen, 1985). In an elicitation study, focused interviews were conducted with 20 restaurant managers in a Midwestern college town. Managers were selected utilizing a convenience sample from both chain and independent operations. The elicitation study design was based on guidelines suggested by Ajzen (2002).

The elicitation study provided results that were found in other studies (Cochran-Yantis et al., 1996; Giampaoli, Sneed, Cluskey, and Koenig, 2002; Howes, McEwen, Griffith, & Harris, 1996; McElroy & Cutter, 2004), but also yielded new ideas. The results of the elicitation study found that positive behavioral beliefs included increasing employee knowledge and understanding of food safety (85%), increasing employee satisfaction (85%), and ensuring quality safe food for the customer (75). Negative behavioral beliefs included extra time (65%), costs (50%), employees not practicing what they learn on-the-job (20%), and employees who just don't care (20%).

The control beliefs that managers suggested were more time (80%), increased opportunities for in-house training (45%), and cost effective methods for training (13%). Control beliefs that made training more difficult included lack of manager's time (60%), lack of money (50%), and difficulties getting all employees together at one time (45%). Employees

(95%), customers (90%), and the health inspector (75%) were the most commonly mentioned normative beliefs.

The initial research instrument, developed based on the review of literature and the elicitation study, was tested for response rate and understandability of questions. Face validity was assured through a focus group (n=5) including three graduate students with food safety and foodservice experience and two restaurant managers. The focus group made recommendations for questionnaire wording and flow.

Two pilot studies were administered, one via telephone and another by mail to determine response rates using each methodology. Only one of the 50 operations returned the mailed questionnaire for a 2% response rate. While 19 of the 50 operations contacted via telephone completed the instrument for a 38% response rate.

The final version of the questionnaire included 85 questions that measured the components of the TpB and demographic information. The sample population for this study included 1,321 commercial foodservice operations in Kansas. A total of 266 managers responded. Due to incomplete and missing data, 237 responses were usable. The final overall response rate was 17.9%. This is comparable to the response rates for Roberts and Sneed (2003) and Cochran-Yantis, et al. (1996) who achieved a response rate with restaurant managers of 19% and 20%, respectively.

Cronbach's alpha (1951) was used to determine construct reliability among the direct measures. A threshold of .70 was used to demonstrate consistency. Results indicated that all direct measures had reliabilities that were acceptable. The reliability coefficients for behavioral beliefs, normative beliefs, perceived behavioral controls, and behavioral intention were 0.73,

0.79, 0.86, and 0.92, respectively. This indicated that the scales used in this study successfully measured the constructs of interest.

## **MAJOR FINDINGS**

Principal axis factor analysis with varimax rotation was combined with multiple linear regression to test the hypotheses. The hypotheses in this study were as follows:

- Hypothesis 1: Managers' attitudes about food safety training are not significantly associated with their behavioral intentions to train employees.
- Hypothesis 2: Managers' subjective norms about food safety training are not significantly associated with their behavioral intentions to train employees.
- Hypothesis 3: Managers' perceived behavioral controls of food safety training are not significantly associated with their behavioral intentions to train employees.
- Hypothesis 4: Behavioral beliefs about food safety training are not significantly associated with attitude toward food safety training.
- Hypothesis 5: Normative beliefs toward food safety training are not significantly associated with subjective norms about food safety training.
- Hypothesis 6: Control beliefs related to food safety training are not significantly associated with managers' perceived behavioral control.

Results of the hypotheses testing are summarized below:

*Hypothesis 1: Managers' attitudes about food safety training are not significantly associated with their behavioral intentions to train employees.*

Hypothesis one was not supported. Results indicated that managers' attitudes played an important role in predicting a manager's behavioral intention to offer food safety training to employees ( $\beta = -0.106, p \leq .038$ ). Similar results have also been found in several TpB studies (e.g., Block & Babrow, 1991; Godin, Naccache, & Fortin, 1998; Martin, Julinna, Eklund, & Reed, 2001).

*Hypothesis 2: Managers' subjective norms about food safety training are not significantly associated with their behavioral intentions to train employees.*

Hypothesis two was not supported. Results indicated that managers subjective norms played an important role in predicting a manager's behavioral intention to offer food safety training to employees ( $\beta = 0.727, p \leq .000$ ). Block and Babrow (1991), Godin, Naccache, and Fortin (1998), and Martin, Julinna, Eklund, and Reed (2001) all found that subjective norms were an important consideration in predicting behavioral intention in their studies which utilized the TpB.

*Hypothesis 3: Managers' perceived behavioral controls of food safety training are not significantly associated with their behavioral intentions to train employees.*

Hypothesis three was supported because the results did not indicate that perceived behavioral controls are significant in the prediction of behavioral intention. Martin, Kulinna, Eklund, & Reed (2001) found similar results in their TpB study and concluded when people feel in control and had the necessary knowledge, perceived behavioral control is not an important determinant in behavior.

*Hypothesis 4: Behavioral beliefs about food safety training are not significantly associated with attitude toward food safety training.*

Hypothesis four was not supported. Results indicated that managers' attitudes were predicted from the behavioral beliefs the managers have ( $F=16.714, p \leq .000$ ).

*Hypothesis 5: Normative beliefs toward food safety training are not significantly associated with subjective norms about food safety training.*

Hypothesis five was not supported. Results indicated that subjective norms are predicted by the manager's normative beliefs ( $F=11.896, p \leq .000$ ).



*Hypothesis 6: Control beliefs related to food safety training are not significantly associated with managers' perceived behavioral control.*

Hypothesis six was supported because the results did not indicate that control beliefs were a good predictor of perceived behavioral control.

### **Research Conclusions**

This research adapted a model based on the Theory of Planned Behavior and developed a research instrument that tested this model to determine foodservice managers' antecedents of behavioral intention to offer food safety training to employees. The first step was to use an elicitation study to explore managers' beliefs about employee food safety training. From the results of the elicitation study an instrument was developed which included both direct and indirect measures of attitude, subjective norms, and perceived behavioral control. Results found that reliabilities for attitude, subjective norms, perceived behavioral control, and behavioral intention were all acceptable at 0.73, 0.79, 0.86, and 0.92, respectively. Multiple regression analysis indicated that attitudes and subjective norms were significant predictors of behavioral intention, while perceived behavioral control was not significant in the overall model.

In general, restaurant managers had positive attitudes about food safety training. Specifically, they had positive beliefs that food safety training for employees would ensure safe food, increase employees' awareness of food safety, and help maintain the operations reputation with customers. However, while these were all ranked highly, it should be noted that these beliefs could be strengthened.

Restaurant managers generally considered the influence of others when deciding to offer food safety training to employees. They placed the greatest importance on the opinions of the health inspector, customers, and long term employees.

Perceived behavioral control was not significant in the overall TpB model. Control beliefs were ranked lower than normative or behavioral beliefs, but results indicated that managers perceived employee scheduling, managers' time, and time commitment for food safety training as important barriers to be addressed.

Independent samples T-tests determined the differences in the direct measures and indirect measures based on whether the restaurant was an independent or chain operation. The only significant difference within the direct measures of attitude, subjective norm, and perceived behavioral control was for perceived behavioral controls ( $t = 3.432, p = .001$ ). Chain operations had significantly lower mean scores than independent operations, indicating chain restaurant managers felt that they were less in control of offering food safety training than independent restaurant managers. For indirect measures, managers in chain operations had more positive beliefs that food safety training would improve overall food quality ( $t = -2.071, p = .039$ ) and keep customers satisfied ( $t = -2.668, p = .008$ ). Managers of chain operations felt stronger normative beliefs about their customers ( $t = -3.031, p = .003$ ) and supervisors ( $t = -6.094, p = .000$ ), indicating that managers care about what these constituents think and are more apt to perform behaviors they deem as appropriate.

Differences in direct and indirect measures were also explored based on the managers' certification status. Certified managers had stronger beliefs about subjective norms ( $t = 3.097, p = .002$ ) meaning they placed more importance on what others around them thought, and they believed that offering food safety training was not as much in their control ( $t = -2.500, p = .013$ ).

Managers who were certified had significantly higher behavioral intentions ( $t = 3.730, p = .000$ ) to train their employees than non-certified managers.

Significant differences between groups were noted in over half of the indirect behavioral beliefs. Certified managers had more positive beliefs that food safety training would ensure safe food ( $t = 2.61, p = .010$ ), increase employees awareness of food safety ( $t = 2.599, p = .011$ ), increase food quality ( $t = 2.72, p = .008$ ), decrease lawsuits ( $t = 2.044, p = .043$ ), and reduce food waste ( $t = 2.105, p = .037$ ). This supports other food safety studies which found that certified managers also perform better on health inspections than their non-certified counterparts (Cochran-Yantis, et al., 1996).

Certified managers placed greater emphasis on the beliefs of vendors ( $t = 2.522, p = .013$ ) and supervisors ( $t = 2.994, p = .003$ ), and perceived less controls about the lack of off-site training opportunities ( $t = -3.490, p = .001$ ). However, certified managers perceived stronger controls about the time commitment for food safety training ( $t = -2.557, p = .012$ ) and lack of financial resources ( $t = -2.205, p = .029$ ).

Overall, attitudes and subjective norms were the only significant predictors of behavioral intention. Therefore, if a foodservice manager has a positive attitude (they want to ensure safe food, maintain the operations reputation, and increase food safety practices of employees) and their important referents (health inspectors, customers, long term employees, supervisors) all promote food safety, they are more likely to provide food safety training for employees.

Comparisons between independent and chain operations found a few differences. Chain operators rated keeping customers satisfied as more important normative beliefs and their significant others include customers and supervisors. This may be because chain operations face greater national exposure and financial losses should a foodborne illness outbreak occur and their

success depends on the food quality and customer satisfaction not only in their restaurant, but in all of the chains' restaurants.

Certified managers had greater behavioral intention to offer food safety training to employees. This would indicate that once certified, managers may be more aware of the serious consequences that can and will result from a foodborne illness outbreak, because most certification programs, including ServSafe® emphasize this throughout the training. Therefore, these results indicate that certified managers have a greater intention of offering food safety training to employees.

The results of this study can be used by food safety professionals and sanitarians to help managers become more aware of the need for employee food safety training. The following are recommendations for food safety educators and health inspectors based on the results of this study:

- Health inspectors and food safety educators should work to schedule multiple food safety training sessions at varying times to reduce the barriers related to employee scheduling availability.
- Food safety professionals should focus on control beliefs when discussing training with managers. Specifically, employee scheduling, manager's time, and the overall time commitment are issues to be addressed.
- Health inspectors and food safety professionals should work to assure that certification for a "person-in-charge" is mandatory in their area. The results of this study found that managers who are certified in food safety have more positive beliefs about food safety training than their non-certified counterparts and greater intention to provide training to employees.

## **LIMITATIONS & FUTURE RESEARCH**

One limitation of this study was the sample is limited to commercial restaurant operations in Kansas. Results cannot be generalized to other foodservices such as school, healthcare, and university foodservice operations. Additionally, any attempt to generalize these results beyond restaurants in the state of Kansas should be considered with caution.

The low overall response rate of the study also presents another limitation, but is comparable to the results of other studies using restaurant managers as the population. Additionally, the data in this study was self-reported and as with any self-reported data, results should be taken into context.

This research did not address non-response bias. The managers who responded may be more supportive of food safety training and food safety training programs, therefore would have more positive attitudes and perceive fewer barriers to training than those managers who elected not to participate in the study.

The lack of relationship between perceived behavioral control and its indirect measure is another limitation. To better understand the relationship between the indirect measure and perceived behavioral control, further research should attempt to determine the underlying multiple constructs of belief.

Finally, this research did not explore the relationship between behavioral intention and behavior. Further research should seek to explore this relationship in an attempt to fully understand the antecedents to providing an opportunity for employees to participate in food safety training.

## REFERENCES

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11-39). New York: Springer-Verlag.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50, 179-211.
- Ajzen, I. (2002). Behavioral intentions based on the theory of planned behavior. Retrieved November 1, 2003 from the World Wide Web:  
<http://www-unix.oit.umass.edu/~aizen/pdf/tpb.intervention.pdf>
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84, 888-918.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Black D. R., & Babrow, A. S. (1991). Identification of campaign recruitment strategies for a stepped smoking cessation intervention for a college campus. *Health Education Quarterly*, 18(2), 235-247.
- Beale, D. A., & Manstead, A. S. R. (1991). Predicting mothers' intentions to limit frequency of infants' sugar intake: Testing the theory of planned behavior. *Journal of Applied Social Psychology*, 21, 409-431
- Black D. R., & Babrow, A. S. (1991). Identification of campaign recruitment strategies for a stepped smoking cessation intervention for a college campus. *Health Education Quarterly*, 18(2), 235-247.

- Cochran-Yantis, D., Belo, P., Giampaoli, J., McProud, L., Everly, V., & Gans, J. (1996). Attitudes and knowledge of food safety among Santa Clara County, California restaurant operators. *Journal of Foodservice Systems, 9*, 117-128.
- Cotterchio, M., Gunn, J., Coffill, T., Tormey, P., & Barry, M. A. (1998). Effect of a manager training program on sanitary conditions in restaurants. *Public Health Reports, 113*, 353 – 358.
- Giampaoli, J., Sneed, J., Cluskey, M., & Koenig, H. F. (2002). School foodservice directors' attitudes and perceived challenges to implementing food safety and HACCP programs. *The Journal of Child Nutrition & Management*. Retrieved June 21, 2002 from the World Wide Web: <http://www.asfsa.org/childnutrition/jcnm/02spring/giampaoli1/>
- Godin, G., Naccache, H., & Fortin, C. (1998). Understanding physicians' intention to use a simple infection control measure: Wearing gloves. *American Journal of Infection Control, 26*, 413-417.
- Howes, M., McEwen, S., Griffiths, M., & Harris, L. (1996). Food Handler certification by home study: Measuring changes in knowledge and behavior. *Dairy, Food, and Environmental Sanitation, 16*, 737-744.
- Kneller, P., & Bierma, T. (1990). Food service certification measuring the effectiveness of a state program. *Journal of Environmental Health, 52*(2), 292-294.
- Martin, J. J., Kulinna, P. H., Eklund, R. C., & Reed, B. (2001). Determinants of teachers' intentions to teach physically active physical education classes. *Journal of Teaching in Physical Educaiton, 20*, 129 – 143.

- McElroy, D. M., & Cutter, C. N. (2004). Self-report changes in food safety practices as a result of participation in a statewide food safety certification program. *Food Protection Trends, 24*,150-161.
- Parker, D., Stradling, S. G., & Manstead A. S. B. (1996). Modifying beliefs and attitudes to exceeding the speed limit: An intervention study based on the Theory of Planned Behaviour. *Journal of Applied Social Psychology, 26*(1), 1-19.
- Roberts, K. R., Howells, A. D., Shanklin, C. W., Pilling, V., & Brannon, L., (2008). Food Safety Training and Foodservice Employees' Knowledge and Behavior. *Food Protection Trends*.
- Roberts, K. R., & Sneed, P.J. (2003). An assessment of the status of prerequisite and HACCP programs in Iowa Restaurants. *Food Protection Trends, 23*(10), 808-816.
- Williams, M., Bowen, A., Timpson, S., Ross, M., & Atkinson, J. (2006). HIV prevention and male sex workers: Evaluation of brief interventions to increase condom use during paid sexual encounters. *AIDS Education and Prevention, 18*, 204-215.



## **APPENDIX A - WRITTEN PILOT TEST INSTRUMENT**

Friday, March 28, 2008

Dear Restaurant Manager:

Would you like to win an iPod or \$200 cash? We are conducting a pilot study to explore how the quality and usefulness of food safety training can be improved in Kansas and how to make food safety training more accessible to restaurateurs and employees. We would also like your feedback on the questionnaire and cover letter. By completing the enclosed questionnaire and returning it using the postage-paid return envelope you will be entered into the drawing.

Little is known about attitudes of restaurant managers toward food safety training, even though it is managers like yourself who make the decision to allow your employees to participate in training. *It should only take you 10 minutes to complete the survey.*

Your participation is voluntary, refusal to participate will involve no penalty and you may discontinue participation at any time without penalty. Individual responses will be completely anonymous. Please be assured that your responses will be confidential and all results will be reported as group data.

Your participation in this effort is essential to the study's success. We greatly appreciate your time and assistance. Should you have any questions about the study, please contact Kevin Roberts at (785) 532-2213 or Betsy Barrett at (785) 532-2208. If you have any questions about the rights of individuals in this study or about the way it is conducted, you may contact the University Research Compliance Office at (785) 532-3224. Thank you for your time and assistance.

Cordially,

Kevin R. Roberts, MS

Instructor/PhD Candidate

Betsy Barrett, PhD

Associate Professor

# *Food Safety Training in Kansas Restaurants*



**Hotel & Restaurant Management Program  
Kansas State University  
104 Justin Hall  
Manhattan, KS 66506**

**Part I: Operational Demographic Information.**

Please answer the following questions based on your operation.

1. What is the seating capacity of your restaurant (not including banquet facilities)?

\_\_\_\_\_ (Number of seats)

2. Approximately how many full-time employees work in your restaurant?

\_\_\_\_\_

3. Approximately how many part-time employees work in your restaurant?

\_\_\_\_\_

4. How would you describe your operation?

- a. Independent
- b. Chain

4a. Is this particular operation run by the parent company?

- a. Yes
- b. No

5. How would you classify your service?

- a. Quick Service (Fast Food)
- b. Quick Casual
- c. Casual Dining
- d. Fine Dining

6. The Food Code in the state of Kansas indicates that you should have at least one person per shift knowledgeable in food safety. How many total employees do you have?

\_\_\_\_\_

7. Does your restaurant have an employee whose primary responsibility is implementing and monitoring food safety in the restaurant?

- a. Yes
- b. No

8. Within the last year, did you provide employees an opportunity to attend a food safety program such as ServSafe?

- a. Yes
- b. No

7a. Was the training conducted:

- a. In-house
- b. Off-site

7a. How many employees were trained?

\_\_\_\_\_

9. What are your estimated annual costs for food safety training?

\_\_\_\_\_

**Part II: Food Safety Training Attitudes**

For each statement below, please indicate how LIKELY OR UNLIKELY the statements are for you by circling the corresponding number.

10. Offering food safety training to my employees will \_\_\_\_\_.

	Extremely Unlikely						Extremely Likely
A. keep my customers satisfied	1	2	3	4	5	6	7
B. ensure safe food	1	2	3	4	5	6	7
C. ensure better food quality	1	2	3	4	5	6	7
D. reduce food waste	1	2	3	4	5	6	7
E. increase employees' awareness of food safety	1	2	3	4	5	6	7
F. help maintain the operations' reputation	1	2	3	4	5	6	7
G. increase employee satisfaction	1	2	3	4	5	6	7
H. decrease the likelihood of lawsuits	1	2	3	4	5	6	7
I. improve food safety practices of employees	1	2	3	4	5	6	7

**11. Please indicate how GOOD OR BAD each of the following is to you in providing food safety training for your employees by circling the corresponding number.**

	Extremely Bad							Extremely Good
A. keep my customers satisfied	1	2	3	4	5	6	7	7
B. ensure safe food	1	2	3	4	5	6	7	7
C. ensure better food quality	1	2	3	4	5	6	7	7
D. reduce food waste	1	2	3	4	5	6	7	7
E. increase employees' awareness of food safety	1	2	3	4	5	6	7	7
F. help maintain the operations reputation	1	2	3	4	5	6	7	7
G. increase employee satisfaction	1	2	3	4	5	6	7	7
H. decrease the likelihood of lawsuits	1	2	3	4	5	6	7	7
I. improve food safety practices of employees	1	2	3	4	5	6	7	7

**12. Please indicate how LIKELY the following individuals are to think that you should offer food safety training to your employees by circling the corresponding number.**

	Extremely Unlikely						Extremely Likely	Not Applicable
A. Your supervisor	1	2	3	4	5	6	7	8
B. Your long-term employees	1	2	3	4	5	6	7	8
C. Your short-term employees (less than 2 years)	1	2	3	4	5	6	7	8
D. Your customers	1	2	3	4	5	6	7	8
E. The health inspector	1	2	3	4	5	6	7	8
F. Your vendor(s)	1	2	3	4	5	6	7	8

**13. Please indicate how much you CARE about what the following people think you should do by circling the corresponding number.**

	Not at all						Very Much	Not Applicable
A. Your supervisor	1	2	3	4	5	6	7	8
B. Your long-term employees	1	2	3	4	5	6	7	8
C. Your short-term employees (less than 2 years)	1	2	3	4	5	6	7	8
D. Your customers	1	2	3	4	5	6	7	8
E. The health inspector	1	2	3	4	5	6	7	8
F. Your vendor(s)	1	2	3	4	5	6	7	8

**14. The following items have been identified as potentially making it difficult to offer food safety training. Please indicate the extent to which you agree that the item makes it difficult to provide training.**

	Strongly Disagree						Strongly Agree
A. Employee scheduling availability for training	1	2	3	4	5	6	7
B. Managers' time	1	2	3	4	5	6	7
C. Financial resources	1	2	3	4	5	6	7
D. Lack of off-site food safety training opportunities	1	2	3	4	5	6	7
E. Lack of on-site food safety training opportunities	1	2	3	4	5	6	7
F. Lack of targeted food safety training materials	1	2	3	4	5	6	7
G. Employees don't follow what they learn from food safety training.	1	2	3	4	5	6	7
H. Time commitment for food safety training classes	1	2	3	4	5	6	7

**15. Please indicate how OFTEN the following AFFECTS your offering food safety training to your employees by circling the corresponding number?**

	Very Rarely						Very Frequently
A. Employee scheduling availability for training	1	2	3	4	5	6	7
B. Managers' time	1	2	3	4	5	6	7
C. Financial resources	1	2	3	4	5	6	7
D. Lack of off-Site food safety training opportunities	1	2	3	4	5	6	7
E. Lack of on-Site food safety training opportunities	1	2	3	4	5	6	7
F. Lack of targeted food safety training materials	1	2	3	4	5	6	7
G. Employees don't follow what they learn from food safety training.	1	2	3	4	5	6	7
H. Time commitment for food safety training classes	1	2	3	4	5	6	7

**16. Using the stem "Offering food safety training to my employees would be \_\_\_\_\_", please circle your response to each of the following five attitudes.**

A.	Extremely Bad	2	3	4	5	6	Extremely Good
B.	Extremely Worthless	2	3	4	5	6	Extremely Valuable
C.	Extremely Difficult	2	3	4	5	6	Extremely Easy
D.	Extremely Unpleasant	2	3	4	5	6	Extremely Pleasant
E.	Extremely Unimportant	2	3	4	5	6	Extremely Important

**17. How much do you AGREE with the following statements? Please circle the corresponding number.**

	Strongly Disagree							Strongly Agree
	1	2	3	4	5	6	7	
A. Most people who are important to me think that I should offer food safety training to my employees within the next year.	1	2	3	4	5	6	7	
B. I plan to offer food safety training to my employees within the next year.	1	2	3	4	5	6	7	
C. It is expected that I will offer food safety training to my employees within the next year.	1	2	3	4	5	6	7	
D. The people in my life whose opinions I value would approve of offering food safety training to my employees within the next year.	1	2	3	4	5	6	7	
E. It is my choice whether I offer food safety training to my employees within the next year.	1	2	3	4	5	6	7	
F. I will try to offer food safety training to my employees within the next year.	1	2	3	4	5	6	7	
G. I am able to send my employees to food safety training if I choose.	1	2	3	4	5	6	7	
H. I intend to offer food safety training opportunities to my employees within the next year.	1	2	3	4	5	6	7	

**18. What would motivate you to provide food safety training to your employees?**

---



---



---

**19. How do your employees get information about proper food safety practices?**

---



---



---

**Part III: Managers' Demographic information.**

*Please circle the correct answer to the following questions.*

**20. What is your gender?**

- a. Male
- b. Female

**25. How many years have you been employed in all types of foodservice operations?**

\_\_\_\_\_ (years)

**21. What is your age?** \_\_\_\_\_

**22. Which of the following best describes your highest educational level?**

- a. Less than high school degree
- b. High school degree/GED
- c. Some college
- d. Associate's Degree
- e. Bachelor's Degree
- f. Graduate Degree

**26. How many years have you been employed in the restaurant industry?**

\_\_\_\_\_ (years)

**23. Do you have food safety certification?**

- a. No
- b. Yes



**22a. If Yes, which one?**

- a. ServSafe®
- b. Serving it safe
- c. Other, please specify:

**27. How long have you been employed at your current position in foodservice?**

\_\_\_\_\_ (years)

**28. Which of the following organizations are you a member (you may choose more than one)?**

- a. National Restaurant Association
- b. Kansas Restaurant & Hospitality Association
- c. Local Restaurant Association
- d. Other trade or professional association. Please specify: \_\_\_\_\_

**24. What is your job title?**

\_\_\_\_\_

**29. Do you have any other comments about food safety training that you would like to provide?**

---

---

---



**Part IV: Survey and Content Clarity**  
*Please provide any insight you have concerning the content or clarity of the questions asked.*

**30. Did any of the questions have content you did not understand?**

- a. No
- b. Yes: Please specify: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**31. Were any of the questions unclear to you?**

- a. No
- b. Yes: How would you improve the question: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**32. Was any part of this survey not applicable to your operation(s)?**

- a. No
- b. Yes: Please specify: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**33. Any suggestions on how we could improve this survey before administering it to other restaurant managers?**

- a. No
- b. Yes: Please specify: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Thank you for your time!!**

**Would you like a copy of the results?**

- Yes, please send me a copy  No, thank you

**Would you like to be entered into a drawing for a free iPod Nano or \$200 cash?**

- Yes, please provide your full name: \_\_\_\_\_  No, thank you

## REMINDER POSTCARD

### **\*\*Reminder\*\***

A week ago, you received a questionnaire entitled “Food Safety Training in Kansas Restaurants.” If you have already completed and returned the questionnaire to us, please accept our sincere thanks. If not, please do so today. Your response is critical to the success of the study. It is only in asking restaurant managers for their perceptions that we can change food safety training to make it more accessible to restaurant managers and employees across Kansas and the U.S.

Cordially,

**Kevin R. Roberts, Instructor**

Kansas State University

Department of Hotel, Restaurant, Institution Management and Dietetics

**Betsy Barrett, Assoc. Professor**

Kansas State University

Department of Hotel, Restaurant, Institution Management and Dietetics

**APPENDIX B - ADVANCE LETTER, TELEPHONE PILOT TEST  
INSTRUMENT & CALL TRACKING FORM**

Dear Restaurant Manager:

**Would you like to win an iPod or \$200 cash?** Within the next ten days, someone from Kansas State University will call you to request your participation in a pilot test for a statewide study. If you choose to participate, you will be entered into the drawing. The purpose of this study is to explore how the quality and usefulness of food safety training can be improved in Kansas.

We are writing in advance to introduce you to our study and alert you that we will be calling to request your participation. We know how busy you are, but to ensure the success of the study, we would appreciate your assistance.

When our interviewer calls, she (or he) will ask to speak to the manager of the restaurant. ***The interview will take approximately ten minutes.*** Having managed restaurants, we understand that certain times are busier than others. Thus, the interviewer will not call during peak service times. Your participation is voluntary, refusal to participate will involve no penalty and you may discontinue participation at any time without penalty. Individual responses will be completely anonymous. Please be assured that your responses will be confidential and all data will be reported as group data. **Should we happen to call at an inconvenient time, please tell the interviewer and they will be happy to call back at another time.**

Your participation in this effort is essential to the study's success. ***To thank you for your participation, you will be entered into a drawing for an iPod Nano or \$200 cash upon completion of the survey.*** We greatly appreciate your time and assistance. Should you have any questions about the study, please contact Kevin Roberts at (785) 532-2213 or Betsy Barrett at (785) 532-2208. If you have any questions about the rights of individuals in this study or about the way it is conducted, you may contact the University Research Compliance Office at (785) 532-3224. Thank you for your time and assistance.

Cordially,

Kevin R. Roberts, MS	Betsy Barrett, PhD
Instructor/PhD Candidate	Associate Professor

USING THE THEORY OF PLANNED BEHAVIOR TO  
EXPLORE RESTAURANT MANAGERS SUPPORT FOR  
EMPLOYEE FOOD SAFETY TRAINING

Survey Description

USING THE THEORY OF PLANNED BEHAVIOR TO EXPLORE RESTAURANT MANAGERS SUPPORT FOR EMPLOYEE FOOD SAFETY TRAINING

Opening Instructions

USING THE THEORY OF PLANNED BEHAVIOR TO EXPLORE RESTAURANT MANAGERS SUPPORT FOR EMPLOYEE FOOD SAFETY TRAINING

Page 1

First, I am going to ask you some questions about your operation.

Question 1

What is the seating capacity of your restaurant, not including any banquet facilities?

Characters Remaining: 5

Question 2

Approximately how many full-time employees work in your restaurant?

Characters Remaining: 5

Question 3

Approximately how many part-time employees work in your restaurant?

Characters Remaining: 5

Question 4

How would you describe your operation?

Independent

Chain

Question 5

If a chain, Is this particular operation run by the parent company?

Yes

No

Question 6

How would you classify your service?

DATA COLLECTORS DO NOT READ - BUT FOR YOUR INFORMATION:

**Quick Service (fast food).** Designed to provide a limited number of food items to a customer in a relatively short period of time. Often the customer orders and receives food at a counter and pays before eating. (Examples: McDonalds, Burger King, Chipotle)

**Quick Casual.** Designed to provide a limited number of food items to a customer in a relatively short period of time. Often the customer orders and pays before eating, but will be served their order at the table. (Examples: Culvers, McAlister's)

**Casual Dining.** Are designed to attract middle-income individuals who enjoy dining, but do not want the formal atmosphere and high prices found in fine dining. The atmosphere is casual, the mood relaxed, and the prices midrange. (Examples: Olive Garden, Red lobster, Applebee's, Chili's)

**Fine Dining:** Characterized by a high level of attentive table service, expensive looking furnishing and décor, and fine cuisine. Prices paid often exceed \$100 per person. (Examples: Harry's Uptown, Charlie Trotters)

- Quick Service
- Quick Casual
- Casual Dining
- Fine Dining

#### Question 7

---

As you know, the Food Code in the state of Kansas indicates that you should have at least one person per shift knowledgeable in food safety. How many total employees do you have?

Characters Remaining: 5

#### Question 8

---

Does your restaurant have an employee whose **PRIMARY RESPONSIBILITY** is implementing and monitoring food safety in the restaurant?

- Yes
- No

#### Question 9

---

Within the last year, did you provide employees an opportunity to attend a food safety program such as ServSafe?

- Yes
- No

#### Question 10

---

If Yes -- Where was the training conducted?

- In-House
- Off-Site

#### Question 11

---

If yes, how many employees were trained?

Characters Remaining: 10

#### Question 12

---

What do you estimate your annual costs are for food safety training?

Characters Remaining: 10

#### Question 13

---

Next, I am going to ask you several questions – all of which will be ranked on a varying 7-point scale. I will let you know the scale prior to each section, but if you need me to repeat the scale at any time, please let me know.

The following four statements are about offering food safety training to your employees. For each statement, please rate how LIKELY OR UNLIKELY the statements are for you with 1 being EXTREMELY UNLIKELY and 7 being EXTREMELY LIKELY

1 - Extremely Unlikley | 2 -- | 3 -- | 4 -- | 5 -- | 6 --

7 - Extremely likely

	1	2	3	4	5	6	7
13.1 Offering food safety training to my employees will keep my customers satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.2 Offering food safety training to my employees will ensure safe food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.3 Offering food safety training to my employees will ensure better food quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.4 Offering food safety training to my employees will reduce food waste.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.5 Offering food safety training to my employees will increase employees' awareness of food safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.6 Offering food safety training to my employees will help maintain the operations' reputation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.7 Offering food safety training to my employees will increase employee satisfaction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.8 Offering food safety training to my employees will decrease the likelihood of lawsuits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.9 Offering food safety training to my employees will improve food safety practices of employees.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 14**

Next, please indicate how GOOD OR BAD each of the following is to you in providing food safety training for your employees, with 1 being EXTREMELY BAD and 7 being EXTREMELY GOOD

1 - EXTREMELY BAD | 2 -- | 3 -- | 4 -- | 5 -- | 6 --

7 - EXTREMELY GOOD

	1	2	3	4	5	6	7
14.1 Keeping your customers satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.2 Ensuring safe food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.3 Ensuring better food quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.4 Reducing food waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.5 Increasing employee's awareness of food safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.6 Helping maintain the operations' reputation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.7 Increasing employee satisfaction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.8 Decreasing the likelihood of lawsuits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.9 Improving food safety practices of employees.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 15**

Great! Next I am going to ask you to think about the following individuals and how **LIKELY** they are to think that you should offer food safety training to your employees, with 1 being extremely unlikely and 7 being extremely likely.

**Please note: only use NOT APPLICABLE (Number 8) choice if it does not relate to their operation.**

1 - Extremely Unlikely | 2 -- | 3 -- | 4 -- | 5 -- | 6 --  
7 - Extremely Likely | 8 - Not Applicable

	1	2	3	4	5	6	7	8
15.1 Your supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.2 Your long-term employees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.3 Your short-term employees (less than 2 years)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.4 Your customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.5 Your Health Inspector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.6 Your vendor(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 16**

Now, I am interested in your thoughts about how much you **CARE** what the following people think you should do, please rank on a 7 point scale with 1 being that you don't care what they think and 7 being that you very much care what they think.

**Please note: only use NOT APPLICABLE (Number 8) choice if it does not relate to their operation.**

1 - Not at all | 2 -- | 3 -- | 4 -- | 5 -- | 6 --  
7 - Very Much | 8 - Not Applicable

	1	2	3	4	5	6	7	8
16.1 Your supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.2 Your long-term employees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.3 Your short-term employees (less than 2 years)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.4 Your customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.5 The health inspector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.6 Your vendor(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 17**

The following items have been identified as potentially making it difficult to offer food safety training. Please indicate the extent to which you **AGREE** that the item makes food safety training difficult. Please rank on a 7 point scale with 1 being strongly disagree and 7 being that you strongly agree.

1 - Strongly Disagree | 2 -- | 3 -- | 4 -- | 5 -- | 6 --  
7 - Strongly Agree

	1	2	3	4	5	6	7
17.1 Employee scheduling availability for training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.2 Managers' time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.3 Financial resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.4 Lack of off-site food safety training availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



17.5 Lack of on-site food safety training availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.6 Lack of targeted food safety training materials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.7 Employees don't follow what they learn from food safety training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.8 Time commitment for food safety training classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 18**

Please indicate how **OFTEN** not having enough of the following **AFFECTS** your offering food safety training to your employees? Please rank on a 7 point scale with 1 being it affects you very rarely and 7 being that it affects you very frequently.

1 - Very Rarely | 2 -- | 3 -- | 4 -- | 5 -- | 6 --  
7 - Very FREQUENTLY

	1	2	3	4	5	6	7
18.1 Employee scheduling availability for training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.2 Managers' time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.3 Financial resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.4 Lack of off-site food safety training availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.5 Lack of on-site food safety training availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.6 Lack of targeted food safety training materials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.7 Employees don't follow what they learn from food safety training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.8 Time commitment for food safety training classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 19**

Good, now we are almost complete, I need to get your opinion about offering food safety training to your employees within the next year, overall would you say it is...

1 - Extremely | 2 -- | 3 -- | 4 -- | 5 -- | 6 --  
7 - Extremely

	1	2	3	4	5	6	7
19.1 Extremely Bad/Extremely Good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.2 Extremely Worthless/Extremely Valuable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.3 Extremely Difficult/Extremely Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.4 Extremely Unpleasant/Extremely Pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.5 Extremely Unimportant/Extremely Important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 20**

Next, I need you to respond to these questions on the strongly disagree/strongly agree scale that we used before, with one being strongly disagree and 7 being strongly agree.

1 - Strongly disagree | 2 - Disagree | 3 - Slightly disagree

4 - Neutral | 5 - Slightly Agree | 6 - Agree | 7 - Strongly Agree

	1	2	3	4	5	6	7
20.1 Most people who are important to me think that I should offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.2 I plan to offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.3 It is expected that I will offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.4 The people in my life whose opinions I value would approve of offering food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.5 It is my choice whether I offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.6 I will try to offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.7 I am able to send my employees to food safety training if I choose.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.8 I plan to offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 21**

Now, I just have a few demographic questions to finish with....

19. What would motivate you to provide food safety training to your employees?



Characters Remaining: 200

**Question 22**

How do your employees get information about proper food safety practices?



Characters Remaining: 200

**Question 23**

What is your gender? YOU DO NOT NEED TO ASK THIS QUESTION IF IT IS OBVIOUS - JUST MARK IT AND GO ON!

- Male
- Female

**Question 24**

What is your age?

Characters Remaining: 3

**Question 25**

Which of the following best describes your highest educational level?

- Less than High School Degree
- High School Degree/GED
- Some College
- Associate's Degree
- Bachelor's Degree

Graduate Degree

---

**Question 26**

Do you have food safety certification?

Yes

No

---

**Question 27**

If Yes, which one?

ServSafe

Serving-it-safe

Other: |

---

**Question 28**

What is your job title?

Characters Remaining: 50

---

**Question 29**

25. How many years have you been employed in all types of foodservice operations?

Characters Remaining: 10

---

**Question 30**

How many years have you been employed in the restaurant industry?

Characters Remaining: 10

---

**Question 31**

How long have you been employed at your current position in foodservice?

Characters Remaining: 10

---

**Question 32**

Are you a member of any of the following organizations?

National Restaurant Association

Kansas Restaurant & Hospitality Association

Local Restaurant Association

Other: |

---

**Question 33**

Do you have any other comments about food safety training that you would like to provide?

Characters Remaining: 200

---

**Question 34**

Alright, now I am going to ask you some questions about the survey itself...

Did any of the questions have content you did not understand?

- No
- Yes, please specify

Further comments about your response:

---

**Question 35**

Were any of the questions unclear to you?

- No
- Yes, please specify

Further comments about your response:

---

**Question 36**

Was any part of this survey not applicable to your operation(s)?

- No
- Yes, please specify

Further comments about your response:

---

**Question 37**

Do you have any suggestions on how we could improve this survey prior to administering it to other restaurant managers?

- Yes
- No
- Other: |

---

**Question 38**

Would you like a copy of the results?

- No
- Yes - please get address and type in the space below

Further comments about your response:

---

**Question 39**

Would you like to be entered into a drawing for a the free iPod nano or \$200 cash?

No

Yes (be sure to include their name and address if you did not get it in the question above)

Further comments about your response:



---

### Closing Message

Great!! Thank you for your time.

Thanks again and have a nice day.

- End of Survey -

© 2008 Axio Learning. All Rights Reserved.

Hello. This is <<*Interviewer's name*>> from Kansas State University. May I please speak to the manager?

- Hi <<*Insert Manager's name if known*>> I am calling from the Hotel and Restaurant Management Program at K-State.
- IF UNSURE, *verify that they are a foodservice establishment* (50% or more of sales from food)
- We are conducting a study to assess the needs for food safety education in Kansas Restaurants. **By completing the survey, you will be entered into a drawing for either a free IPOD or \$200 cash.**
- You should have received a letter about this within the last week or so.
- Can I have about 10 minutes of your time?
- If no, when can I call you back later today? **{SCHEDULE A SPECIFIC CALL BACK TIME!}**

Date	Time	Interviewer	Result								
			(See abbreviations)								
			NA	UNA	WR	REF	NF	IC	PC	WN	DISC
			Notes:								
			NA	UNA	WR	REF	NF	IC	PC	WN	DISC
			Notes:								
			NA	UNA	WR	REF	NF	IC	PC	WN	DISC
			Notes:								
			NA	UNA	WR	REF	NF	IC	PC	WN	DISC
			Notes:								

**Abbreviations:**

NA = No Answer

UNA = Unavailable

WR = Will return (When, who is being called back – NAME!?!?)

REF = Refused (when, why, at what point)

NF = Not a foodservice establishment

IC = Interview Completed

PC = Partially Completed

WN = Wrong Number

**APPENDIX C - FINAL INSTRUMENT & CALL TRACKING FORM**



Department of Hotel,  
Restaurant, Institution  
Management and Dietetics  
104 Justin Hall  
Manhattan, KS 66506-1404  
785-532-5521  
Fax: 785-532-5522

Dear Restaurant Manager:

**Would you like to win an iPod or \$200 cash?** Within the next ten days, someone from Kansas State University will call you to request your participation in a statewide study. If you choose to participate, you will be entered into the drawing. The purpose of this study is to explore how the quality and usefulness of food safety training can be improved in Kansas.

We are writing in advance to introduce you to our study and alert you that we will be calling to request your participation. We know how busy you are, but to ensure the success of the study, we would appreciate your assistance.

When our interviewer calls, she (or he) will ask to speak to the manager of the restaurant. ***The interview will take approximately ten minutes.*** Having managed restaurants, we understand that certain times are busier than others. Thus, the interviewer will not call during peak service times. Your participation is voluntary, refusal to participate will involve no penalty and you may discontinue participation at any time without penalty. Individual responses will be completely anonymous. Please be assured that your responses will be confidential and all data will be reported as group data. **Should we happen to call at an inconvenient time, please tell the interviewer and they will be happy to call back at another time.**

Your participation in this effort is essential to the study's success. ***To thank you for your participation, you will be entered into a drawing for an iPod Nano or \$200 cash upon completion of the survey.*** We greatly appreciate your time and assistance. Should you have any questions about the study, please contact Kevin Roberts at (785) 532-2213 or Betsy Barrett at (785) 532-2208. If you have any questions about the rights of individuals in this study or about the way it is conducted, you may contact the University Research Compliance Office at (785) 532-3224. Thank you for your time and assistance.

Cordially,

Kevin R. Roberts, MS	Betsy Barrett, PhD
Instructor/PhD Candidate	Associate Professor



**USING THE THEORY OF PLANNED BEHAVIOR TO  
EXPLORE RESTAURANT MANAGERS SUPPORT FOR  
EMPLOYEE FOOD SAFETY TRAINING**

**Survey Description**

USING THE THEORY OF PLANNED BEHAVIOR TO EXPLORE RESTAURANT MANAGERS SUPPORT FOR EMPLOYEE FOOD SAFETY TRAINING

**Opening Instructions**

USING THE THEORY OF PLANNED BEHAVIOR TO EXPLORE RESTAURANT MANAGERS SUPPORT FOR EMPLOYEE FOOD SAFETY TRAINING

**Page 1**

**Don't FORGET TO TELL THEM ABOUT THE DRAWING FOR A FREE IPOD or \$200 that they will be entered into if they complete the survey!!**

First, I am going to ask you some questions about your operation.

**Question 1**

What is the seating capacity of your restaurant, not including any banquet facilities?

Characters Remaining: 5

**Question 2**

Approximately how many full-time employees work in your restaurant?

Characters Remaining: 5

**Question 3**

Approximately how many part-time employees work in your restaurant?

Characters Remaining: 5

**Question 4**

How would you describe your operation?

Independent

Chain

**Question 5**

If a chain, is this particular operation run by the parent company?

Yes

No

**Question 6**

How would you classify your service?

**DATA COLLECTORS DO NOT READ - BUT FOR YOUR INFORMATION:**

**Quick Service (fast food).** Designed to provide a limited number of food items to a customer in a relatively short period of time. Often the customer orders and receives food at a counter and pays before eating. (Examples: McDonalds, Burger King, Chipotle)

**Quick Casual.** Designed to provide a limited number of food items to a customer in a relatively short period of time. Often the customer orders and pays before eating, but will be served their order at the table. (Examples: Culvers, McAlisters)

**Casual Dining.** Are designed to attract middle-income individuals who enjoy dining, but do not want the formal atmosphere and high prices found in fine dining. The atmosphere is casual, the mood relaxed, and the prices midrange. (Examples: Olive Garden, Red lobster, Applebee's, Chili's)

**Fine Dining:** Characterized by a high level of attentive table service, expensive looking furnishing and décor, and fine cuisine. Prices paid often exceed \$100 per person. (Examples: Harry's Uptown, Charlie Trotters)

- Quick Service
- Quick Casual
- Casual Dining
- Fine Dining

**Question 7**

---

As you know, the Food Code in the state of Kansas indicates that you should have at least one person per shift knowledgeable in food safety. How many total employees do you have?

Characters Remaining: 5

**Question 8**

---

Does your restaurant have an employee whose **PRIMARY RESPONSIBILITY** is implementing and monitoring food safety in the restaurant?

- Yes
- No

**Question 9**

---

Within the last year, did you provide employees an opportunity to attend a food safety program such as ServSafe?

- Yes
- No

**Question 10**

---

If Yes -- Where was the training conducted?

- In-House
- Off-Site

**Question 11**

---

If yes, how many employees were trained?

Characters Remaining: 10

**Question 12**

---

What do you estimate your annual costs are for food safety training?

Characters Remaining: 10

**Question 13**

---

Next, I am going to ask you several questions – all of which will be ranked on a varying 7-point scale. I will let you know the scale prior to each section, but if you need me to repeat the scale at any time, please let me know.

The following four statements are about offering food safety training to your employees. For each statement, please rate how LIKELY OR UNLIKELY the statements are for you with 1 being EXTREMELY UNLIKELY and 7 being EXTREMELY LIKELY

1 - Extremely Unlikely | 2 -- | 3 -- | 4 -- | 5 -- | 6 --  
7 - Extremely likely

	1	2	3	4	5	6	7
13.1 Offering food safety training to my employees will keep my customers satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.2 Offering food safety training to my employees will ensure safe food.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.3 Offering food safety training to my employees will ensure better food quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.4 Offering food safety training to my employees will reduce food waste.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.5 Offering food safety training to my employees will increase employees' awareness of food safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.6 Offering food safety training to my employees will help maintain the operations' reputation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.7 Offering food safety training to my employees will increase employee satisfaction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.8 Offering food safety training to my employees will decrease the likelihood of lawsuits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.9 Offering food safety training to my employees will improve food safety practices of employees.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### Question 14

Next, please indicate how GOOD OR BAD each of the following is to you in providing food safety training for your employees, with 1 being EXTREMELY BAD and 7 being EXTREMELY GOOD

1 - EXTREMELY BAD | 2 -- | 3 -- | 4 -- | 5 -- | 6 --  
7 - EXTREMELY GOOD

	1	2	3	4	5	6	7
14.1 Keeping your customers satisfied	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.2 Ensuring safe food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.3 Ensuring better food quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.4 Reducing food waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.5 Increasing employee's awareness of food safety.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.6 Helping maintain the operations' reputation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.7 Increasing employee satisfaction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.8 Decreasing the likelihood of lawsuits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.9 Improving food safety practices of employees.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### Question 15

Great! Next I am going to ask you to think about the following individuals and how **LIKELY** they are to think that you should offer food safety training to your employees, with 1 being extremely unlikely and 7 being extremely likely.



17.4 Lack of off-site food safety training availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.5 Lack of on-site food safety training availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.6 Lack of targeted food safety training materials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.7 Employees don't follow what they learn from food safety training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.8 Time commitment for food safety training classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 18**

Please indicate how **OFTEN** not having enough of the following **AFFECTS** your offering food safety training to your employees? Please rank on a 7 point scale with 1 being it affects you very rarely and 7 being that it affects you very frequently.

1 - Very Rarely | 2 - | 3 - | 4 - | 5 - | 6 -

7 - Very FREQUENTLY

	1	2	3	4	5	6	7
18.1 Employee scheduling availability for training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.2 Managers' time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.3 Financial resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.4 Lack of off-site food safety training availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.5 Lack of on-site food safety training availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.6 Lack of targeted food safety training materials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.7 Employees don't follow what they learn from food safety training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.8 Time commitment for food safety training classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 19**

Good, now we are almost complete, I need to get your opinion about offering food safety training to your employees within the next year, overall would you say it is...

1 - Extremely | 2 - | 3 - | 4 - | 5 - | 6 -

7 - Extremely

	1	2	3	4	5	6	7
19.1 Extremely Bad/Extremely Good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.2 Extremely Worthless/Extremely Valuable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.3 Extremely Difficult/Extremely Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.4 Extremely Unpleasant/Extremely Pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.5 Extremely Unimportant/Extremely Important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 20**

Next, I need you to respond to these questions on the strongly disagree/strongly agree scale that we used before, with one being strongly disagree and 7 being strongly agree.

1 - Strongly disagree | 2 - Disagree | 3 - Slightly disagree  
 4 - Neutral | 5 - Slightly Agree | 6 - Agree | 7 - Strongly Agree

	1	2	3	4	5	6	7
20.1 Most people who are important to me think that I should offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.2 I plan to offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.3 It is expected that I will offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.4 The people in my life whose opinions I value would approve of offering food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.5 It is my choice whether I offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.6 I will try to offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.7 I am able to send my employees to food safety training if I choose.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.8 I intend to offer food safety training to my employees within the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Question 21**

Now, I just have a few demographic questions to finish with....

19. What would motivate you to provide food safety training to your employees?



Characters Remaining: 200

**Question 22**

How do your employees get information about proper food safety practices?



Characters Remaining: 200

**Question 23**

What is your gender? YOU DO NOT NEED TO ASK THIS QUESTION IF IT IS OBVIOUS - JUST MARK IT AND GO ON!

- Male
- Female

**Question 24**

What is your age?

Characters Remaining: 3

**Question 25**

Which of the following best describes your highest educational level?

- Less than High School Degree
- High School Degree/GED
- Some College
- Associate's Degree

- Bachelor's Degree
- Graduate Degree

**Question 26**

---

Do you have food safety certification?

- Yes
- No

**Question 27**

---

If Yes, which one?

- ServSafe
- Serving-it-safe
- Other: |

**Question 28**

---

What is your job title?

Characters Remaining: 50

**Question 29**

---

25. How many years have you been employed in all types of foodservice operations?

Characters Remaining: 10

**Question 30**

---

How many years have you been employed in the restaurant industry?

Characters Remaining: 10

**Question 31**

---

How long have you been employed at your current position in foodservice?

Characters Remaining: 10

**Question 32**

---

Are you a member of any of the following organizations?

- National Restaurant Association
- Kansas Restaurant & Hospitality Association
- Local Restaurant Association
- Other: |

**Question 33**

---

Would you like a copy of the results?

- No
- Yes - please get address and type in the space below

Further comments about your response:

\_\_\_\_\_

#### Question 34

---

Would you like to be entered into a drawing for a the free iPod nano or \$200 cash?

No

Yes (be sure to include their name and adress if you did not get it in the question above)

Further comments about your response:



---

#### Closing Message

Great!! Thank you for your time.

Thanks again and have a nice day.

- End of Survey -

© 2007 Axio Learning. All Rights Reserved.



Hello. This is <<*Interviewer's name*>> from Kansas State University. May I please speak to the manager?

- Hi <<*Insert Manager's name if known*>> I am calling from the Hotel and Restaurant Management Program at K-State.
- IF UNSURE, *verify that they are a foodservice establishment* (50% or more of sales from food)
- We are conducting a study to assess the needs for food safety education in Kansas Restaurants. ***By completing the survey, you will be entered into a drawing for either a free iPod or \$200 cash.***
- You should have received a letter about this within the last week or so.
- Can I have about 10 minutes of your time?
- If no, when can I call you back later today? ***{SCHEDULE A SPECIFIC CALL BACK TIME!}***

Date	Time	Interviewer	Result									
			NA	UNA	WR	REF	NF	IC	PC	WN	DISC	
			Notes:									
			Notes:									
			Notes:									
			Notes:									
			Notes:									

**Abbreviations:**  
 NA = No Answer  
 UNA = Unavailable  
 WR = Will return (When, who is being called back – NAME!?)  
 REF = Refused (when, why, at what point)  
 NF = Not a foodservice establishment  
 IC = Interview Completed  
 PC = Partially Completed  
 WN = Wrong Number

## **APPENDIX D - IRB APPROVAL**



University Research  
Compliance Office  
203 Fairchild Hall  
Lower Mezzanine  
Manhattan, KS 66506-1103  
785-532-3224  
Fax: 785-532-3278  
<http://www.ksu.edu/research/comply>

TO: Kevin Roberts  
HRIMD  
104 Justin Hall

Proposal Number: 4315

FROM: Rick Scheidt, Chair  
Committee on Research Involving Human Subjects

DATE: May 14, 2007

RE: Proposal Entitled, "Improving the participation of restaurant managers in food safety training"

The Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is exempt from further review.

This exemption applies only to the proposal currently on file with the IRB. Any change affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Exemption from review does not release the investigator from statutory responsibility for obtaining the informed consent of subjects or their authorized representatives, as appropriate, either orally or in writing, prior to involving the subjects in research. The general requirements for informed consent and for its documentation are set forth in the Federal Policy for the Protection of Human Subjects, 45 CFR 46.116-117, copies of which are available in the University Research Compliance Office and online at <http://ohrp.osophs.dhhs.gov/humansubjects/guidance/45cfr46.htm#46.116>. In cases of remote oral data collection, as in telephone interviews, oral consent is sufficient and the researcher is required to provide the respondent with a copy of the consent statement only if the respondent requests one. The researcher must, however, ask the respondent whether he or she wishes to have a copy. The initiative in requesting a copy must not be left to the respondent. Regardless of whether the informed consent is written or oral, the investigator must keep a written record of the informed consent statement, not merely of the fact that it was presented, and must save this documentation for 3 years after completing the research.

The identification of a human subject in any publication constitutes an invasion of privacy and requires a separate informed consent.

Injuries or any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.