STORYTELLING AS A FOOD SAFETY TRAINING TOOL
IN SCHOOL FOODSERVICE

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Abstract

Understanding what motivates food handlers is important for developing effective interventions to increase compliance with food safety guidelines. Traditional food safety training techniques improve knowledge, but do not always result in improved performance in the workplace. Studies have consistently demonstrated the persuasive power of stories to influence beliefs and behavior. *Transportation into a narrative world* is a state of immersion into a story. When individuals are transported into the world of a story, they integrate story information into their real-world beliefs and behavior. In this study, foodservice employees were shown a brief video dramatizing a foodborne illness outbreak. Behavioral intent to comply with food safety guidelines was measured both before and after watching the video. Transportation into the story and story-specific beliefs were measured as well. Study results confirmed previous findings involving narrative transportation. Participants who were highly transported into the story of *Glenda's Horrible Day* reported stronger food safety behavioral intent, specifically in areas highlighted by the story, after viewing the video. Highly transported participants also reported stronger agreement with food safety messages after viewing the video. For participants who experienced low transportation into the story, there were no significant increases in behavioral intent or story-specific beliefs after viewing the video. Highly transported participants were those who (a) were familiar with the story topic, (b) were mentally engaged with the story, (c) responded emotionally to the story, and (d) identified with and felt empathy for the story characters.

Keywords: training, training transfer, food safety, storytelling, narrative transportation

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Dedication

I'd like to dedicate this thesis to my dad, William Hughes Farmer, who graduated from

Harvard University with an M.B.A. in 1958.

Chapter 1 - Introduction

"There's always room for a story that can transport people to another place."

— *J.K. Rowling*

Since ancient times, stories have been told for entertainment, education, cultural preservation, and instilling moral values (Allan, Fairtlough, & Heinzen, 2002). As humans developed forms of communication, they began to share knowledge and experiences by telling stories. Tribal leaders told stories around the community campfire about the triumphs and tragedies of their heroes, imparting life-or-death lessons that were necessary for the tribe's survival (Gruber, 2011). Stories were committed to memory and faithfully passed down to each successive generation. Given our history with storytelling, it is no wonder that stories have great power to influence how we think and act (Cullen, 2008).

Recent studies have consistently demonstrated the remarkable persuasive power of stories to influence beliefs and behavior. Green and Brock (2000) added significantly to our understanding of the persuasiveness of stories by identifying a key mechanism behind the phenomenon. The process involves the transportation of individuals into the narrative world of the story. *Transportation into a narrative world* is a state of immersion into a story, which involves attentional focus, emotional involvement, and feeling a connection with the story's characters. When individuals are transported into the world of the story, they integrate story information into their real-world beliefs and behaviors.

The inherent persuasiveness of stories make them a well-suited companion to food safety training. Food safety research has repeatedly demonstrated the need for new training approaches that improve safe food handling practices on the job. Studies on the topic concluded that traditional food safety training techniques improve knowledge, but do not always result in

improved performance in the workplace (Arendt & Sneed, 2008; Henroid & Sneed, 2004; Roberts et al., 2008).

Error-based stories, or stories about mistakes and failures, make some of the best teaching stories; they stimulate listeners' curiosity, motivating them to probe for causes and develop better solutions to problems (Kaye & Jacobson, 1999). Educating employees about the serious consequences of improper food handling may improve their attitudes toward food safety (Howells et al., 2008), and if employees are transported into a story about the serious consequences of a foodborne illness outbreak, they may be persuaded to consistently follow food safety guidelines.

Stories have been used successfully to persuade miners to follow mining safety guidelines (Cullen, 2008), medical staff members to take steps to eliminate preventable deaths in hospitals (Quaid, Thao, & Denham, 2010), and smokers to stop smoking (Williams, Green, Kohler, Allison, & Houston, 2010). There is every reason to expect similar successes in the foodservice environment.

Justification

Over 28 million children in over 101,000 schools receive meals daily through the federal school meal programs: the National School Lunch Program (NSLP), School Breakfast Program, Summer Food Service, After School Snack Program, and the Adult Care Feeding Program (United States Department of Agriculture [USDA], 2013a). Such an immense volume of food produced and served daily presents an opportunity for a large-scale foodborne illness outbreak with serious consequences. Food safety in schools is especially important because children can have a higher risk of complications from some foodborne illnesses, and a single foodborne illness outbreak can involve many children (United States General Accounting Office [GAO],

2003). Although food safety training is provided to school foodservice staff members, proper food handling practices are not always followed (Henroid & Sneed, 2004; Roberts et al., 2014).

Efforts to increase compliance with food safety guidelines have yielded mixed results. A number of studies have focused on identifying and removing barriers to handling food safely (Howells et al., 2008; Jenkins-McLean, Skilton, & Sellers, 2004; Pilling et al., 2008; Roberts, 2008; York et al., 2009). In addition, studies have focused on the importance of the supervisor in enforcing safe food handling procedures (Arendt & Sneed, 2008; Ashraf, Atwood, Bloom, Blaise, & Salazar, 2008) and educating employees through multiple methods (Roberts, Arendt, Strohbehn, Ellis, & Paez, 2012).

There is a paucity of research involving interventions involving the use of stories to influence employees' attitudes and beliefs about food safety. This study addresses this gap by testing the effectiveness of a story to increase school foodservice employees' behavioral intent to comply with food safety guidelines.

Purpose of Study

In this study, an error-based story, entitled *Glenda's Horrible Day*, was used to communicate to employees what can go wrong if proper food handling protocols are not followed. The purpose was to investigate whether storytelling, used as a training tool, would influence school foodservice employees' compliance with food safety guidelines. Educating employees about the serious consequences of improper food handling may improve their attitudes toward food safety; they may be less likely to perceive food safety practices as an inconvenience and be more inclined to practice safe food handling.

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Research Questions

The following research questions were addressed in this study:

1. To what degree will an error-based story transport employees into the story?

2. To what degree will an error-based story influence employees' food safety behavioral intentions?

3. To what degree will an error-based story influence employees' story-specific beliefs?

4. Does a positive relationship exist between the degree of transportation into the story and an intention to change behavior?

Significance of Study

This study breaks new ground in the use of storytelling as a training technique in the foodservice environment. It is also the first study to use Green and Brock's (2000) Narrative Transportation Scale to measure transportation into the story in the foodservice environment. The results of this study will provide "seed data" for Dr. Sauer and Dr. Roberts' upcoming longitudinal study on storytelling and food safety behaviors. This study has validated the usefulness of stories in influencing employee food safety behavioral intent, and provides trainers with a valuable tool to improve the effectiveness of food safety training sessions.

Limitations of Study

There are several limitations to this study:

1. *Sample Size.* The small sample size (< 100) decreased statistical power, limiting the ability to achieve statistical significance on some t-tests and ANOVA tests.

2. *Job Sector and Geographical.* The ability to generalize the results was limited, as the sample included only school foodservice employees and not foodservice employees from other environments, such as restaurants, hospitals, or long-term care dining. Further, the

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employees were located in the state of Kansas only; school foodservice employees were not recruited from other states.

3. *Self-Reported Data.* The study relied on self-reported survey data, which can potentially contain several sources of bias. Respondents may have felt pressured to give more positive answers regarding their food safety practices (social desirability bias). Direct observation is the most accurate means of measuring employees' typical food safety compliance, as long as data collected during the first hour of observation is disregarded. Although direct observation was desired in this study, limited time and resources did not permit this method of data collection.

4. *Time and Interest.* Respondents to the study may not have answered the questions accurately due to time constraints or lack of interest. This could have resulted in faulty analysis and findings.

5. *Social Desirability Bias.* Because the likelihood of social desirability bias contaminating the data was high, a creative approach was needed to mitigate the inevitable biased responses. The "Narrative Transportation Scale," designed by Green and Brock (2000) provided an additional measurement tool, which gave participants an opportunity to candidly describe their level of transportation into the story.

Definition of Terms

Behavioral intention (BI): A person's perceived likelihood that he or she will engage in a given behavior; it describes how hard a person is willing to try, and how motivated he or she is to perform the behavior (Ajzen, 1991).

Error-based examples: A training technique in which trainees hear stories about what can go wrong if the skills addressed in the training session are not applied (Carnes, 2010).

Foodborne illness: An illness caused by the ingestion of food or beverages contaminated with harmful bacteria, viruses, parasites, or chemicals (Centers for Disease Control and Prevention [CDC], 2012).

Foodborne illness outbreak: An incident in which two or more persons (from different households) experience a similar illness after ingestion of a common food or beverage (CDC, 2012).

Narrative: an account of connected events or experiences over a passage of time (Denning, 2005). An example of a personal narrative is when a friend tells us about their day.

Self-efficacy (SE): The belief an individual has about his or her ability to perform a particular task (Bandura, 1986).

Stories: Stories are narratives with plots and characters, designed to convey a message and generate emotion in the audience (Denning, 2005). Stories raise unanswered questions and unresolved conflicts; they have an identifiable beginning, middle, and end (Green & Brock, 2002).

Story-specific beliefs (SB): Beliefs that are consistent with the story characters' dialog or the events in the story. As individuals become absorbed or transported into a story, they may adopt the viewpoints put forth in the story and modify their own beliefs (Green & Brock, 2000).

Training: A planned learning experience designed to bring about a permanent change in an individual's knowledge, skills, and attitudes (Awoniyi, Griego, & Morgan, 2002).

Training transfer: The process of learners *transferring* the knowledge, skills, and attitudes gained in training sessions to their jobs (United States Office of Personnel Management [OPM], 2012).

Training Transfer Process Diagram: A diagram developed by Carnes (2010) that consolidates empirical research results from the last 20 years into a comprehensive list of inputs that have been shown to increase the likelihood that training transfer will occur.

Transportation-Imagery Model of narrative persuasion: A model developed by Green and Brock (2002) suggesting that individuals who are transported into the narrative world of a story tend to be more persuaded by the story's messages.

Transportation into a narrative world: The experience of becoming immersed in a story, which involves attentional focus, emotional involvement, and feeling a connection with the story's characters. Individuals can be transported into factual or fictional narratives in written, spoken, or visual form (Green & Brock, 2000).

Transportation Scale: A survey instrument developed by Green and Brock (2000) that measures the extent to which an individual is transported into a story. The scale measures the individual's mental and emotional engagement with the story, identification with story characters, mental imagery, and lack of awareness of their surroundings.

Chapter 2 - Review of Literature

Introduction

As with any story, it is best to start at the beginning. Because this study builds on the work of many other researchers, it is important to lay the foundation by describing their discoveries and insights. This chapter reviews related literature about key points in the study, including the school foodservice environment, training transfer, and persuasion through stories.

The literature review begins with a description of the school foodservice environment, including its administration, food safety training programs, and incidence of foodborne illness. After that, the concept of training transfer is introduced, followed by a discussion of several inputs that have been shown to increase the likelihood that training will successfully transfer to the work setting.

The remainder of the literature review brings the reader up to date on research investigating the persuasive ability of stories. Stories are a uniquely powerful form of communication. Studies have repeatedly demonstrated that our attitudes, beliefs, and behavior can be influenced by reading, viewing, or listening to stories. In fact, stories can be more effective at changing beliefs than communication that is specifically designed to persuade through argument and evidence.

The School Foodservice Environment

The Child Nutrition Program is a federally-sponsored meal program that provides nutritionally balanced, low-cost or free lunches to children in grades K-12 (USDA, 2013b). This program operates in over 101,000 public and non-profit private schools and residential care institutions, providing more than 10 million children with breakfast and 31 million children with lunch each day (USDA, 2013a). Child Nutrition Programs include the National School Lunch

Program (NSLP), School Breakfast Program, Summer Food Service Program, After School Snack Program, and the Child and Adult Care Food Program. The United States Department of Agriculture (USDA) administers the programs at the federal level, state education agencies operate them at the state level, and local school districts operate them at the local level. Schools participating in the National School Lunch Program (NSLP) must serve lunches that meet federal nutritional requirements and must offer free or reduced price lunches to eligible children (USDA, 2013b). In return, the schools receive cash subsidies and food commodities from the USDA for each meal they serve.

Food Safety in School Foodservice

Foodborne illness is a condition that can be prevented through the use of safe food handling practices. Nationally, roughly one in six Americans (or 48 million people) get sick, 128,000 are hospitalized, and 3,000 die of foodborne illness each year (CDC, 2012).

Although school meals remain some of the safest commercially prepared meals available, opportunities exist to enhance current food safety practices (Roberts et al., 2014). Food safety knowledge was found to be high and food safety attitudes were positive in school foodservice personnel; however, proper food handling practices were not always followed in many school foodservice operations (Henroid & Sneed, 2004).

Over 28 million children receive meals daily through federal school meal programs (USDA, 2012). Such an immense volume of food produced and served daily presents an opportunity for a large-scale foodborne illness outbreak with serious consequences. The USDA provides close oversight of school meal programs and takes the issue of food safety very seriously. Food safety in schools is especially important because children can have a higher risk

of complications from some foodborne illnesses (United States General Accounting Office [GAO], 2003).

According to the Centers for Disease Control and Prevention (CDC) data, 195, or about three percent, of the total of 7,390 foodborne illness outbreaks that were reported nationwide, between 1990 and 1999, occurred in schools (GAO, 2003). Unfortunately, the CDC data collection limitations made comprehensive assessment of the safety of school meal programs difficult; the form used to voluntarily report outbreaks to the CDC did not distinguish between outbreaks in schools involving school meal programs and those involving foods brought from students' homes (GAO, 2003). CDC officials noted that the outbreaks due to school-prepared meals resulted from improper food storage, inadequate cooking, poor food handler hygiene, improper hot holding and cooling of foods, and foods contaminated before delivery to the schools (GAO, 2003).

Another more recent study evaluated the incidence of foodborne illnesses in schools during the period of 2000-2004 and noted 92 outbreaks and 6,407 illnesses of confirmed etiology (Venuto, Halbrook, Hinners, Lange, & Mickelson, 2010). This study found Norovirus to be the leading cause of foodborne illness in schools. Norovirus outbreaks are typically associated with cold foods (salads, sandwiches), baked goods, and liquid foods (salad dressings). The two largest school outbreaks of Norovirus occurred in 2001 and 2004, when 329 illnesses were associated with cheesecake, and 425 illnesses were linked to a salad bar, respectively (Venuto et al., 2010).

Lee and Greig (2010) reviewed the incidence of gastrointestinal outbreaks in schools between 1998 and 2008 and found several cases where an ill employee caused a foodborne illness outbreak. At a Texas university, deli sandwiches prepared by a food handler whose infant was sick with a Norwalk-like virus sickened 125 students. Similarly, 88 students became ill with

cryptosporidiosis from food prepared by an ill cook at a Washington, D. C. university. At the conclusion of their study, researchers Lee and Greig (2010) issued strong recommendations to foodservice operations to provide paid sick leave to all of their employees to decrease the incidence of employees working while ill.

Schools that participate in federal meal programs are required to maintain proper sanitation and health standards in compliance with all applicable state and local laws and regulations (Corbett, 2013). The Child Nutrition and WIC Reauthorization Act of 2004 required all school authorities to "implement a school food safety program for meal preparation and service that complies with a hazard analysis and critical control point (HACCP) system." The legislation also increased the inspection requirement from one to two per year and required schools to post the health inspection reports in a public place. The Healthy, Hunger-Free Kids Act of 2010 included additional provisions to ensure the safety of school foods, such as improving recall procedures and providing training and technical assistance for school foodservice providers.

Food Safety Training in School Foodservice

Food safety training in schools can take the form of on-the-job coaching sessions, classes, workshops, online training programs, or nationally-recognized food safety certification programs. School districts can develop their own food safety training materials, or use existing training materials, such as *Food Safety in Schools* (National Food Service Management Institute [NFSMI], 2015) or the *ServSafe® Food Handler Program* (National Restaurant Association Education Foundation [NRAEF], 2006). Food safety training generally addresses proper procedures to safely receive, store, prepare, and serve food (NRAEF, 2006).

Responsible managers recognize the importance of assuring that their employees have the knowledge and skills they need to safely prepare food (Gregoire, 2010). A foodborne illness outbreak due to food mishandling can have devastating impacts on a foodservice establishment (NRAEF, 2006). In addition to the financial and legal burden it creates, a foodborne illness outbreak can severely damage the reputation of the establishment.

Although food safety training for food handlers is not currently a federal requirement, some states and school districts require food safety training and/or certification of school foodservice workers. According to the School Nutrition Association's (2011) *School nutrition operations report: The state of school nutrition 2011,* nearly three-quarters of school districts report that their state or local health department or district policy requires kitchen managers to be certified in food safety and sanitation; in addition, nearly 6 in 10 districts require all staff to receive food safety training (Corbett, 2013).

The Kansas State Department of Education (KSDE) mandates a minimum amount of food safety training for all Child Nutrition Program personnel:

> All personnel employed in local school foodservice operations that participate in the Child Nutrition Programs are required to receive KSDE-approved food safety training at least every five years. All new school foodservice employees must complete approved food safety training within six months of their employment date (Kansas State Department of Education, 2011).

KSDE-sponsored Child Nutrition Program food safety training sessions, including *Food Safety Basics*, *Food Service Sanitation*, and *ServSafe® Food Handler Program*, are offered to employees on a regular schedule. The classroom trainers typically utilize a number of different

training techniques, such as lectures, group discussions, hands-on activities, and video clips, to provide variety to the participants.

Training Transfer

Training is defined as a planned learning experience designed to bring about a permanent change in an individual's knowledge, skills, and attitudes (Awoniyi et al., 2002). Many organizations view effective training as an important contributor to their overall success (Combs, Liu, Hall, & Ketchen, 2006). In 2010, the American Society for Training and Development (ASTD) estimated that American organizations spent about $171.5 billion on employee training and development, or $1,228 per trainee (U.S. Office of Personnel Management [OPM], 2012).

Training transfer refers to the process of learners "transferring" the knowledge, skills, and attitudes gained in training sessions to their jobs (OPM, 2012). The effectiveness of training is not measured by how much the trainee learns, but by how much of the learning is transferred to the job and is expressed as meaningful changes in work performance and organizational improvements (Blume, Ford, Baldwin, & Huang, 2010; OPM, 2012).

Early pioneers in the area of training transfer (Baldwin & Ford, 1988) analyzed 63 empirical studies spanning the period 1907 to 1987 and identified what they called a "transfer problem." They concluded that much of the training conducted in organizations failed to transfer to the work setting. When training does not transfer, it is likely that trainees and supervisors will question the benefit of their investment in training (OPM, 2012).

In the area of food safety training, research has repeatedly shown this training transfer problem (Arendt & Sneed, 2008; Ashraf et al., 2008; Averett, Nazir, & Neuberger, 2011; Brannon, York, Roberts, Shanklin, & Howells, 2009; Henroid & Sneed, 2004; Howells et al., 2008; Jenkins-McLean et al., 2004; Pilling et al., 2008; Roberts, et al., 2008; Soares, Garcia-

Diez, Esteves, Oliveira, & Saraiva, 2013; York et al., 2009). New training approaches are needed to improve the transfer of food safety knowledge into safe food handling practices on the job.

A great deal of research has been conducted on improving training transfer in the last 20 years. Carnes (2010) has effectively summarized this large body of empirical research in her Training Transfer Process Diagram (Figure 1). Carnes' diagram offers a comprehensive list of inputs that have been shown to increase the likelihood that training will successfully transfer to the work setting. Interestingly, the inputs are cumulative; as additional inputs are added, the likelihood of improved job performance increases. Another noteworthy fact is that the training transfer process is affected not only by what happens during the actual training session, but also by what happens both before and after the training session.
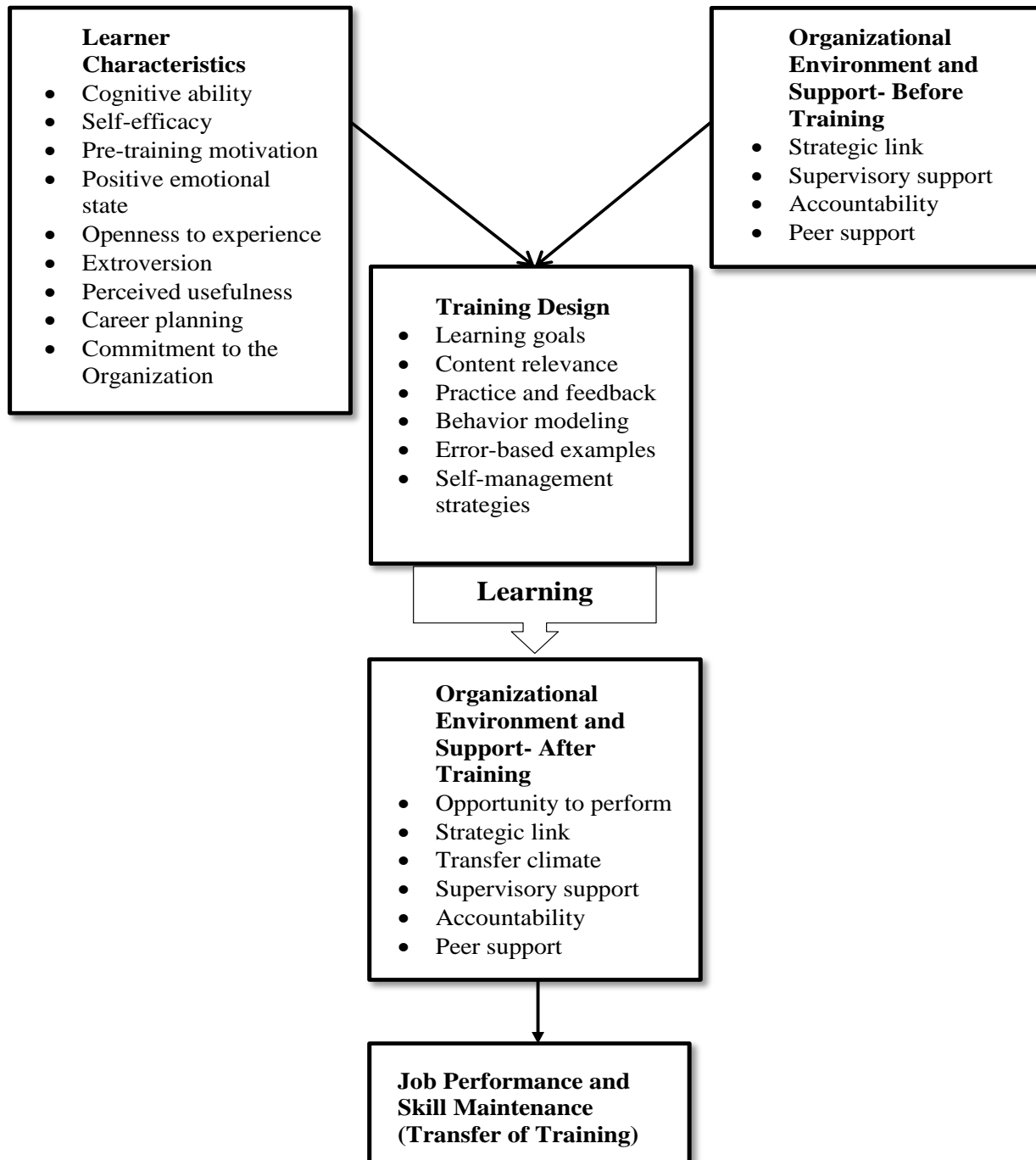
Figure 1 Training Transfer Process Diagram
From *Making Learning Stick* (p. 8), by B. Carnes, 2010, Alexandria, VA: The American Society
for Training and Development Press. Copyright [2010] by the American Society for Training and
Development and Barbara Carnes. Reprinted with permission (located in Appendix A).

It is certainly worthwhile for trainers and educators to familiarize themselves with the inputs in Carnes' diagram to achieve successful training transfer from their training efforts. Below is a brief discussion of the inputs that are most relevant to this study, organized in the three domains of: 1) learner characteristics, 2) organizational environment and support (before and after training), and 3) training design. Following the overview is a discussion of the input of interest in this study, called *error-based examples*.

Learner Characteristics

According to Burke and Hutchins (2007), each trainee comes to the training session with a unique set of qualities and characteristics that will have a profound influence on the training outcome. Carnes' (2010) diagram lists nine learner characteristics that will influence how the training is received, understood, and used: cognitive ability, self-efficacy, pre-training motivation, positive emotional state, openness to experience, extroversion, perceived usefulness, career planning, and commitment to the organization.

Studies have found that trainees who are motivated to learn the content of the training are more likely to transfer the learning (Blume et al., 2010; Carnes, 2010; Chiaburu & Marinova, 2005; Weissbein, Huang, Ford, & Schmidt, 2010). Noe (1986) sought to explain why training programs are effective for some individuals and ineffective for others. He identified and evaluated specific trainee attitudes and attributes that might influence their trainability and found motivation to be the predominant influence. He reasoned that motivation generates enthusiasm to learn new skills and then supplies the determination to use the new skills in the work setting.

Weissbein and colleagues (2010) were interested in developing an intervention to increase trainees' motivation to learn and transfer their learning. They believed that increasing trainees' confidence, or self-efficacy, would improve their motivation to learn. Prior to a class in

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negotiation skills, they showed trainees a "pep talk" video that featured actors discussing their doubts as to whether they had the necessary personality or ability to improve their negotiation skills. The actors then went on to suggest that, with effort and persistence, anyone could develop effective negotiation skills. The intervention did increase trainees' confidence, and, as a result, their motivation to learn and their willingness to engage in post-training negotiation practice sessions increased as well.

Organizational Environment and Support

The work environment has a significant impact on whether employees will use new knowledge and skills on the job (Noe, 1986). Management sets the tone of the workplace as to what the organization values. According to Rouiller and Goldstein (1993), a work environment can either encourage or inhibit the use of what has been learned in training, creating either a positive or a negative transfer climate, respectively. They describe a positive transfer climate as featuring cues to prompt trainees to use new skills and social support from peers and supervisors in the form of encouragement and feedback.

Santos and Stuart (2003) reported that employees who received encouragement from managers to improve their skills through training had a more positive view of training than those who did not receive encouragement. Employees viewed this interest and investment in their professional development as reassurance that they were valued by their employer. Employees specifically mentioned the importance of managers' involvement in discussing training needs, setting and reviewing development goals, and providing coaching and guidance. Additionally, Tai (2006) found that when managers explained to their employees what the training would cover and how the training would meet the needs of the work group, the employees viewed the

training as more important and valuable and entered the training session with a higher motivation to learn.

According to Jenkins-McLean et al. (2004), positive food handling behaviors can be encouraged by determining what employees perceive to be barriers to and benefits of safe food handling. If employers remove the barriers and enhance the benefits of safe food handling, they may make the target behaviors more attractive. A number of studies were conducted which focused on identifying and removing barriers to safe food handling (Brannon et al., 2009; Howells et al., 2008; Jenkins-McLean et al., 2004; Pilling et al., 2008; Roberts, 2008; York et al., 2009). Some of the barriers mentioned were: time constraints, forgetting, lack of working thermometers, lack of supplies or equipment, not knowing how and when to do it, and not knowing the consequences of not doing it.

Post-training supervisor follow-up was consistently mentioned in studies as having a significant impact on training transfer. Employees were more likely to use new knowledge and skills on the job if supervisors supported and reinforced the desirable behavior through: 1) giving feedback, 2) providing coaching, 3) allowing opportunities and time to practice, and 4) providing the necessary tools, equipment or supplies (Arendt & Sneed, 2008; Ashraf et al., 2008; Burke & Hutchins, 2008; Santos & Stuart, 2003).

Interactions with peers can also influence training transfer. Chiaburu and Marinova (2005) found that encouragement and support from peers resulted in higher pre-training motivation and increased likelihood of using the new skills on the job. Hawley and Barnard (2005) found that trainees who continued to network and share ideas about the training content with their peers after the training session were also more likely to continue using their new skills.

Training Design and Delivery

Training design and delivery refers to the instructor's plan for the training session, based on employee needs assessment information, organizational goals, and the methods of presenting the plan (Burke & Hutchins, 2008). Training professionals' best practice strategies for training transfer include the use of interactive activities to encourage participation, post-training evaluation of skills, and making the content relevant to the actual job (Burke & Hutchins, 2008).

Adult education principles stress the importance of involving adult learners in the learning process through the use of collaborative activities, role plays, and small group exercises (Burke & Hutchins, 2008). It is best to minimize lecturing and instead provide engaging activities and opportunities to collaborate with peers. A survey of 156 food handlers employed by a sports arena indicated that approximately 50% preferred to learn by practical hands-on experience, followed by 22% who preferred visually interesting presentations, and 20% who preferred demonstrations (Jenkins-McLean et al., 2004).

Soares and colleagues (2013) achieved positive results with their comprehensive food safety training program. Their program consisted of a lecture, demonstrations of the various food safety tasks presented in the lecture, and a post-training observational audit of the trainees in their workplace. To measure the program's effectiveness, microbiological swab samples were taken from kitchen equipment, utensils, and food handlers' hands both before and after the training. Each of the 11 campus dining facilities that participated showed a significant reduction in microbial counts, ranging from 22% to 87%. The authors attributed the success of their program to the inclusion of practical components (demonstration and observational audit) to complement the theoretical portion (lecture).

Error Based Examples

Roberts and colleagues (2008) were disappointed with the amount of training transfer they observed in restaurant food handlers who had recently attended a four-hour food safety training session. Although trainees' food safety knowledge increased, their food handling practices on the job showed little improvement. The researchers concluded that better results might be achieved if employees are instructed on not only *how* to handle food safety, but also *why* safe food handling must be practiced. If trainees are shown the negative consequences suffered by a foodservice operation due to a foodborne illness outbreak, perhaps they will be persuaded to improve their food handling practices. Similarly, Howells et al. (2008) suggested that educating employees about the serious consequences of improper food handling may improve their attitudes toward food safety; they may be less likely to perceive food safety practices as an inconvenience and be more inclined to practice safe food handling.

Smith-Jentsch, Jentsch, Payne, and Salas (1996) followed a similar line of reasoning in their study involving commercial pilots and assertiveness training. Smith-Jentsch and colleagues theorized that if the pilots heard stories describing the negative consequences of lack of assertiveness, they would be more receptive to the training material and more likely to use the skills on the job. The study results supported their prediction. Prior to the training session, groups of pilots were encouraged to share amongst themselves stories about any aviation mishaps they experienced where greater assertiveness might have helped them. Pilots who had experienced negative events, or had listened to descriptions of negative events prior to the training session, performed significantly better on the flight simulation exercise after the training. This training technique was later called *error-based examples*.

Interestingly, mistakes and failures do make some of the best teaching stories; they stimulate listeners' curiosity, motivating them to probe for causes and better approaches to problems (Kaye & Jacobson, 1999). This study used error-based examples in a video that dramatized the story about Glenda, a school foodservice director, who finds herself in the middle of a foodborne illness outbreak at her school. The training video communicated the serious consequences suffered by an operation as a result of improper food handling, with the goal of improving trainees' attitudes toward food safety and their behavioral intent to handle food safely.

Communicating through Stories

Since ancient times, stories have been told for entertainment, education, cultural preservation, and instilling moral values (Allan et al., 2002). As humans developed forms of communication, they began to share knowledge and experiences by telling stories. Tribal leaders told stories around the community campfire about the triumphs and tragedies of their heroes, imparting life-or-death lessons that were necessary for the tribe's survival (Gruber, 2011). Stories were committed to memory and faithfully passed down to each successive generation.

Stories can be told, shown, or read. They describe a series of events, contain plots and characters, and are designed to convey a message and generate emotion in the audience (Denning, 2005). Storytelling is an activity that we practice throughout our lives. One has only to watch what happens when we are in a social setting, such as a meeting, lunch break, or party, to see that all human beings know how to tell a story (Denning, 2005).

There are many reasons why stories are a preferred form of communication. To begin with, the human brain finds stories user-friendly (Allan et al., 2002). When information is presented in the form of a story, abstract ideas can be converted into more concrete concepts that we can see, touch, hear, and feel. For instance, Aesop's Fables uses stories about animals to

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illustrate abstract concepts such as perseverance, generosity, and friendship. Another advantage

is that the human brain is better able to remember information when it is presented in a story

(Allan et al., 2002). Stories encourage the listener to construct images, sounds, and emotions, co-

creating the story with the storyteller, and this process leads to memory formation (Parkin,

2009).

Finally, stories help link new learning with what is already known. Human brains

naturally strive to make meaning and connections, so when we hear a story, we identify with the

characters and storylines and try to link them with our own experiences (Lickorish, 2009). This

active process of "putting ourselves in the character's shoes" can lead us to new insights and

perspectives. As Lickorish (2009) explains, "listening to a story takes pressure off conscious

thinking, evoking a learning state of relaxed curiosity - ideal for opening the unconscious mind

to the messages contained within the story."

The Persuasive Ability of Stories

According to legend, Abraham Lincoln greeted Harriet Beecher Stowe at the White

House in 1862 saying, "So you're the little woman who wrote the book that started this great

war" (Harriet Beecher Stowe Center, 2011). Beecher Stowe's book, *Uncle Tom's Cabin,*

published in 1852, aroused strong opposition to slavery through her fictional tale about slaves

and their masters and certainly may have played a role in the outbreak of the Civil War. Lincoln

wisely recognized how influential stories can be and was fond of telling stories himself. Cullen

(2008) concluded after her work recording the death-defying stories of miners, "Stories are

integral to human existence and have great power to change or influence how people think or

react."

Ricketts, Shanteau, McSpadden, and Fernandez-Medina (2010) used stories to persuade participants to correctly assemble a child's swing set. They found that participants who received safety warnings as a story (e.g. *"Warning: A 2-year old girl was strangled to death when her necklace became caught on a long bolt while she was playing on her swing set."*) were 19% more likely to install the bolt correctly than participants who received the safety warning as an abstract statement (e.g. *"Warning: Use short bolts that will not entangle children's clothing or necklaces."*)

Cullen (2008) used stories to persuade miners to follow mining safety procedures. Cullen realized that the miners had their own occupational culture and tended to be distrustful of outsiders (Van Maanen & Barley, 1984). For a training program to be successful in this environment, it had to be conveyed in the trainees' language and by a trusted peer. She enlisted experienced miners to tell stories about their mining experiences, especially the negative events. The listeners identified with the storytellers and understood that what happened in the story could happen to them. Cullen produced nine videos on topics such as handling explosives and preventing rock fall injuries. The miners reported that the sessions resulted in meaningful learning and improved job safety (Cullen & Fein, 2005).

Stories have also been used successfully in the medical field to influence the attitudes and behaviors of both medical staff members and patients. Quaid et al. (2010) observed the transformational power that a 10-minute video had on hospital staff members. The video captured a mother's story about the accidental death of her child due to failed communication and teamwork at a hospital. It ignited a strong commitment by the hospital's clinical leaders to eliminate preventable death and injury at all 67 of their acute care hospitals, resulting in the saving of an estimated 4,000 lives in five years. The video has since been shown in over 675

healthcare organizations, with over 85% reporting that they believed that it either saved lives or positively impacted patients.

Williams et al. (2010) used a storytelling video to encourage hospitalized patients to stop smoking. The video featured taped interviews of former smokers, telling their stories about how they quit smoking. They measured patients' transportation into the video using an adaptation of Green & Brock's (2000) Transportation Scale and found that patients who were more transported into the stories were more likely to report quitting smoking when they were contacted two weeks later.

Narrative versus Rhetorical Persuasion

Until recently we've only been able to speculate about story's persuasive effects. However, over the last several decades, psychologists have begun a serious study of how stories affect the human mind. Results repeatedly revealed that our attitudes, beliefs, values, and behavior can be influenced by stories, and fiction seems to be more effective at changing beliefs than writing that is specifically designed to persuade through argument and evidence (Gottschall, 2012).

To fully appreciate the unique persuasive abilities of narratives, it is necessary to contrast it with non-narrative forms of persuasion. Non-narrative forms of persuasive communication, also called rhetorical or argument-based persuasion, attempt to sway the views or beliefs of the listener by presenting a series of logical arguments (Mazzocco & Green, 2011). Examples of rhetorical persuasion include political speeches, courtroom arguments, sermons, lectures, and advertisements.

In rhetorical persuasion, the goal of the speaker is to influence the listener's views; it is a goal that is clear to both the speaker and the listener. The listener responds to the message by

continually comparing the claims of the speaker with their own beliefs and attitudes as they listen, and, in the process, makes a decision as to whether or not they agree with the speaker. If the listener finds the message believable and convincing, he or she is likely to accept the message and form an attitude that aligns with the message.

According to the Elaboration Likelihood Model (Petty & Cacioppo, 1986), this is an example of "central route" brain processing. Central route processing requires considerable effort on the part of the listener to receive and evaluate a message. Understandably then, the listener must be both motivated and able to devote time, attention, and effort to the task of critically evaluating the message.

In contrast, narrative persuasion is processed in the brain via the "peripheral route," which is a more passive process. The messages in stories are subtle and not overtly persuasive. Individuals generally approach a book or a film with the intent to be entertained rather than persuaded; therefore, they tend to be in a non-critical mindset. As a result, story messages are less likely to encounter argument or critical analysis from the listener. The more absorbed into the story they become, the less likely they are to scrutinize the content or challenge the story's assertions, because it would interfere with their understanding and enjoyment of the story (Green & Brock, 2002). Story receivers may even push real-world facts aside in favor of inhabiting the world of the story (Green, 2004). In peripheral route brain processing, the listener accepts or rejects the message based more on external factors, such as the perceived credibility of the source, the quality of the presentation, or the likability of the presenter rather than the argument's merits (Petty & Cacioppo, 1986).

Transportation into a Narrative World

Why are stories so persuasive? Green and Brock's (2000) research added significantly to our understanding of the persuasiveness of stories by identifying a key mechanism behind the phenomenon. The process involves the transportation of individuals into the narrative world of the story.

Transportation into a narrative world is a state of immersion into a story, which involves attentional focus, emotional involvement, and feeling a connection with the story's characters. When individuals are transported into the world of the story, they integrate story information into their real-world beliefs and behaviors.

Gerrig, in his book, *Experiencing Narrative Worlds* (1993), described the experience of being transported into a story:

> Someone ("the traveler") is transported, by some means of transportation, as a result of performing certain actions. The traveler goes some distance from his or her world of origin, which makes some aspects of the world of origin inaccessible. The traveler returns to the world of origin, somewhat changed by the journey (pp. 10-11).

Gerrig suggested that individuals can be mentally transported into the world of the story, temporarily leaving their "real" world behind. This departure from the "world of origin" can occur on a physical level; a transported individual may not notice others talking in the room, for example. The departure can also occur on a psychological level, with the individual feeling as though they are personally experiencing the events in the story, even if the story is fictional.

Film viewers may know that the story events did not actually happen, but may still experience real emotions and reactions. Norden (1980) found it interesting that the movie *Jaws*, a

fictional film about a giant shark that attacks beachgoers, convinced many viewers to fear going into the ocean. The film led to significantly reduced beach attendance and increased shark sightings during the year of its release. Norden explored this phenomenon further by measuring viewers' physiological responses to films containing threatening situations. He discovered that fictional threats experienced while watching a film can actually create the same level of stress as an actual threat.

Gerrig (1993) noted that the traveler returns "somewhat changed by the journey," implying that a change in the individuals' beliefs and attitudes may have taken place. While in the narrative world, individuals tend to change their real-world beliefs and attitudes to align with claims made in the story (Green, 2004).

Green and Brock (2000) conducted a series of experiments in which subjects were asked to read a story and then complete a questionnaire that measured their degree of transportation into the story and their level of agreement with assertions made in the story. The results were consistent; highly transported participants reported stronger agreement with story assertions and more positive evaluations of the story characters than those who were less transported into the story. The authors suggested that the results may indicate that transported participants identify with story characters and come to view them as friends, and it is this trusting relationship that facilitates acceptance of the story characters' assertions.

Building on Gerrig's (1993) concept of being transported into the story, Green and Brock (2000) developed the Transportation-Imagery Model of narrative persuasion. The model asserts that individuals who are more highly transported into a story show greater belief change, more positive evaluations of the story characters, and less rejection of the story content than their less transported counterparts.

Later studies confirmed Green and Brock's (2000) results. Results consistently indicated that individuals who were more transported into the story reported stronger agreement with the story's messages (Escalas, 2004; Green, 2004; Green et al., 2008; Mazzocco, Green, Sasota, & Jones, 2010; Slater & Rouner, 2002; Wang & Calder, 2006). In addition, individuals who were more transported into the story demonstrated behavior that supported the story's messages (Cullen, 2008; Cullen & Fein, 2005; Quaid et al., 2010; Ricketts et al., 2010; Williams et al., 2010).

At this point, it is important to mention that individuals differ in their "transportability." Certain individuals are more willing and able to become transported into narrative worlds (Mazzocco & Green, 2011). While some individuals are emotionally moved by a story as minimal as a thirty-second commercial, others remain impassive after watching a poignant movie. Appel and Richter (2010) suggested that the difference may be due to each individual's "need for affect," or their desire to experience strong emotions. Maio and Esses (2001) defined the need for effect as "the general motivation of people to approach or avoid situations and activities that are emotion-inducing for themselves and others."

Researchers have identified factors that encourage narrative transportation to take place (Appel & Richter, 2010; Dal Cin, Zanna, & Fong, 2004; Green & Brock, 2000; Van Laer, De Ruyter, Visconti, & Wetzels, 2014). Some factors pertain to the story, such as the attributes of the story characters and the situation described in the story. Other factors refer to the story-receivers, such as their familiarity with the story's subject matter and their transportability. These factors will be discussed at length in chapter 4.

Conclusion

The Child Nutrition Program is a federally-sponsored meal program that provides nutritionally balanced, low-cost or free lunches to children in grades K-12. Although school meals remain some of the safest commercially prepared meals available, opportunities exist to enhance the current food safety practices.

Research in the area of training effectiveness has yielded valuable insights into better training delivery techniques. One technique in particular, called "error-based examples," was found to be effective in motivating trainees to transfer the knowledge and skills they learned in the training session to their jobs. The technique involved sharing stories that describe what could go wrong if skills addressed in the training session are not applied in the workplace.

Studies have repeatedly demonstrated that our attitudes, beliefs, and behavior can be influenced by reading, viewing, or listening to stories. In fact, stories can be more effective at changing beliefs than communication that is specifically designed to persuade through argument and evidence, partly because the story's message is typically received without scrutiny or counter-arguing.

Green and Brock's (2000) research added significantly to our understanding of the persuasiveness of stories by identifying a key mechanism behind the phenomenon. The process involves the transportation of individuals into the narrative world of a story. *Transportation into a narrative world* is a state of immersion into a story, which involves attentional focus, emotional involvement, and feeling a connection with the story's characters. When individuals are transported into the world of a story, they integrate story information into their real-world beliefs and behaviors.

Transportation facilitates narrative belief change in at least three ways. First, transportation reduces cognitive resistance to the issues raised in the story. Next, transportation into the story makes the events in the story seem more real, as if the viewer is experiencing them personally. Finally, attachment to the story characters, including emotional responses and empathy, creates a trusting relationship that facilitates acceptance of the story characters' assertions.

Studies have clearly shown that individuals who were more transported into a story exhibited greater attitude, belief, and behavior change than their less transported counterparts. Research is needed to determine if storytelling can be used increase school foodservice employees' compliance with food safety guidelines, so that best practices are consistently applied in the workplace.

Chapter 3 - Methodology

Introduction

This chapter presents the study's target population, sampling procedure, survey instrument, video development, project approval, expert panel review, pilot study, collection of data, and methods of data analysis.

In this study, an error-based story, entitled *Glenda's Horrible Day*, was used to communicate to employees what can go wrong if proper food handling protocols are not followed. The purpose was to investigate whether storytelling, used as a training tool, would influence school foodservice employees' compliance with food safety guidelines. Educating employees about the consequences of improper food handling may improve their attitudes toward food safety; they may be less likely to perceive food safety practices as an inconvenience and be more inclined to practice safe food handling. The study builds on prior studies that have consistently demonstrated the persuasive power of stories to influence beliefs and behavior.

Research Questions

The following research questions were addressed in this study:

1. To what degree will an error-based story transport employees into the story?

2. To what degree will an error-based story influence employees' food safety behavioral intentions?

3. To what degree will an error-based story influence employees' story-specific beliefs?

4. Does a positive relationship exist between the degree of transportation into the story and an intention to change behavior?

Population and Sample

The target population for this study was employees of school nutrition programs in Kansas. The study sample included program directors, supervisors, and line staff from school districts of varying sizes: small (fewer than 2,500 students), medium (2,500 to 19,999 students), and large (20,000 to 39,999 students).

Survey Instrument

The survey instrument (Appendix B) measured participants' food safety behavioral intent (BI), self-efficacy (SE), and story-specific beliefs (SB) before and after watching *Glenda's Horrible Day*, as well as their degree of transportation into the story. The BI and SE survey items were adapted from Ajzen's (2006) Theory of Planned Behavior questionnaire.

Theory of Planned Behavior

Ajzen's (1991) Theory of Planned Behavior (TpB) is one of the most widely used psychological models that examine the factors that influence behavior. The TpB states that the best predictor of a person's behavior in any situation is their intention to perform the behavior, or their behavioral intention (BI). Behavioral intention is defined as a person's perceived likelihood that he or she will engage in a given behavior; it reflects how hard a person is willing to try, and how motivated he or she is to perform the behavior. Behavioral intent can be measured by asking survey questions starting with stems such as "I intend to [behavior]" and using Likert scale response choices to measure respondents' relative strength of intention (National Institutes of Health [NIH], 2013).

A person's behavioral intention is influenced by three antecedents: 1) their attitude towards the behavior, 2) the influence of others, and 3) the person's self-assessment of their ability to carry out the behavior, or their self-efficacy (SE). If the individual's attitude towards

the behavior is positive, their peers encourage the behavior, and they believe that they are capable of carrying out the behavior (high SE), the individual is likely to carry out the behavior (Ajzen, 2002).

Because the ultimate goal of training is to influence behavior, BI can be used as an indicator of training effectiveness. This study measured BI before and after a training intervention (storytelling video) to gauge the effectiveness of the intervention. In addition, self-efficacy (SE) was measured to assess its possible influence on the BI.

Survey Item Description

The survey included a pre-video portion (Part 1A) and a post-video portion (Parts 2A, 2B and 2C).

Part 1A: Food safety behavioral intent, self-efficacy, and story-specific beliefs

Part 1A consisted of 15 items that measured the three constructs of behavioral intent, self-efficacy, and story-specific beliefs. Participants were asked to rate their level of agreement with each of the items using a 7-point Likert-type rating scale, anchored with 1 (*strongly disagree)* and 7 (*strongly agree).* The following statements were developed for this study to reflect key food handling behaviors:

Note: R = reverse-scored

1) Behavioral intent:

"*I plan to wash my hands between glove changes.*"

"*I plan to wear gloves when preparing fresh produce.*"

"*I plan to use a thermometer to check the doneness of meats and meat dishes.*"

"*I do not plan to wash the skins of melons before slicing.*" (R)

"*I plan to stay home from work when I am feeling ill.*"

2) Self-efficacy:

"I am confident that I can prepare and serve food in a way that will prevent a foodborne illness outbreak."

"I am not confident that I can stay home from work if I am feeling ill." (R)

"I feel confident that I can wash my hands in a way that prevents contamination."

"I feel confident in my ability to use a thermometer to check the doneness of meats and meat dishes."

"I feel confident in my ability to prepare food in a way that prevents contamination."

3) Story-specific beliefs:

"There are serious risks when food safety procedures are not followed."

"A foodborne illness outbreak can damage a school's reputation."

"A foodborne illness outbreak is not a threat in school foodservice." (R)

"A foodborne illness outbreak creates emotional stress for employees, families, and students."

"It is not likely that a foodborne illness outbreak will lead to a lawsuit." (R)

Part 2A: Degree of transportation into the story.

Part 2A consisted of 13 items adapted from Green and Brock's (2000) original 15-item Narrative Transportation Scale, a survey instrument designed to assess the extent to which an individual is transported into a story. Permission to use the scale is located in Appendix C. The scale measures the individual's mental and emotional engagement with the story, identification with story characters, mental imagery, and lack of awareness of their surroundings. The scale had a Cronbach's alpha of .76 for $n = 274$ in Green and Brock's (2000) study.

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The original scale, developed for use with written narratives, was modified for use with film-based interventions. For example, *"I was mentally involved in the narrative while reading it"* was replaced with *"I was mentally involved in the story while watching it."* In addition, items were removed that referred to creating mental imagery from written narratives (e.g. *"While I was reading the narrative, I could easily picture the events in it taking place"*). Participants were asked to rate each statement using a 7-point rating scale, ranging from 1 (*not at all)* to 7 (*very much*). Five aspects of the transportation state were measured:

Note: R = reverse-scored

1) Attentional focus and cognitive engagement:

"I was mentally involved in the story while watching it."

"I found my mind wandering as I watched the story." (R)

"I wanted to learn how the story ended."

"After the video ended, I found it easy to put the story out of my mind." (R)

"While watching the story, activity going on in the room around me was on my mind."(R)

2) Emotional involvement:

"The story affected me emotionally."

3) Imagines self in story:

"I could picture myself in the scene of events while watching the story."

"I found myself thinking of ways the story could have turned out differently."

"The events in the story are relevant to my everyday work life."

4) Feeling of connection with story characters:

"I identified with Glenda."

"I empathized with Glenda."

"Glenda reacted appropriately in the situation."

5)   Overall influence of the story video:

"The story video influenced me to practice safe food handling."

Part 2B: Food safety behavioral intent, self-efficacy, and story-specific beliefs

Part 2B consisted of a duplicate set of the items in Part 1A.

Part 2C: Demographic questions.

Part 2C gathered information regarding the participants' job title, gender, age, years of foodservice experience, years in current job, and whether they had a food safety certification.

Video Development

The video used as the intervention in this study required the time and talents of many competent and creative individuals. The process included developing a story line, writing a script, filming, and editing. The collective efforts of the team produced a five-minute video entitled *Glenda's Horrible Day.*

Story Development

The video production process began with a brief story outline (Appendix D), which described the setting, the characters, the main talking points or messages, the emotions, the props, and the costumes. From this, a story scenario was created (Appendix E), which transformed the talking points into dialog and created a plot with a beginning (meet the characters and introduce the problem), middle (explore options and potential solutions), and end (problem solved). The final story script (Appendix F) was written to communicate instructions to the actors and the videographer. The script contents were arranged in four columns, containing the scene number, actors' dialog, notes to the videographer, and images that gave the

videographer an idea of what visuals were desired. Notes to the videographer communicated additional instructions, such as use of B-roll (secondary footage), sound effects, and music. Care was taken to create a plausible plot, while remaining true to recommended food safety practices and the foodborne illness outbreak response protocols of Kansas public health agencies (Kansas Department of Health and Environment Division of Health, 2008a, 2008b).

To truly engage and transport viewers, the video had to offer a compelling story line with an appealing delivery. According to Allan and colleagues (2002), a good story contains: (a) a beginning that draws us in; (b) movement, providing a progression of events with the resolution of a contradiction or a conflict; (c) suspense, leaving something unknown or unanswered until the very end; (d) emotion, creating characters or situations that engage our emotions; (e) relevance to us and our situation; and (f) proper pace and simplicity, in that the story is neither too long nor too short and is not too overloaded with details. Denning (2005) also commented on what makes a good story:

> Stories focus on anomalies - events that go counter to expectations. When everything goes as we expect, there's no story. The regular recurring events of our existence are simply the way things are - they are unremarkable. To have the basis for a story, we need something unusual, something different, something out of the ordinary, something strange (p. 181).

In *Glenda's Horrible Day*, viewers faced a situation that was out of the ordinary. The video dramatized a suspenseful story of a school foodservice supervisor, Glenda, who found herself in the middle of a foodborne illness outbreak due to suspected errors made by someone on her staff. The story opened with Glenda receiving news from the school's principal that a large number of the school's students were absent from school due to illness. Parents had filed

complaints with the school and with health authorities. In response, an investigation had been

scheduled for the following morning. Glenda was assigned the daunting task of determining an

explanation for the unfortunate situation. Glenda proceeded to go through her mental check list

of all the likely causes, such as improper cleaning, not taking end-point food temperatures, and

inadequate training of employees. At the end of the story, the cause of the outbreak was revealed.

Filming

After the script had been reviewed for accuracy and plausibility, actors were recruited and

cast through the university's drama department, and filming began. Actors were given the freedom

to develop their own dialog, as it leads to a more natural and convincing performance. The video

was filmed by a professional videographer in one of the university's residence hall kitchens. After

the filming was complete, the footage was edited, and sound effects, narration, music, subtitles,

and special effects were added. Still shots from the video are located in Appendix G.

Throughout the process, the main goal was to produce a video that engaged the viewers'

emotions. For transportation to occur, viewers must feel drawn into the story's world by

experiencing some of the same emotions as the story's characters (Green, 2004). It was therefore

imperative that the video evoke in audience members some of the same feelings of pain and

frustration that Glenda felt. To achieve this end, the video production team used camera angles,

music, and sound effects to heighten the tension and conflict in the developing story.

Another important goal during the production process was to make the video image rich.

The most persuasive stories are those that contain vivid images that can be recalled, recognized,

and responded to (Green & Brock, 2000). The images take on meaning and significance from the

story, and each time the participant recalls the images, the beliefs contained within the story are

reinforced. In *Glenda's Horrible Day*, the negative images of a boss' disapproval, sick children,

and aggressive news reporters supported the story's message that foodborne illness outbreaks are a serious and highly undesirable situation. In the same way, images of washing hands, taking end-point temperatures and cleaning kitchen counters supported the story's message that following safe food handling procedures is the best way to avoid a foodborne illness outbreak. Well-crafted stories that are highly involving, suspenseful, and imagery-rich are more likely to transport participants than those that offer little in the way of imagery (Green & Brock, 2002).

Project Approval

Before data collection commenced, approval from the Kansas State University Institutional Review Board was obtained. The approval letter is located in Appendix H.

Expert Panel Review

Four expert panelists from the Kansas Department of Education Child Nutrition and Wellness Program, the Kansas Department of Agriculture Division of Food Safety and Lodging, and the Riley County Health Department reviewed the video script to make sure that: (a) the story was engaging, (b) the characters and the situation were realistic, (c) the details were accurate and plausible, (d) the intended message was clearly stated, and (e) the conclusion addressed all of the issues raised in the video. The results are summarized in Appendix I. The recommendations and comments provided by the panel members were used to refine the video script.

Pilot Study

The survey and video were pilot tested by a group of eight school foodservice staff members. Participation in the pilot study was voluntary. Participants were asked to complete a survey before and after watching *Glenda's Horrible Day*. The process of showing the video and administering the surveys was handled by the researcher. The survey included a comment page

at the end for respondents to record recommendations for revisions to the survey and video; however, no revisions to the survey instrument or video were recommended by the pilot group.

Data Collection

Surveys were distributed to participants at four *Food Safety Basics* classes presented by Kansas Department of Education (KSDE) Child Nutrition and Wellness consultants during the month of September 2014. Participation in the study was voluntary. The intent of the survey was for English-speaking staff members only. Participants were asked to complete a survey before and after watching *Glenda's Horrible Day*. The process of showing the video and administering the surveys was handled by the researcher and KSDE consultants. All participants received a small gift for their participation.

Data Analysis

The Statistical Package for Social Sciences (SPSS) version 20.0 was used to compute descriptive statistics (mean, median, range, percentile, frequency, and standard deviation), scale reliability (Cronbach's alpha), paired samples *t*-tests, independent sample *t*-tests, and one-way analysis of variance (ANOVA). Statistical significance was set at p-value < .05 unless otherwise indicated.

Chapter 4 - Storytelling as a Food Safety Training Tool in School Foodservice

Introduction

Over 28 million children in 101,000 schools receive meals daily through the federal school meal programs: the National School Lunch Program (NSLP), School Breakfast Program, Summer Food Service, After School Snack Program, and the Child and Adult Care Food Program (USDA, 2013a). Such an immense volume of food produced and served daily presents an opportunity for a large-scale foodborne illness outbreak with serious consequences. Food safety in schools is especially important because children can have a higher risk of complications from some foodborne illnesses (United States General Accounting Office [GAO], 2003).

Although school meals remain some of the safest commercially prepared meals available, opportunities exist to enhance the current food safety practices (Roberts et al., 2014). Food safety knowledge was found to be high and food safety attitudes were positive in school foodservice personnel; however, proper food handling practices were not always being followed in many school foodservice operations (Henroid & Sneed, 2004). New training approaches are needed that would improve the transfer of food safety knowledge into safe food handling practices on the job.

Interventions to improve food safety training transfer have yielded mixed results. A number of interventions have focused on identifying and removing barriers to handling food safely (Howells et al., 2008; Jenkins-McLean et al., 2004; Pilling et al., 2008; Roberts, 2008; York et al., 2009), and others have focused on the importance of the supervisor in enforcing safe food handling procedures (Arendt & Sneed, 2008; Ashraf et al., 2008).

Although stories are generally associated with entertainment, they can also be used to convey serious information, such as the importance of following safety precautions. Studies have consistently demonstrated the persuasive power of stories to influence beliefs and behavior. Stories have been used successfully to persuade miners to follow mining safety guidelines (Cullen, 2008), medical staff members to take steps to eliminate preventable deaths in hospitals (Quaid, Thao, & Denham, 2010), and smokers to stop smoking (Williams, Green, Kohler, Allison, & Houston, 2010). In fact, stories can be more effective at changing beliefs than communication that is specifically designed to persuade through argument and evidence.

Green and Brock (2000) added significantly to our understanding of the persuasiveness of stories by identifying a key mechanism behind the phenomenon. The process involves the transportation of individuals into the narrative world of the story. *Transportation into a narrative world* is a state of immersion into a story, which involves attentional focus, emotional involvement, and feeling a connection with the story's characters. When individuals are transported into the world of a story, they integrate story information into their real-world beliefs and behaviors. Studies have clearly shown that individuals who were more transported into the story exhibited greater attitude, belief, and behavior change than their less transported counterparts (Green, 2004; Green, 2008; Green & Brock, 2000; Mazzocco et al., 2010; Slater & Rouner, 2002; Wang & Calder, 2006; Williams et al., 2010).

Error-based stories, or stories about mistakes and failures, make some of the best teaching stories; they stimulate listeners' curiosity, motivating them to probe for causes and develop better solutions to problems (Kaye & Jacobson, 1999). Educating employees about the serious consequences of improper food handling might improve their attitudes toward food safety (Howells et al., 2008), and if employees are transported into a story about the serious

consequences of a foodborne illness outbreak, they may be persuaded to consistently follow food safety guidelines. Because the impressive power of stories to influence attitudes and behavior has already been demonstrated in other environments, there is every reason to expect similar successes in the foodservice environment.

Methodology

The purpose of this study was to investigate whether storytelling, used as a training tool, would influence school foodservice employees' compliance with food safety guidelines. The study builds on prior studies that have consistently demonstrated the persuasive power of stories to influence beliefs and behavior.

Research Questions. The following research questions were addressed in this study:

1. To what degree will an error-based story transport employees into the story?

2. To what degree will an error-based story influence employees' food safety behavioral intentions?

3. To what degree will an error-based story influence employees' story-specific beliefs?

4. Does a positive relationship exist between the degree of transportation into the story and an intention to change behavior?

Population and Sample. The target population for this study was employees of school nutrition programs in Kansas. The study sample included program directors, supervisors, and line staff from school districts of varying sizes: small (fewer than 2,500 students), medium (2,500 to 19,999 students), and large (20,000 to 39,999 students).

Story. The story, entitled Glenda's Horrible Day, told the suspenseful tale of a school foodservice supervisor, Glenda, who found herself in the middle of a foodborne illness outbreak due to a suspected error made by someone on her staff. The error-based story communicated to

audience members what can go wrong if proper food handling protocols are not followed.

Video Development. The video production process began with a brief story outline, which described the setting, the characters, the main talking points or messages, the emotions, the props, and the costumes. From this, a story scenario was created that transformed the talking points into dialog and created a plot with a beginning, middle, and end. The final story script was written to communicate instructions to the actors and the videographer. The video featured actors recruited and cast through the university's drama department and was filmed by a professional videographer in one of the university's residence hall kitchens.

Expert Panel. Four expert panelists reviewed the story script before video production commenced, and revisions were made to the script based on their recommendations.

Approval. Prior to data collection, approval from the Kansas State University Institutional Review Board was obtained. Participation in the study was voluntary.

Pilot Test. The survey and video were pilot tested by a group of eight school foodservice staff members, and no changes were recommended to the survey or video.

Data Collection. Surveys were administered to participants in four Food Safety Basics classes presented by Kansas State Department of Education (KSDE) Child Nutrition and Wellness consultants during the month of September 2014. Participants were asked to complete a survey before and after watching *Glenda's Horrible Day*. The process of showing the video and distributing and collecting the surveys was handled by the researcher and KSDE consultants. All participants received a small gift for their participation.

Survey Instrument. The survey instrument was designed to measure participants' food safety behavioral intent, story-specific beliefs, and self-efficacy before and after watching the video. In addition, participants' transportation into the story was measured using Green &

Brock's (2000) Transportation Scale. Permission to use the Transportation Scale was obtained prior to data collection. Participants were asked to rate their level of agreement with each of the items using a 7-point rating scale, anchored with 1 (*strongly disagree*) and 7 (*strongly agree*).

    Data Analysis. The Statistical Package for Social Sciences (SPSS) version 20.0 was used to compute descriptive statistics (mean, median, range, percentile, frequency, and standard deviation), scale reliability (Cronbach's alpha), paired samples *t*-tests, independent sample *t*-tests, and one-way analysis of variance (ANOVA).

Results

A total of 93 ($N = 93$) surveys were completed by School Lunch Program ($n = 75$) and Child and Adult Care Food Program ($n = 18$) staff members.

Demographic Characteristics of Participants

Participant demographics are presented in Table 1. Most of the participants were female ($n = 82$). Participants ranged in age from less than 20 years old to older than 60, with the majority being over 40 years old. The majority of the participants were line employees ($n = 72$), with the remainder of the group composed of directors and supervisors ($n = 14$).

Table 1 Demographic Characteristics of Participants

Characteristic	n^{a}	Characteristic	n^{a}
Job title		Years worked in foodservice	
Director	5	<5	51
Manager/Supervisor	9	5 - 9	11
Line staff member	72	10 - 19	18
		20 – 29	3
Gender		≥ 30	8
Female	82		
Male	11	Years worked in current position	
		< 5	70
Age		5 - 9	11
< 30	11	10 - 19	7
30 - 39	20	≥ 20	4
40 - 49	26		
50 - 59	18	Food safety certified[b]	
≥ 60	18	Yes	20
		No	69
Affiliation			
School Lunch Program	75		
Child and Adult Care Food Program	18		

Note. $N = 93$

[a] Responses may not equal 93 due to non-response to an item. [b] Response to question: "Do you have a food safety certification, such as ServSafe ®?"

While 51 participants were relatively new to foodservice, having worked in the field for less than 5 years, 40 were experienced foodservice veterans. Most ($n = 70$) of the respondents had worked in their current position for less than 5 years and were not food safety certified ($n = 69$).

Transportation into the Story

High and Low Transportation Groups

Of the 93 participants, 86 completed all of the Transportation Scale items. All 86 participants were transported into the story to varying degrees. Using the same methods presented by Green and Brock (2000), response data from the Transportation Scale items were categorized into high and low transportation groups to better differentiate the impact of the story.

Table 2 Total Transportation Scores and Group Designation

Total transportation score	Frequency		Group designation
40 - 72	$n = 43$	50%	Low transportation group
73 - 91	$n = 43$	50%	High transportation group

Note. Median = 72.5.

Total transportation scores were calculated for participants by totaling their answers to the 13 Transportation Scale items (Table 2). The theoretical range of the scale was 13 to 91, where higher scores represent greater transportation. The actual range on the scale was 40 – 91. The Cronbach's alpha was .80 for $n = 86$ participants. A median split (median = 72.5) divided the participants into high and low transportation groups. The low transportation (Low TS) group contained participants with total transportation scores between 40 and 72, and the high transportation (High TS) group contained those whose total transportation scores were 73 to 91.

High and Low Transportation Groups' Responses on Transportation Scale

High TS group members' responses on Transportation Scale items differed significantly from those of Low TS group members. Independent samples *t*-tests revealed statistically significant differences ($p \leq .01$) between the mean responses of the two groups for 12 out of the 13 items. Table 3 presents the frequency of each response, response means with standard deviations, and *t*-test results.

Attentional Focus and Cognitive Engagement. High TS group members reported significantly higher mental involvement with the story (High TS Group: $M = 6.5$, Low TS Group: $M = 4.8$). In addition, High TS group members reported a stronger desire to learn how the story ended (High TS Group: $M = 6.3$, Low TS Group: $M = 4.7$) and a lower level of distraction (High TS Group: $M = 1.5$, Low TS Group: $M = 2.6$).

Emotional Involvement. A significant difference was noted in the area of emotional involvement with the story. High TS group members reported higher emotional involvement in the story (High TS Group: $M = 5.6$, Low TS Group: $M = 3.4$).

Imagines Self in Story. High TS group members reported that they could picture themselves in the scene of events ($M = 5.2$), whereas Low TS group members reported that they did not picture themselves in the scene of events ($M = 3.4$). High TS group members found the story to be more relevant to their everyday work life ($M = 6.1$) that did Low TS group members ($M = 4.8$).

Feelings of Connection with Story Characters. High TS group members strongly identified with Glenda ($M = 6.0$), while Low TS group members did not identify with Glenda ($M = 3.9$). High TS group members expressed more empathy for Glenda (High TS Group: $M =$

6.5, Low TS Group: $M = 5.4$) and stronger agreement that Glenda reacted appropriately in the situation (High TS Group: $M = 6.4$, Low TS Group: $M = 5.5$).

Overall influence of story video. Among High TS group members, 36 of 43 reported that the video influenced them to practice safe food handling "*very much,*" compared to 13 of 43 Low TS group members.

Table 3 Comparison of High and Low Transportation Groups' Responses on Transportation Scale

Item on Transportation Scale Survey	Transportation Group	Responses 1 = *Not at all, 4 = Neutral, 7 = Very Much*							Mean	SD	t	p value
		n	1	2	3	4	5	6	7			
Attentional Focus/ Cognitive Engagement													
I was mentally involved in the story while watching it.	High	43	0	0	0	1	6	6	30	6.5	0.8	-6.74	.000***
	Low	43	2	1	2	14	8	12	4	4.8	1.5		
I found my mind wandering as I watched the story (R).	High	43	37	2	0	0	1	2	1	1.5	1.5	3.23	.002**
	Low	43	15	9	5	10	2	2	0	2.6	1.5		
I wanted to learn how the story ended.	High	43	2	1	0	1	2	8	29	6.3	1.5	-4.98	.000***
	Low	43	1	1	1	18	10	8	4	4.7	1.3		
I found it easy to put the story out of my mind after the video ended (R).	High	43	29	7	0	4	0	1	2	1.8	1.6	4.93	.000***
	Low	43	4	7	7	21	3	1	0	3.4	1.2		
Activity going on in the room around me was on my mind while watching the story (R).	High	43	39	1	0	1	0	0	2	1.4	1.4	1.38	.171
	Low	43	26	10	2	3	1	0	1	1.8	1.3		
Emotional involvement													
The story affected me emotionally.	High	43	0	1	1	11	6	7	17	5.6	1.4	-6.84	.000***
	Low	43	9	4	4	17	7	1	1	3.4	1.6		
Imagines self in story													
I could picture myself in the scene of events while watching the story	High	43	5	1	0	7	8	6	16	5.2	2.0	-4.34	.000***
	Low	43	11	3	5	11	8	4	1	3.4	1.8		
The events in the story are relevant to my everyday work life.	High	43	5	0	0	0	2	4	32	6.1	2.0	-2.94	.004***
	Low	43	6	3	1	4	8	10	11	4.8	2.1		
I found myself thinking of ways the story could have turned out differently.	High	43	2	1	0	2	5	13	20	6.0	1.5	-4.73	.000***
	Low	43	3	4	4	11	9	10	2	4.3	1.6		

(Table continues)

Item on Transportation Scale Survey	Transportation Group	Responses 1 = *Not at all*, 4 = *Neutral*, 7 = *Very Much*								Mean	*SD*	*t*	*p value*
		n	1	2	3	4	5	6	7				
Feeling of connection with story characters													
I identified with Glenda.	High	43	0	0	1	7	7	5	23	6.0	1.3	-6.09	.000***
	Low	43	8	2	5	10	10	5	3	3.9	1.8		
I empathized with Glenda.	High	43	0	0	0	2	5	7	29	6.5	0.9	-5.12	.000***
	Low	43	0	0	0	11	11	14	7	5.4	1.1		
Glenda reacted appropriately in the situation.	High	43	0	0	1	1	4	9	28	6.4	0.9	-3.53	.000***
	Low	43	0	3	1	4	8	16	11	5.5	1.4		
Overall influence of story video													
The video influenced me to practice safe food handling.	High	43	0	0	0	1	1	5	36	6.8	0.6	-4.91	.000***
	Low	43	0	2	1	6	5	16	13	5.7	1.4		

Note. n = 86. All items were measured on a 7-point scale anchored by 1 (*not at all*) and 7 (*very much*). (R) = Reverse-scored item. *Significant at the p ≤ .05 level, two-tailed. **Significant at the p ≤ .01 level, two-tailed. ***Significant at the p ≤ .001 level, two-tailed.

Demographic Characteristics of High and Low Transportation Group Participants

      The demographics of the High TS and Low TS group members differed as well (Table 4). Low TS participants tended to be predominately line staff members ($n = 40$) who had worked in foodservice ($n = 23$) and in their current position ($n = 34$) less than five years. The median age was 40 to 49 years.

      The High TS group had more directors and supervisors ($n = 11$) than the Low TS Group ($n = 3$). High TS group members also tended to be relatively new to the profession, having worked in foodservice ($n = 26$) and their current position ($n = 32$) for less than five years. The median age of participants in the High TS group was slightly higher at 50 to 59 years.

Transportation Scores by Participant Demographics

      One way ANOVA and independent samples *t*-tests assessed differences between mean total transportation scores for each of the demographic characteristics (Table 5). No statistically significant differences emerged.

Table 4 Demographic Characteristics of High and Low Transportation Group Participants

Demographic	Low Transportation Participants $(n = 43)$[a]	High Transportation Participants $(n = 43)$[a]
	n[b]	n[b]
Age		
< 30	6	5
30 - 39	14	5
40 - 49	13	11
50 - 59	7	11
≥ 60	3	11
Job title		
Director	1	4
Supervisor	2	7
Line Staff Member	40	32
Years worked in foodservice		
< 5	23	26
5 - 9	5	4
10 - 19	11	5
20 – 29	3	0
≥ 30	1	7
Years worked in current position		
< 5	34	32
5 – 9	6	5
10 – 19	2	3
≥ 20	1	3
Gender		
Female	37	39
Male	6	4

[a] The total sample size was 93, with 86 usable responses. The 86 participants were divided into two groups, each with 43 members. [b] Some criteria may not equal 86 due to non-response to an item.

Table 5 Comparison of Transportation Scores by Participant Demographics

Characteristics	Participants n^a	Transportation Scores Mean[b][c]	SD	F	p value
Age				1.28	.285
<30	11	72.8	11.2		
30-39	19	66.6	11.6		
40-49	24	71.2	10.9		
50-59	18	73.9	11.2		
≥60	14	74.0	12.6		
Years Worked in Foodservice				2.28	.068
<5	49	71.7	12.2		
5-9	9	75.6	9.2		
10-19	16	66.8	11.3		
20-29	3	61.0	7.9		
≥30	8	77.9	6.8		
Years Worked in Current Position				0.37	.778
<5	66	70.8	11.6		
5-9	11	73.6	11.8		
10-19	5	70.8	13.6		
≥20	4	75.8	9.6		
				t	p value
Gender				0.49	.632
Female	76	71.6	11.7		
Male	10	69.8	10.9		
Job Title				1.97	.059
Director/Supervisor	14	75.8	8.5		
Foodservice Employee	72	70.4	12.1		
Food Safety Certified				-0.59	.564
Yes	19	70.1	12.2		
No	65	71.9	11.1		

[a] $n = 86$. Responses may not equal 86 due to non-response to an item. [b] Mean transportation scores: ≥ 73 = High Transportation, ≤ 72 = Low Transportation. [c] Maximum transportation score possible = 91.

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Transportation Scale Responses by Participant Job Title

Although the analysis of variance (ANOVA) test and independent samples *t*-tests used to compare the difference between the mean Transportation Scale responses of the directors, supervisors, and line staff members failed to identify a significant relationship between job title and transportation, interesting information can be gleaned from an analysis of their responses. Table 6 presents the frequency of each response, response means with standard deviations, and ANOVA test results.

Table 6 Comparison of Transportation Scale Responses after Viewing Video by Participant Job Title

Item on Transportation Scale Survey	Job Title	Responses 1 = *Not at all*, 4 = *Neutral*, 7 = *Very Much*								Mean	SD	F	p value
		n	1	2	3	4	5	6	7	Mean	SD	F	p value
Attentional Focus/ Cognitive Engagement													
I was mentally involved in the story while watching it	Director	5	0	0	0	1	0	1	3	6.2	1.3	.717	.491
	Supervisor	9	0	0	0	1	0	6	2	6.0	0.9		
	Line Staff	72	2	1	2	13	14	11	29	5.6	1.5		
I found my mind wandering as I watched the story. (R)	Director	5	3	0	1	0	0	0	1	2.6	2.6	.733	.484
	Supervisor	9	6	2	0	1	0	0	0	1.6	1.0		
	Line Staff	72	43	9	4	9	3	4	0	2.1	1.6		
I wanted to learn how the story ended.	Director	5	0	0	0	1	0	1	3	6.2	1.3	.538	.586
	Supervisor	9	1	0	0	2	0	3	3	5.3	2.0		
	Line Staff	72	2	2	1	16	12	12	27	5.5	1.6		
I found it easy to put the story out of my mind after the video ended. (R)	Director	5	2	1	0	1	0	0	1	3.0	2.6	.168	.846
	Supervisor	9	3	3	0	2	0	1	0	2.6	1.7		
	Line Staff	72	28	10	7	22	3	1	1	2.6	1.5		
Activity going on in the room around me was on my mind while watching the story. (R)	Director	5	5	0	0	0	0	0	0	1.0	0.0	1.184	.311
	Supervisor	9	8	1	0	0	0	0	0	1.1	0.3		
	Line Staff	72	52	10	2	4	1	0	3	1.7	1.4		
Emotional Involvement													
The story affected me emotionally.	Director	5	0	0	0	2	2	0	1	5.0	1.2	.859	.427
	Supervisor	9	0	0	0	4	2	1	2	5.1	1.3		
	Line Staff	72	9	5	5	22	9	7	15	4.4	2.0		

(Table continues)

Item on Transportation Scale Survey	Job Title	Responses 1 = *Not at all,* 4 = *Neutral,* 7 = *Very Much*								Mean	*SD*	*F*	*p value*
		n	1	2	3	4	5	6	7				
Imagines self in story													
I could picture myself in the scene of events while watching the story	Director	5	0	1	0	0	1	1	2	5.4	2.1	.987	.377
	Supervisor	9	2	1	0	2	2	2	0	3.8	2.0		
	Line Staff	72	14	2	5	16	13	7	15	4.3	2.1		
The events in the story are relevant to my everyday work life.	Director	5	0	0	0	0	1	1	3	6.4	0.9	.891	.414
	Supervisor	9	1	0	0	0	1	1	6	6.0	2.0		
	Line Staff	72	10	3	1	4	8	12	34	5.4	2.2		
I found myself thinking of ways the story could have turned out differently.	Director	5	0	0	1	1	0	2	1	5.2	1.6	.005	.995
	Supervisor	9	1	0	0	2	1	3	2	5.1	1.9		
	Line Staff	72	4	5	3	10	13	18	19	5.1	1.8		
Feeling of connection with story characters													
I identified with Glenda.	Director	5	0	0	1	0	0	1	3	6.0	1.7	2.755	.069
	Supervisor	9	0	0	0	1	2	2	4	6.0	1.1		
	Line Staff	72	8	2	5	16	15	7	19	4.7	1.9		
I empathized with Glenda.	Director	5	0	0	0	0	1	1	3	6.4	0.9	2.330	.104
	Supervisor	9	0	0	0	0	0	4	5	6.6	0.5		
	Line Staff	72	0	0	0	13	15	16	28	5.8	1.1		
Glenda reacted appropriately in the situation.	Director	5	0	0	0	0	2	0	3	6.2	1.1	.074	.929
	Supervisor	9	0	1	0	0	1	2	5	6.0	1.7		
	Line Staff	72	0	2	2	5	9	23	31	6.0	1.2		
Overall influence of story video													
The video influenced me to practice safe food handling.	Director	5	0	0	0	0	1	1	3	6.4	0.9	.521	.596
	Supervisor	9	0	0	0	0	1	2	6	6.6	0.7		
	Line Staff	72	0	2	1	7	4	18	40	6.2	1.3		

Note. *n* = 86. All items were measured on a 7-point scale anchored by 1 (*not at all*) and 7 (*very much*). (R) = Reverse-scored item.

Food Safety Behavioral Intent, Story-Specific Beliefs, and Self-Efficacy

A 15-item survey, based on Ajzen's (1991) Theory of Planned Behavior, was used to measure participants' food safety behavioral intent (BI), story-specific beliefs (SB), and self-efficacy (SE), both before and after watching the video. An exploratory factor analysis of survey items revealed low construct validity for each of the three constructs; therefore, for the purposes of this study, they were considered as individual items.

An internal consistency reliability analysis was conducted for both the pre-video and post-video behavioral intent responses, yielding a Cronbach's alpha coefficient of .62 and .54, respectively. Reliability analysis was also conducted for both the pre-video and post-video story-specific belief responses, yielding a Cronbach's alpha coefficient of .56 and .53, respectively.

Behavioral Intent

Behavioral Intent Before and After Viewing Video. Paired samples *t*-tests were used to compare participants' behavioral intent to follow proper food handling procedures before and after watching the video (Table 7). Statistically significant increases in behavioral intent were noted on two items within the High TS group, with none present in the Low TS group. High TS group members' agreement with *"I plan to wear gloves when preparing fresh produce"* increased significantly, pre-video BI ($M = 6.9$ of 7.0, $SD = 0.3$), post-video BI ($M = 7.0$ of 7.0, $SD = 0.2$), $t (42) = -2.08$, p = .044, and their agreement with *"I plan to stay home from work when I am feeling ill"* also increased significantly, pre-video BI ($M = 6.6$ of 7.0, $SD = 1.0$), post-video BI ($M = 6.9$ of 7.0, $SD = 0.4$), $t (42) = -2.17$, $p = .036$.

High and Low TS Groups' Behavioral Intent after Viewing Video. Independent samples *t*-tests were used to compare High and Low TS participants' post-video behavioral intent. Table 8 presents the frequency of each response, response means with standard deviations, and *t*-test

results. Statistically significant differences were noted between mean responses on three of the

five items. High TS participants reported significantly higher agreement with *"I plan to wash my*

hands between glove changes" ($p \leq .001$), "*I plan to wear gloves when preparing fresh produce"*

($p \leq .05$), and "*I plan to stay home from work when I am feeling ill*" ($p \leq .01$) than did Low TS

participants.

Table 7 Behavioral Intent Before and After Viewing Video

Item	Low Transportation Group (n = 43) Mean Response ± SD				High Transportation Group (n = 43) Mean Response ± SD			
	Before	After	*t*	*p* value	Before	After	*t*	*p* value
I plan to wash my hands between glove changes.	6.6±0.7	6.6±0.6	0.00	1.000	6.9±0.3	6.9±0.3	-1.00	.323
I plan to wear gloves when preparing fresh produce.	6.5±1.1	6.7±0.6	-1.65	.107	6.9±0.3	7.0±0.2	-2.08	.044*
I plan to use a thermometer to check the doneness of meats and meat dishes.	6.6±0.8	6.6±0.7	0.00	1.000	6.9±0.3	6.8±0.9	0.31	.762
I do not plan to wash the skins of melons before slicing. (R)	1.9±1.6	1.7±1.5	0.70	.488	1.6±1.4	1.5±1.6	0.07	.941
I plan to stay home from work when I am feeling ill.	6.1±1.2	6.2±1.3	-0.68	.498	6.6±1.0	6.9±0.4	-2.17	.036*

Note. n = 86. All items were measured on a 7-point scale, anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). (R) = Reverse-scored item. For all items except (R) item, stronger agreement with the item (higher number) equates to higher behavioral intent to follow safe food handling procedures. For (R) item, stronger disagreement with the item (lower number) equates to higher behavioral intent to follow safe food handling.
*Significant at the *p* ≤ .05 level, two-tailed.

Table 8 Comparison of High and Low Transportation Groups' Behavioral Intent after Viewing Video

Item on Transportation Scale Survey	Transportation Group	Responses 1 = *Strongly disagree* 7 = *Strongly agree*										
		n	1	2	3	4	5	6	7	Mean	*SD*	*t*	*p* value
I plan to wash my hands between glove changes	High	43	0	0	0	0	0	3	40	6.9	0.3	3.349	.001***
	Low	43	0	0	0	0	2	13	28	6.6	0.6		
I plan to wear gloves when preparing fresh produce	High	43	0	0	0	0	0	2	41	7.0	0.2	2.590	.012*
	Low	43	0	0	0	0	2	8	33	6.7	0.6		
I plan to use a thermometer to check the doneness of meats and meat dishes.	High	43	1	0	0	0	0	1	41	6.8	0.9	1.319	.191
	Low	43	0	0	0	1	2	10	30	6.6	0.7		
I do not plan to wash the skins of melons before slicing. (R)	High	43	35	5	0	0	0	0	3	1.5	1.6	0.492	.624
	Low	43	31	7	0	1	1	2	1	1.7	1.5		
I plan to stay home from work when I am feeling ill.	High	43	0	0	0	0	1	4	38	6.9	0.4	3.128	.003**
	Low	43	1	0	2	1	2	13	24	6.2	1.3		

Note. *n* = 86. All items were measured on a 7-point scale, anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). (R) = Reverse-scored item. For all items except (R) item, stronger agreement with the item (higher number) equates to higher behavioral intent to follow safe food handling procedures. For (R) item, stronger disagreement with the item (lower number) equates to higher behavioral intent to follow safe food handling.

*Significant at the $p \leq .05$ level, two-tailed. **Significant at the $p \leq .01$ level, two-tailed. ***Significant at the $p \leq .001$ level, two-tailed.

Story-Specific Beliefs

Story-Specific Beliefs Before and After Viewing Video. Paired samples *t*-tests were used to compare participants' story-specific beliefs before and after watching the video (Table 9). Statistically significant increases in story-specific beliefs were noted on two items within the High TS group, with none present in the Low TS group. High TS group members' disagreement with "*A foodborne illness outbreak is not a threat in school foodservice*" increased significantly, pre-video (M = 1.4 of 7.0, SD = 1.2) and post-video (M = 1.1 of 7.0, SD = 0.8), t (42) = 2.31, p = .026, and their agreement with "*A foodborne illness outbreak can damage a school's reputation*" also increased significantly, pre-video (M = 6.5 of 7.0, SD = 1.2) and post-video (M = 6.8 of 7.0, SD = 0.8), t (42) = -2.19, p = .034.

High and Low TS Groups' Story-Specific Beliefs after Viewing Video. Independent samples *t*-tests were used to compare High and Low TS participants' post-video story-specific beliefs. Table 10 presents the frequency of each response, response means with standard deviations, and *t*-test results. Statistically significant differences were noted between mean responses on three out of five items. High TS participants reported significantly higher agreement than Low TS participants with two statements: *"There are serious risks when food safety procedures are not followed"* ($p \leq$ .05) and "*A foodborne illness outbreak creates emotional stress for employees, families and students*" ($p \leq$ .01). In addition, High TS participants reported significantly lower agreement with "*A foodborne illness outbreak is not a threat in school foodservice"* ($p \leq$ .05) than did Low TS Participants.

Table 9 Story-Specific Beliefs Before and After Viewing Video

Item	Low Transportation Group (n = 43)				High Transportation Group (n = 43)			
	Mean Response ± SD				Mean Response ± SD			
	Before	After	t	p value	Before	After	t	p value
There are serious risks when food safety procedures are not followed.	6.6±1.0	6.6±1.1	0.00	1.000	6.8±0.9	7.0±0.0	-1.46	.152
A foodborne illness outbreak is not a threat in school foodservice. (R)	1.5±1.1	1.8±1.8	-0.83	.412	1.4±1.2	1.1±0.8	2.31	.026*
A foodborne illness outbreak creates emotional stress for employees, families and students.	6.4±1.0	6.6±0.6	-1.13	.268	6.5±1.3	6.9±0.4	-1.84	.073
A foodborne illness outbreak can damage a school's reputation.	6.5±0.8	6.5±1.0	-0.13	.895	6.5±1.2	6.8±0.8	-2.19	.034*
It is not likely that a foodborne illness outbreak will lead to a lawsuit. (R)	2.1±1.4	1.8±1.4	1.49	.143	1.6±1.1	1.6±1.4	0.10	.922

Note. $n = 86$. All items were measured on a 7-point scale, anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). (R) = Reverse-scored item. For all items except (R) items, stronger agreement with the item (higher number) equates to stronger story-specific beliefs. For (R) item, stronger disagreement with the item (lower number) equates to stronger story specific beliefs.
*Significant at the $p \leq .05$ level, two-tailed.

Table 10 Comparison of High and Low Transportation Groups' Story-Specific Beliefs after Viewing Video

Item on Transportation Scale Survey	Transportation Group	Responses 1 = *Strongly disagree* 7 = *Strongly agree*								Mean	SD	t	p value
		n	1	2	3	4	5	6	7	Mean	SD	t	p value
There are serious risks when food safety procedures are not followed.	High	43	0	0	0	0	0	0	43	7.0	0.0	2.456	.018*
	Low	43	1	0	1	0	0	8	33	6.6	1.1		
A foodborne illness outbreak is not a threat in school foodservice. (R)	High	43	40	1	0	0	0	1	0	1.1	0.8	2.257	.028*
	Low	43	30	6	1	1	0	1	3	1.8	1.8		
A foodborne illness outbreak creates emotional stress for employees, families and students.	High	43	0	0	0	0	1	2	40	6.9	0.4	3.144	.002**
	Low	43	0	0	0	0	3	13	27	6.6	0.6		
A foodborne illness outbreak can damage a school's reputation.	High	43	0	1	0	0	0	3	39	6.8	0.8	1.405	.164
	Low	43	1	0	0	0	2	10	30	6.5	1.0		
It is not likely that a foodborne illness outbreak will lead to a lawsuit. (R)	High	43	33	6	0	1	0	2	1	1.6	1.4	0.603	.548
	Low	43	27	9	4	0	0	2	1	1.8	1.4		

Note. n = 86. All items were measured on a 7-point scale, anchored by 1 (*strongly disagree)* and 7 (*strongly agree)*. (R) = Reverse-scored item. For all items except (R) items, stronger agreement with the item (higher number) equates to stronger story specific beliefs. For (R) item, stronger disagreement with the item (lower number) equates to stronger story specific beliefs.
*Significant at the *p* ≤ .05 level, two-tailed. **Significant at the *p* ≤ .01 level, two-tailed.

Self-Efficacy

Self-Efficacy Before and After Viewing Video. Paired samples *t*-tests were used to compare participants' level of self-efficacy before and after watching the video (Table 11). Statistically significant changes in self-efficacy were noted on two items in the High TS group and one in the Low TS group. For the item, "*I am not confident that I can stay home from work if I am feeling ill,*" both groups displayed a significant change in self-efficacy, but in opposite directions. High TS group members' post-video mean response (*M* = 3.1 of 7.0, *SD* = 2.6) was significantly higher (decreased confidence/ decreased self-efficacy) than their pre-video mean response (*M* = 2.3 of 7.0, *SD* = 2.0), *t* (42) = -2.26, *p* = .029. In contrast, Low TS group members' post-video mean response (*M* = 2.5 of 7.0, *SD* = 2.0) was significantly lower (increased confidence/ increased self-efficacy) than their pre-video mean response (*M* = 3.2 of 7.0, *SD* = 2.2), *t* (42) = 2.20, *p* = .034. For the item, "*I feel confident in my ability to use a thermometer to check the doneness of meats and meat dishes*," High TS group members' post-video mean response (*M* = 6.8 of 7.0, *SD* = 0.4) was significantly higher (increased confidence/increased self-efficacy) than their pre-video response (*M* = 6.7 of 7.0, *SD* = 0.8), *t* (42) = -2.44, *p* = .019.

Table 11 Self-Efficacy Before and After Viewing Video

Item	Low Transportation Group (n = 43)				High Transportation Group (n = 43)			
	Mean Response ± SD				Mean Response ± SD			
	Before	After	t	p value	Before	After	t	p value
I feel confident in my ability to prepare food in a way that prevents contamination.	6.4±1.0	6.6±0.6	-1.30	.202	6.4±1.1	6.7±0.6	-1.96	.057
I am not confident that I can stay home from work if I am feeling ill. (R)	3.2±2.2	2.5±2.0	2.20	.034*	2.3±2.0	3.1±2.6	-2.26	.029*
I feel confident that I can wash my hands in a way that prevents contamination.	6.7±0.5	6.7±0.5	0.57	.570	6.6±1.1	6.9±0.3	-1.78	.083
I feel confident in my ability to use a thermometer to check the doneness of meats and meat dishes.	6.4±0.9	6.5±0.7	-1.27	.210	6.7±0.8	6.8±0.4	-2.44	.019*
I am confident that I can prepare and serve food in a way that prevents a foodborne illness outbreak.	6.5±0.6	6.4±0.7	0.63	.533	6.5±1.1	6.4±1.3	0.44	.660

Note. n = 86. All items were measured on a 7-point scale, anchored by 1 (*strongly disagree)* and 7 (*strongly agree).* (R) = Reverse-scored item. For all items except (R) item, stronger agreement with the item (higher number) equates to higher self-efficacy. For (R) item, stronger disagreement with the item (lower number) equates to higher self-efficacy.
*Significant at the $p \leq .05$ level, two-tailed.

Discussion

The purpose of this study was to investigate whether storytelling, used as a training tool, would influence school foodservice employees' compliance with food safety guidelines. Study findings provide new insights into the use of stories to influence food safety behaviors and the use of Green and Brock's (2000) Transportation Scale to measure transportation into food safety stories.

Overall, study results confirmed previous findings involving narrative transportation:

- Participants who were more highly transported into the story of *Glenda's Horrible Day* reported stronger food safety behavioral intent, specifically in areas highlighted by the story, after viewing the video.

- Highly transported participants also reported stronger agreement with food safety messages embedded in the story after viewing the video.

- For participants who experienced low transportation into the story, there were no increases in behavioral intent or story-specific beliefs after viewing the video.

- Highly transported participants were those who (a) were more familiar with the story topic, (b) were mentally engaged with the story, (c) responded emotionally to the story, and (d) identified with and felt empathy for the story characters.

Transportation into the Story

High and Low Transportation Groups. The lack of extreme low scores indicated that *Glenda's Horrible Day* was compelling enough to transport all participants to some degree. The actual range of total transportation scores was 40 – 91, with a maximum possible of 91 and a median of 72.5. This compares well with Green and Brock's (2000) results; their range of total

transportation scores was 41 – 103, with a maximum possible of 105 and a median of 72, for a gruesome story about the murder of a young girl.

High and Low Transportation Groups' Responses on Transportation Scale. The responses of High TS group members on the Transportation Scale differed significantly from those of Low TS members for 12 out of the 13 items ($p \leq .01$). High TS group members reported significantly higher cognitive and emotional engagement with the story, a lower level of distraction, and a stronger desire to learn how the story ended. They reported that the story was relevant to their everyday work life, they could picture themselves in the story, and they found themselves thinking about how the story could have turned out differently. They strongly identified with Glenda, expressed empathy for her, and supported her actions. Regarding the video, 36 of 43 High TS group members reported that the video influenced them *"very much"* to practice safe food handling.

The Low TS group members, on the other hand, reported lower mental involvement in the story and a higher level of distraction. Their emotional involvement in the story was minimal, and they did not picture themselves in the story. They found the story to be less relevant to their everyday work life and were not inclined to think of ways the story could have turned out differently. They did not identify with Glenda; however, they did express empathy for her and supported her actions. Regarding the video, only 13 of 43 Low TS group members reported that the video influenced them "*very much*" to practice safe food handling.

Demographic Characteristics of High and Low Transportation Group Participants. Some differences were noted in the demographics of the High TS and Low TS group members. The High TS group contained more supervisory staff and fewer male participants. They tended to be slightly older than the Low TS group members, with 33 of 43 High TS members over 40

years of age, compared to 23 of 43 Low TS group members. The connection between age and transportation has been inconclusive in other studies in narrative transportation (Van Laer et al., 2014). Some researchers concluded that younger participants may be more transportable because they are more easily influenced, and some argued that older participants may be more transportable because they are more likely to have the knowledge and life experience needed to fully interpret the story. In this study, it appeared that knowledge and life experience may have increased transportation into the story.

Transportation into the Story. Research has consistently shown that individuals who were more transported into the story reported stronger agreement with the story's messages (Escalas, 2004; Green, 2004; Green et al., 2008; Mazzocco et al., 2010; Slater & Rouner, 2002; Wang & Calder, 2006). In addition, individuals who were more transported into the story demonstrated behavior that supported the story's messages (Cullen, 2008; Cullen & Fein, 2005; Quaid et al., 2010; Rickets et al., 2010; Williams et al., 2010). Therefore, the most persuasive stories are those that successfully transport viewers.

Glenda's Horrible Day succeeded in transporting all of the participants into the story to varying degrees. This success was due in large part to the valuable guidance provided by the work of earlier researchers, who identified key elements of effective narrative transportation. The elements are presented in three categories: 1) stories that the storyteller creates, 2) characteristics of the story receiver, and 3) the intended result - behavioral intent change and story-specific beliefs (Figure 4-1). The next section will focus on how these key elements were incorporated into *Glenda's Horrible Day* and how they affected study participants' transportation into the story.

Figure 2 Key Elements of Effective Narrative Transportation
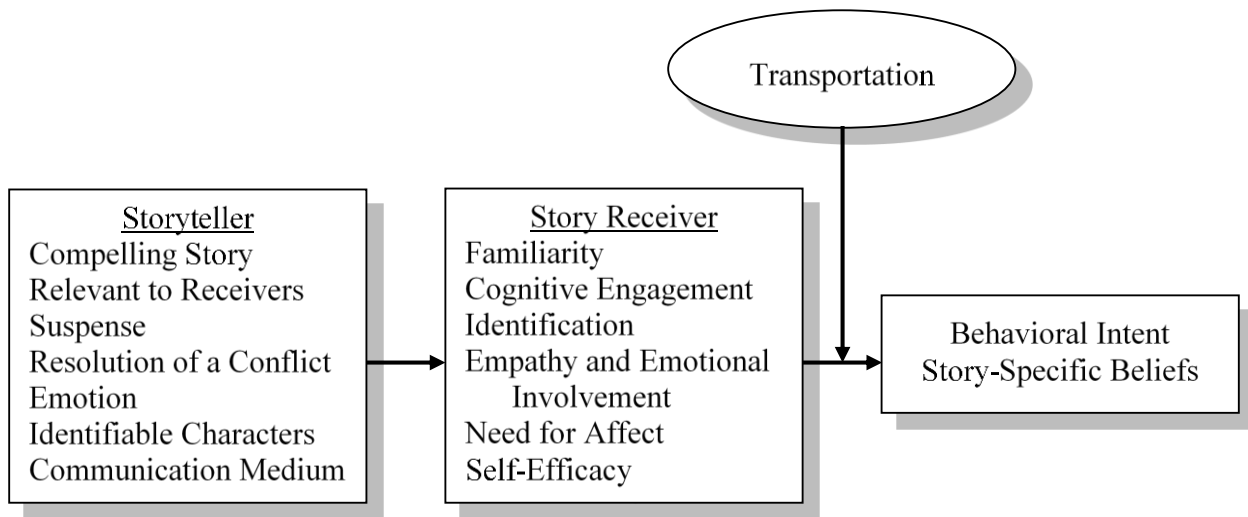
Adapted from "Transportation into narrative worlds: The role of prior knowledge and perceived realism," by M. Green, 2004, Discourse Processes, 38, p. 801. Copyright 2004 by Lawrence Erlbaum Associates, and "The Extended Transportation-Imagery Model: A meta-analysis of the antecedents and consequences of consumers' narrative transportation," by T. Van Laer, K. De Ruyter, L. Visconti, and M. Wetzels, 2014, Journal of Consumer Research, 40, p. 801. Copyright 2013 by Journal of Consumer Research.

Storyteller

Compelling Story. To truly engage and transport viewers, the video had to offer a

compelling story line with an appealing delivery. *Glenda's Horrible Day* started with an

attention-grabbing beginning that drew viewers in, inviting them to wonder how the crisis

happened and how the situation would be resolved. Glenda barely had time to put her apron on

when she was called into the principal's office and given the responsibility of finding the cause

of the foodborne illness outbreak. The story was designed to be relevant to school foodservice

staff members, as it was set in a school kitchen and involved a situation that is plausible in this

environment.

As the story progressed, clues were gradually revealed as to possible causes of the

foodborne illness outbreak. Glenda went through a mental checklist of possible causes, inviting

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viewers to join her in solving the mystery. The actual cause of the outbreak was not revealed until the end of the story.

The story included characters and a situation that engaged viewers' emotions. Glenda was embarrassed and frustrated that her department was accused of a food safety failure. She felt that she had done her best as a manager, and yet it wasn't enough. The video production team used close camera shots of actors' faces, emotional music, and strategically-placed sound effects to put viewers in Glenda's shoes, so that they could experience some of the same emotions that she felt.

In this study, participants were successfully transported into a story presented in video format. Interestingly, film, print, and spoken stories can be equally transporting (Dal Cin et al., 2004; Green et al., 2008). Many may find that films make it easier to enter the narrative world, because the journey is made relatively effortless. Whereas written stories require an investment of effort from the reader to create the imagery, a filmed presentation provides a "complete" version of the story; the viewer does not need to create the scenes in their imagination. Viewers can see the setting of the film, meet the characters, hear their voices, and observe their actions. In addition, viewers' emotional responses can be enhanced by the film's music soundtrack (Green et al., 2008).

Story Receiver

The story receiver plays a major role in the interpretation of the story. Their individual attributes may affect the intensity and effects of narrative transportation (Green, 2008; Green & Brock, 2002).

Familiarity. Familiarity refers to the degree to which a story receiver has prior knowledge of or personal experience with the story topic (Green, 2004). A certain amount of

familiarity with the story topic is needed for the viewer to interpret and understand the information contained in the story's plot. Viewers with more familiarity with the topic will experience greater transportation, most likely due to a greater interest in the topic and because they find it easier to imagine the story plot (Green, 2004).

Matching is a technique used to increase transportation by making aspects of the story familiar to the viewer (Green, 2008). To achieve this end, *Glenda's Horrible Day* intentionally incorporated themes and setting elements that were familiar to the audience members. Many of the sights and sounds that school foodservice personnel encounter each day were included. They saw a commercial kitchen with shiny stainless steel equipment and countertops, thermometers testing the end-point cooking temperatures, and employees wearing aprons and hairnets. They heard vegetables being chopped, steam table pans clinking, and the all-too-common interchange between a staff member and supervisor about running low on supplies.

Although the familiar setting engaged both line staff and supervisory staff, the situation of recovering from a foodborne illness outbreak proved more engaging to the supervisory staff. The story was told from the viewpoint of Glenda, a school foodservice supervisor, who was responsible for accomplishing her department's objectives by training, monitoring, and coaching her staff, as well as enforcing policies and procedures. Glenda's concerns and fears about the outbreak resonated more with the directors and supervisors than with the line staff members, and as a result, 11 of 14 supervisory staff were highly transported into the story, compared to only 28 of 66 line staff members. The results align with Green's (2004) findings that viewers with more knowledge or experience relevant to the story's themes will experience greater transportation.

Cognitive Engagement. Cognitive engagement is the degree of focused attention on the story (Van Laer et al., 2013). *Glenda's Horrible Day* engaged the interest and cognitive focus of

some participants more than others. Individuals approach and interpret stories according to their own backgrounds and goals (Green, 2007), and a story will "hook" viewers to the extent that they find the story interesting and useful to them.

When individuals share a similarity with the characters or situations in a story, they are more likely to be interested in the story and become transported into it (Green, 2004). Not surprisingly, supervisory staff members reported the highest mental engagement with the story, as the story was told from a supervisor's point of view, and it addressed the challenges a supervisor might face during a foodborne illness outbreak in their school. The story did engage the interest of some line staff as well, however. Perhaps these individuals saw the problem as belonging to the entire team, rather than solely the problem of the supervisor.

Identification. Identification with a story character involves seeing part of one's self represented in that character (Cohen, 2001). Identification with Glenda was encouraged by matching her age, gender, and attire to that of a typical school foodservice staff member.

Supervisory staff identified more with Glenda than did the line staff. Although Glenda shared many attributes in common with line staff, they did not readily picture themselves in her situation and found the story to have limited relevance to their everyday work life. As a result, only 40 of 72 line staff identified with her, compared to 12 of 14 supervisory staff.

Supervisory staff also expressed stronger agreement with the food safety messages embedded in the story, reported stronger support for Glenda's decision-making, and were more highly transported into the story (11 of 14 supervisory staff were highly transported, while 32 of 72 line staff were highly transported).

The results are consistent with Green's (2004) findings that pre-existing similarities between the individual and the story character lead to stronger identification with the story

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character, and stronger identification with the story character leads to increased transportation into the story.

   Emotional Involvement. Supervisory staff reported the highest emotional involvement in the story and the highest amount of empathy for Glenda. Being supervisors themselves, they could easily understand how Glenda felt in this situation. Supervisory staff were also the group most persuaded by the video to practice safe food handling. These results are consistent with Green and Brock's (2000) assertion that viewers who experience some of the same emotions as the story's characters form empathetic connections with those characters, becoming more trusting and persuadable, and this attachment encourages story-based attitude change. In addition, individuals who feel an empathetic connection with story characters are more likely to be transported into the story (Mazzocco et al., 2010).

   Although the line staff did not readily identify with Glenda, they did feel empathy for her. They were able to understand and share her feelings. The sad situation that Glenda found herself in tugged on the heartstrings of most of the participants. All of the supervisory staff and 59 of 72 line staff empathized with Glenda. Participants were likely thankful that they had never been in Glenda's situation and appreciated the difficult decisions that she had to make. They demonstrated their support for Glenda by affirming her actions, with 77 of 86 respondents agreeing that Glenda reacted appropriately in the situation.

   Need for Affect. Because the experience of transportation depends heavily on participants' emotional responses to the events in the story and emotional identification with the story's characters, extra care was taken to maximize the video's emotional impact. In spite of this effort, the Low TS group members reported low emotional involvement (M = 3.4 of 7.0) with the story. What was the reason for the low emotional involvement?

Characteristics of the participants themselves can facilitate or limit transportation; certain individuals are more willing and able to become transported into narrative worlds (Mazzocco & Green, 2011). Some individuals are emotionally moved by a story as minimal as a thirty-second commercial, while others remain impassive after watching a poignant movie.

Appel and Richter (2010) suggested that the source of the difference is each individual's "need for affect"; that is, individuals differ in their desire to experience strong emotions. "Need for affect" is defined by Maio and Esses (2001) as "the general motivation of people to approach or avoid situations and activities that are emotion-inducing for themselves and others." Individuals who fall on the higher end of the need for affect scale see emotions as useful tools to shape judgments and behavior. Their entertainment choices might include emotional movies like Forrest Gump, E.T., or Schindler's List. On the other hand, those on the lower end of the scale see emotions as uncomfortable and unproductive. Their entertainment choices might include reality shows, comedies, or documentaries. It is likely that individuals who were less transported into *Glenda's Horrible Day* were also lower in need for affect.

If the story had included the death of a student due to foodborne illness, would that have engaged the emotions of the Low TS participants? For those low in need for affect, a situation containing too much emotion may cause them to "tune out." In general, motivation to experience emotions is stronger than motivation to avoid emotions; however, there appears to be a threshold where the avoidance motivation takes hold and becomes stronger (Maio & Esses, 2001). This might be a point where the individual considers the emotional content of the experience to be at an uncomfortable level. Therefore, raising the emotional intensity of the story may actually alienate some participants. Thus, for individuals who are low in need for affect, rhetorical arguments might prove more effective than narrative transportation.

Self-Efficacy. Self-efficacy is the belief an individual has about his or her ability to perform a particular task (Bandura, 1986). Individuals with high self-efficacy are more likely to believe that they can learn and perform new skills (Carnes, 2010). Self-efficacy is an important factor to consider when attempting to affect behavior change, as, logically, employees will not engage in behaviors that they do not believe they can perform (Brannon et al., 2009). Self-efficacy is seen as a moderator of behavioral intent change in the Theory of Planned Behavior (Ajzen, 1991). The theory posits that behavioral intent requires adequate self-efficacy before it can be realized. Insufficient self-efficacy might explain a lack of behavioral intent.

In terms of "adequate" self-efficacy, it would appear that both High TS and Low TS members considered themselves fully able to perform the tasks mentioned on the survey. The mean self-reported level of confidence to perform each of the tasks ranged from 6.4 to 6.7 out of a maximum of 7.0. Clearly, insufficient self-efficacy does not appear to be a barrier.

According to Van Laer et al. (2014), narrative transportation into a story can increase self-efficacy. They suggest that stories that show viewers how barriers can be overcome may lead to more positive self-efficacy and behavioral intention. Story receivers can experience the negative event vicariously and learn from the story characters' experiences, which can boost their confidence in their own ability to handle a similar crisis.

Although self-efficacy appeared to be affected by viewing the video, the results are somewhat contradictory. For the item "*I am not confident that I can stay home from work when I am feeling ill,*" Low TS group members reported increased self-confidence, and High TS group members reported decreased self-confidence. It is possible that the curious results could be due to confusion from the reverse nature of the question. One item on the survey did reveal increased self-efficacy after viewing the video. High TS group members reported significantly higher

confidence in their ability to use a thermometer to check the doneness of meats ($p < .05$). This result could be in response to scenes in the video where a foodservice employee tested the end-point temperature of hamburger patties. Perhaps observing the foodservice employee perform the task the same way that they did validated their procedure and boosted their confidence.

Behavioral Intent

Study results were consistent with those of Williams et al. (2010) in that participants who were highly transported into the story of *Glenda's Horrible Day* reported stronger food safety behavioral intent, specifically in areas highlighted by the story, after viewing the video. The behavioral intent scores of High TS group members increased significantly ($p \leq .05$) on two of the five items after watching the video (Table 7). For participants who experienced low transportation into the story, there were no increases in behavioral intent after viewing the video.

It is interesting to note that the only two items that showed significant increases in behavioral intent were the two items that dealt directly with the cause of the foodborne illness outbreak. Highly transported group members responded to the story's message by increasing their behavioral intent to "*wear gloves while preparing fresh produce*" and "*stay home from work when feeling ill.*"

In the story of *Glenda's Horrible Day*, the investigation revealed that the source of the outbreak was the fruit salad, which had been prepared by an ill food handler who was not wearing gloves. The other three behavioral intent items, although representing good food safety practices, were not implicated as causes of the foodborne illness outbreak and did not attract the attention of the participants. Participants' behavioral intent was affected only by the main point of the story: To avoid a foodborne illness outbreak of this nature, wear gloves while preparing

fresh produce and stay home from work when feeling ill. It appears that High TS participants increased their behavioral intent specifically in areas highlighted by the story.

Increased behavioral intent was also observed in responses to the item, "*the video influenced me to practice safe food handling."* Here, 36 of 43 High TS group members reported that the video influenced them "*very much,*" compared to only 13 of 43 Low TS group members.

Study results suggested that transportation into the story was positively related to increased behavioral intent, specifically in areas highlighted by the story. For participants who experienced low transportation into the story, there was no increase in behavioral intent after viewing the video. To successfully influence participants' behavioral intent with a story, it is advantageous to design stories that will effectively transport participants.

Story-Specific Beliefs

Study results were consistent with Green and Brock's (2000) findings that highly transported participants reported stronger agreement with messages embedded in the story after viewing the video. High TS group members' disagreement with *"A foodborne illness is not a threat in school foodservice*" increased, and their agreement with "*A foodborne illness can damage a school's reputation"* also increased after watching the video (Table 9). For participants who experienced low transportation into the story, there was no increase in agreement with embedded food safety messages after viewing the video.

Conclusions

Stories are gaining recognition as an effective way to influence attitudes, beliefs, and behavior. Green and Brock (2000) added significantly to our understanding of the persuasiveness of stories by identifying a key mechanism behind the phenomenon. The process involves the transportation of individuals into the narrative world of the story. When individuals are transported into a story, they integrate story information into their real-world beliefs and behaviors.

In this study, school foodservice employees were shown a brief video, entitled *Glenda's Horrible Day*, dramatizing a foodborne illness outbreak in a school. Behavioral intent to handle food safely was measured both before and after watching the video, as well as story-specific beliefs and transportation into the story. The story's ability to transport viewers into the story was tested, as well as its ability to influence school foodservice employees' compliance with food safety guidelines.

Glenda's Horrible Day, succeeded in transporting all of the participants into the story to varying degrees. This success was due in large part to the valuable guidance provided by the work of earlier researchers who identified key elements of effective narrative transportation. Transportation into *Glenda's Horrible Day* was encouraged by including key elements such as suspense, familiarity, identification, and emotion.

To truly engage and transport viewers, the video had to offer a compelling story line with an appealing delivery. Interestingly, the story itself was not the sole determinant of the amount of transportation experienced by the participants. Story receivers' interpretation of the story and individual attributes also facilitated or limited transportation. For example, each individual's

"need for affect," or desire to either experience or avoid strong emotions, played a role in the amount of narrative transportation that he or she experienced.

Overall, study results were consistent with previous findings involving narrative transportation:

- Participants who were more highly transported into the story of *Glenda's Horrible Day* reported stronger food safety behavioral intent, specifically in areas highlighted by the story, after viewing the video.

- Highly transported participants also reported stronger agreement with food safety messages embedded in the story after viewing the video.

- For participants who experienced low transportation into the story, there were no significant increases in behavioral intent or story-specific beliefs after viewing the video.

- Highly transported participants were those who (a) were more familiar with the story topic, (b) were mentally engaged with the story, (c) responded emotionally to the story, and (d) identified with and felt empathy for the story characters.

To successfully influence participants' behavioral intent with a story, it is advantageous to design stories that will effectively transport participants. For individuals who are low in need for affect, a rhetorical argument may be more persuasive than a story in affecting beliefs and behaviors.

Limitations

1. *Sample Size.* The small sample size (< 100) decreased statistical power, limiting the ability to achieve statistical significance on some t-tests and ANOVA tests.

2. *Geographical.* Data were collected in only one state, which limits generalizability.

3. *Demographic*. Directors and Supervisors were under-represented in the sample.

4. *Delivery of Intervention.* The video was shown in four different locations, using four different audio-visual systems, and each system had its own limitations in sound and picture quality.

5. *Social Desirability Response Bias.* Social desirability response bias is a situation where respondents answer questions in a way that would be viewed favorably by others rather than report their actual opinions or behaviors. Foodservice employees may self-report compliance with proper food handling procedures more often than they actually practice them. The behavioral intent, story-specific beliefs and self-efficacy items were especially susceptible to social desirability bias, as they described the expected behaviors of foodservice employees; that is, there were "right" and "wrong" answers. Participants' responses tended to congregate around the "correct" answers.

    By contrast, participants' responses on the transportation scale appear to be relatively free of social desirability bias, perhaps because the scale does not have "right" or "wrong" answers. Given the variety of responses received on each item, it appears that participants felt comfortable expressing their honest opinions, and consequently, the survey results represent a fairly accurate picture of their transportation into the story.

    Social desirability response bias can be greatly reduced by using direct observation to assess foodservice employees' compliance with food safety guidelines (Paez, Strohbehn &

Sneed, 2007; Pilling et al., 2008; Roberts et al., 2008; York et al. 2012). The social desirability theory suggests that employees may temporarily improve their compliance with food safety protocols when they are aware of being observed. York et al. (2012) found that employees did exhibit increased compliance rates with food safety guidelines while being observed; however, after approximately one hour, employees returned to their usual behaviors. In other words, after one hour, the researchers' presence did not influence employees' behavior. Direct observation appears to be the most accurate means of measuring employees' typical food safety compliance, as long as data collected during the first hour of observation is disregarded. Unfortunately, direct observation was not possible in this study due to limited time and resources.

6. *Reliability and Validity of Construct Scales*. An exploratory factor analysis ($n = 86$) was done on the survey items measuring the constructs of behavioral intent (BI), story-specific beliefs (SB), and self-efficacy (SE). For each construct, the items did not load on one factor; therefore, for the purposes of this study, they were considered as individual items.

An internal consistency reliability analysis was conducted for both the pre-video and post-video responses on the behavioral intent scale, yielding a Cronbach's alpha coefficient of .62 and .54, respectively. Reliability analysis was also conducted for both the pre-video and post-video responses on the story-specific beliefs scale, yielding a Cronbach's alpha coefficient of .56 and .53, respectively.

The low construct reliability and validity may have been due to several factors. To begin with, the study had a small sample size (< 100). Also, a self-generated rather than an established scale was used measure the constructs of behavioral intent (BI), story-specific beliefs (SB), and self-efficacy (SE). More valid and reliable results could have been

achieved by using established scales with known psychometric properties. Further, using established scales to measure the three constructs would have strengthened the researcher's ability to draw conclusions about group differences and to compare the results with other studies. Finally, only one to two questions were included on the survey to assess each behavior, rather than the five to six per behavior that Ajzen (2006) recommends. In addition, Theory of Planned Behavior surveys typically include questions that assess each of the theory's major constructs: attitude, perceived norm, perceived behavioral control, and intention.

7. *High Initial Responses.* Studies in narrative persuasion have often used story themes that were controversial (e.g. murder of a young child by a psychotic patient, a gay man returning to his college fraternity and encountering homophobia). The expectation would be that participants' feelings about these situations would vary widely, both before and after reading the story, and this would clearly show whether a belief change took place. *Glenda's Horrible Day*, on the other hand, did not contain story themes that were controversial, and as a result, received fairly homogeneous responses from participants for the behavioral intent items both before and after watching the video. For the behavioral intent items, the mean was very high before they saw the video (M = 6.1 − 6.9 out of 7.0), which afforded limited room for improvement.

Chapter 5 - Summary and Conclusions

Stories have been used successfully to influence beliefs and behaviors in a wide variety of settings; however, there is a paucity of research involving the use of storytelling to promote food safety. This study investigated whether storytelling, used as a training tool, would influence school foodservice employees' compliance with food safety guidelines. The results of this study add new understanding to the subjects of training transfer and narrative transportation and provide directions for future research in these areas.

Summary of Study

Building on the previous work of Green and Brock (2000), this study used an error-based story, entitled *Glenda's Horrible Day*, to communicate to employees what can go wrong if proper food handling protocols are not followed. Behavioral intent to handle food safely was measured both before and after watching the video, as well as story-specific beliefs and transportation into the story.

Research Question 1

To what degree will an error-based story transport employees into the story?

Glenda's Horrible Day succeeded in transporting all of the participants into the story to varying degrees. The video was able to achieve a level of transportation in participants equal to that achieved by Green and Brock's (2000) written narrative, *Murder in the Mall*. This success was due in large part to the valuable guidance provided by the work of earlier researchers, who identified key elements of effective narrative transportation. The design and production of *Glenda's Horrible Day* was guided by this useful information.

To truly engage and transport viewers, the video had to offer a compelling story line with an appealing delivery. Interestingly, the story itself was not the sole determinant of the amount of

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transportation experienced by the participants. Story receivers' interpretation of the story and individual attributes also facilitated or limited transportation. For example, each individual's "need for affect," or desire to either experience or avoid strong emotions, played a role in the amount of narrative transportation that he or she experienced.

The results of this study were consistent with prior studies, in that highly transported participants were those who (a) were more familiar with the story topic, (b) were mentally engaged with the story, (c) responded emotionally to the story, and (d) identified with and felt empathy for the story characters.

Research Question 2

To what degree will an error-based story influence employees' food safety behavioral intentions?

This study successfully illustrated the persuasiveness of the story in influencing participants' food safety behavioral intent. Highly transported group members responded to the story's message by increasing their behavioral intent to "*wear gloves while preparing fresh produce*" and "*stay home from work when feeling ill.*" Importantly, these were the only two items that dealt directly with the cause of the foodborne illness outbreak.

In the story of *Glenda's Horrible Day*, the investigation revealed that the source of the outbreak was the fruit salad, which had been prepared by an ill food handler who was not wearing gloves. The other three behavioral intent items, although representing good food safety practices, were not implicated as causes of the foodborne illness outbreak and did not attract the attention of the participants. Participants' behavioral intent was affected only by the main point of the story: To avoid a foodborne illness outbreak of this nature, wear gloves while preparing fresh produce and stay home from work when feeling ill.

Participants who were more highly transported into the story of *Glenda's Horrible Day* reported stronger food safety behavioral intent, specifically in areas highlighted by the story, after viewing the video. For participants who experienced low transportation into the story, there was no increase in behavioral intent.

Research Question 3

To what degree will an error-based story influence employees' story-specific beliefs?

Study results were consistent with Green and Brock's (2000) findings that highly transported participants reported stronger agreement with messages embedded in the story after viewing the video. High TS group members' disagreement with *"A foodborne illness is not a threat in school foodservice"* increased, and their agreement with "*A foodborne illness can damage a school's reputation"* also increased after watching the video. For participants who experienced low transportation into the story, there was no increase in agreement with embedded food safety messages after viewing the video.

Research Question 4

Does a positive correlation exist between the degree of transportation into the story and an intention to change behavior?

There was a positive relationship between transportation into the story and increased behavioral intent to "*wear gloves while preparing fresh produce*" and "*stay home from work when feeling ill*," but not for other areas of behavior.

Future Research

To date, no other studies have examined narrative transportation in the school nutrition environment. Future studies could build on these results by including direct observations of food handling behaviors both before and after the intervention to determine the actual impacts on food safety behaviors.

In addition, this study could have been improved by using established scales to measure the constructs of behavioral intent (BI), story-specific beliefs (SB), and self-efficacy (SE). Using scales with known psychometric properties strengthens the researcher's ability to draw conclusions about group differences and to compare their results with other studies.

Additionally, longitudinal studies are needed to measure the long-term effects of belief and behavior change. How long does the behavior change last? Will there be a decline over time, or an increase ("sleeper effect")?

Also, more studies are needed to test the effects of narrative transportation in video-based interventions, as few studies have evaluated the impact of narrative communication in ways other than written form. Another interesting area of exploration is how long a narrative needs to be to achieve transportation and whether longer narratives achieve stronger effects than brief ones.

Future studies may consider pre-testing participants with additional scales, such as the Need for Affect Questionnaire (Maio & Esses, 2001), which measures participants' comfort with experiencing emotions. This additional information would help researchers better understand their audiences and be in a stronger position to design the most effective training interventions.

Implications

This study contributes to the field of dietetics and foodservice management by offering a valuable tool to improve the effectiveness of food safety training. Safe food handling practices are especially important in foodservice operations that serve vulnerable groups, such as young children and the elderly. Error-based stories can be useful during training sessions to influence employees' compliance with food safety guidelines.

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Appendix A – Permission to Use Training Transfer Process

Diagram

Permission to Use Training Transfer Process Diagram

Barbara Carnes <BCarnes@maketrainingstick.com>
Sat 3/29/2014 5:56 AM
To: Heidi Weil;

Hi Heidi,
I'm glad you're finding the Training Transfer Process Diagram helpful. It is in my book Making Learning Stick, so you should cite the book itself. If you need a copy of the book, it can be ordered from my Website
www.MakeTrainingStick.com or Amazon.com
Best wishes and good luck with your thesis! Let me know if you need anything further.

-Barbara

**Read my white paper on new training transfer technologies!
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www.MakeTrainingStick.com

Appendix B – Survey Instrument

Dear Participant,

Thank you very much for agreeing to take this survey! This survey is part of a research project currently underway in Kansas State University's Department of Hospitality Management and Dietetics. Your input is important for the success of this study, and your assistance is greatly appreciated.

This survey will take approximately 15 minutes to complete. Participation in this study is completely voluntary, and you may discontinue at any time. Individual responses will not be identifiable, and all information will be reported as group data. You may skip any questions that make you uncomfortable. Completing the survey indicates that you are volunteering to participate in this study.

Below are the steps in the process:
1) You will receive a survey booklet.
2) Please fill out "Part 1" **only.**
3) You will be shown a brief video.
4) After watching the video, please fill out "Parts 2A, 2B, and 2C" of the survey.
5) The instructor will collect the surveys when completed.

If you have any questions regarding the survey or the video, please feel free to contact either Heidi or Dr. Sauer at the contact information listed below.

Thank you again for your assistance,

Heidi Weil, RD   Kevin Sauer, PhD, RD, LD
Master's Student   Associate Professor
Kansas State University   Dept. of Hospitality Management and Dietetics
hweil@ksu.edu   Kansas State University
(785) 537-5074   ksauer@ksu.edu
                                        (785) 532-5581

_____

For questions about your rights as a participant or the manner the study is conducted, you may contact Dr. Rick Scheidt, Chair of Committee on Research Involving Human Subjects, (785) 532-3224, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506.

Part 1 Instructions: Please rate your level of agreement with each statement by using the scale 1 (Strongly Disagree) to 7 (Strongly Agree). Please circle your response.

		Strongly Disagree	Disagree	Somewhat Disagree	Neither	Somewhat Agree	Agree	Strongly Agree
1.	There are serious risks when food safety procedures are not followed.	1	2	3	4	5	6	7
2.	I feel confident in my ability to prepare food in a way that prevents contamination.	1	2	3	4	5	6	7
3.	A foodborne illness outbreak is not a threat in school foodservice.	1	2	3	4	5	6	7
4.	I plan to wash my hands between glove changes.	1	2	3	4	5	6	7
5.	I plan to wear gloves when preparing fresh produce.	1	2	3	4	5	6	7
6.	I am not confident that I can stay home from work if I am feeling ill.	1	2	3	4	5	6	7
7.	I plan to use a thermometer to check the doneness of meats and meat dishes.	1	2	3	4	5	6	7
8.	A foodborne illness outbreak creates emotional stress for employees, families, and students.	1	2	3	4	5	6	7
9.	I feel confident that I can wash my hands in a way that prevents contamination.	1	2	3	4	5	6	7
10.	I do not plan to wash the skins of melons before slicing.	1	2	3	4	5	6	7
11.	A foodborne illness outbreak can damage a school's reputation.	1	2	3	4	5	6	7
12.	I plan to stay home from work when I am feeling ill.	1	2	3	4	5	6	7
13.	I feel confident in my ability to use a thermometer to check the doneness of meats and meat dishes.	1	2	3	4	5	6	7

14.	It is not likely that a foodborne illness outbreak will lead to a lawsuit.	1	2	3	4	5	6	7
15.	I am confident that I can prepare and serve food in a way that prevents a foodborne illness outbreak.	1	2	3	4	5	6	7

That completes Part 1.

You will now be shown a brief video.

After the video, please turn the page and

answer the questions

in Part 2A, Part 2B, and Part 2C.

Thank you very much!

Part 2A Instructions: Please circle the number by each statement that best represents your opinion about the video you just watched by using the scale 1 (Not at all) to 7 (Very much).

		Not at all			Neutral			Very much
1.	I could picture myself in the scene of events while watching the story.	1	2	3	4	5	6	7
2.	I was mentally involved in the story while watching it.	1	2	3	4	5	6	7
3.	Activity going on in the room around me was on my mind while watching the story.	1	2	3	4	5	6	7
4.	I found it easy to put the story out of my mind after the video ended.	1	2	3	4	5	6	7
5.	I wanted to learn how the story ended.	1	2	3	4	5	6	7
6.	The story affected me emotionally.	1	2	3	4	5	6	7
7.	I found myself thinking of ways the story could have turned out differently.	1	2	3	4	5	6	7
8.	I found my mind wandering as I watched the story.	1	2	3	4	5	6	7
9.	The events in the story are relevant to my everyday work life.	1	2	3	4	5	6	7
10.	I identified with Glenda.	1	2	3	4	5	6	7
11.	I empathized with Glenda.	1	2	3	4	5	6	7
12.	Glenda reacted appropriately in the situation.	1	2	3	4	5	6	7
13.	The video influenced me to practice safe food handling.	1	2	3	4	5	6	7

Part 2B Instructions: Please rate your level of agreement with each statement by using the scale 1 (Strongly Disagree) to 7 (Strongly Agree). Please circle your response.

		Strongly Disagree	Disagree	Somewhat Disagree	Neither	Somewhat Agree	Agree	Strongly Agree
1.	There are serious risks when food safety procedures are not followed.	1	2	3	4	5	6	7
2.	I feel confident in my ability to prepare food in a way that prevents contamination.	1	2	3	4	5	6	7
3.	A foodborne illness outbreak is not a threat in school foodservice.	1	2	3	4	5	6	7
4.	I plan to wash my hands between glove changes.	1	2	3	4	5	6	7
5.	I plan to wear gloves when preparing fresh produce.	1	2	3	4	5	6	7
6.	I am not confident that I can stay home from work if I am feeling ill.	1	2	3	4	5	6	7
7.	I plan to use a thermometer to check the doneness of meats and meat dishes.	1	2	3	4	5	6	7
8.	A foodborne illness outbreak creates emotional stress for employees, families, and students.	1	2	3	4	5	6	7
9.	I feel confident that I can wash my hands in a way that prevents contamination.	1	2	3	4	5	6	7
10.	I do not plan to wash the skins of melons before slicing.	1	2	3	4	5	6	7
11.	A foodborne illness outbreak can damage a school's reputation.	1	2	3	4	5	6	7
12.	I plan to stay home from work when I am feeling ill.	1	2	3	4	5	6	7

13.	I feel confident in my ability to use a thermometer to check the doneness of meats and meat dishes.	1	2	3	4	5	6	7
14.	It is not likely that a foodborne illness outbreak will lead to a lawsuit.	1	2	3	4	5	6	7
15.	I am confident that I can prepare and serve food in a way that prevents a foodborne illness outbreak.	1	2	3	4	5	6	7

Part 2C Instructions: The following questions will ask some basic questions about you. Please place a mark in the category that describes you best.

1. Which program are you affiliated with?

☐ School Lunch Program ☐ Child and Adult Care Food Program

2. What is your job title? _____

3. What is your gender?

☐ Female ☐ Male

4. What is your age range?

☐ < 20 ☐ 40 - 49

☐ 20 - 29 ☐ 50 – 59

☐ 30 - 39 ☐ > 59

5. How many years have you worked in foodservice?

☐ < 5 ☐ 10 – 14

☐ 5 - 9 ☐ > 14

6. How many years have you worked in your current position?

☐ < 5 ☐ 10 - 14

☐ 5 - 9 ☐ > 14

7. Do you have a food safety certification, such as ServSafe ®?

☐ Yes ☐ No

Thank you for your time!

Appendix C – Permission to Use Transportation Scale

Permission to Use Transportation Scale

Green, Melanie C <mcgreen@email.unc.edu>
Thu 3/13/2014 9:54 PM
To: Heidi Weil;
Cc: Green, Melanie C <mcgreen@email.unc.edu>;

Dear Heidi,

Thank you for your kind email! Your project sounds very interesting, and you are welcome to adapt the transportation scale for use with your video.

Best of luck with your research!

Melanie

Melanie C. Green
Department of Psychology
University of North Carolina at Chapel Hill
CB #3270, Davie Hall
Chapel Hill, NC 27599

Appendix D – Story Outline

Glenda's Horrible Day Story Outline

Scenario: School foodservice supervisor

- The health department has just informed her that they received several reports of flu-like symptoms. It appears that all of the victims are students at her school, and they all ate lunch in the school cafeteria yesterday. They plan to launch an investigation and will be visiting her school tomorrow morning.

- She reflects on the day:

    o What was on the menu? Tacos, fresh fruit salad, milk

    o Were any of the staff members ill?

    o Did everyone wash their hands when they should have?

    o Did they take the temperature of the hamburger after browning?

    o Did they wash the skin of the cantaloupes before slicing?

    o Did they wear gloves when they prepared the fruit salad?

    o She had heard that one school had received strawberries that were contaminated …are hers OK?

    o What is going to happen next?

    o Is she going to be fired? Sued?

    o What is going to happen to the school's reputation?

    o Are the victims going to be OK? Did they require hospitalization? Is their illness serious?

- While she is reflecting the phone rings. It's the principal of the school. The local newspaper has contacted her for a statement. Also, the school district superintendent is concerned about a lawsuit.

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- Resolution: The source of the problem was an ill employee who prepared the fruit salad without gloves resulting in Norovirus contamination.

- Emotions are fear, frustration, anger, hopelessness, anxiety

- Setting and props- commercial kitchen (Van Zile). Food handler attire with apron.

Main messages in the video:

- A food safety slip can cause a foodborne illness outbreak

- A foodborne illness outbreak can damage a school's reputation

- A foodborne illness outbreak creates emotional stress for employees, families and students

- A foodborne illness outbreak can lead to a lawsuit

Appendix E – Story Scenario

Story Scenario for Glenda's Horrible Day

Mrs. Glenda Miller – Foodservice Supervisor

Principal Alberta Braeburn

Etta – Foodservice Employee – voice off camera

PLACE: Benjamin Franklin Elementary School, anywhere USA.

Author: Sally Bailey, MFA, MSW, RDT/BCT

SCENE ONE: The Principal's Office

MRS. MILLER enters the Principal's office. PRINCIPAL BRAEBURN is at her desk and
welcomes her in, has her sit down.

Principal's talking points:

- I'm very concerned about a situation.

- There seems to be an epidemic affecting a great many students at school.

- About half the elementary school is out sick today.

- They seem to have come down with flu-like symptoms since yesterday

- Complaining about nausea and vomiting.

- I've been fielding non-stop phone calls from parents and doctors' offices all morning.

- One doctor called after examining about 10 kids and said he thought, from the symptoms,
  it might be due to something they ate.

- I've been asking questions and the children are all from different classes. The one thing
  they have in common is all of them ate lunch in the cafeteria yesterday.

- I need you to get to the bottom on this and find out if something happened to contaminate
  the food.

- It could be just a contagious bug, but we need to rule out a food borne illness as soon as possible in case the health department calls.

MRS. MILLER is horrified that something like this could have happened in her kitchen.

Nothing like this has ever happened before. She runs a clean kitchen and has many safety precautions in place. She promises she'll find out if it *was* due to something they served at lunch and will get back with the principal.

<div align="center">SCENE TWO: The Kitchen Supervisor's Office</div>

MRS. MILLER is back in her office trying to figure out what could have gone wrong yesterday.

She's looking through her food delivery records. Talking to herself about how she really hopes it's nothing her staff did…

MRS. MILLER'S MUSINGS can include:

- I know we haven't been checking temperatures as often as we should.

- We've been short staffed…

- I know staff has been working hard to keep everything in the kitchen and on the line clean…

- Trudy's a new employee – did I train her on how to prepare produce?

- I know I've seen them wash their hands….

Phone rings. It's June Richter, another foodservice worker, calling in sick. We don't hear the other end of the conversation – just Mrs. Miller's side

MRS. MILLER:

Hello, Food Supervisor's Office, Glenda Miller speaking…..Oh, hello, June….Oh, I'm sorry you don't feel well. No, no, you should stay in bed….You know, a lot of the kids are out sick today, too. Seems like there's some kind of bug going around. Say, did you eat lunch in the cafeteria

yesterday?.....Oh, I see…How long have you not been feeling well??....That's a long time! Why didn't you stay home?.....

[ETTA, another foodservice worker, sticks her head in the office.]

MRS. MILLER: Hold on just a minute, June. Yes, Etta?

ETTA: Can you put some gloves on the Acme Supply order today? We're all out.

MRS. MILLER: How many do you have left? Can you make it through lunch today?

ETTA: We ran out in the middle of food prep yesterday. I stopped by the grocery store on my way in so we would have some today.

MRS. MILLER: Good thinking! Thank you, Etta! I'll order more gloves today.

ETTA: Right-o!

(MRS. MILLER suddenly makes a connection about where the virus might have come from.)

MRS. MILLER (back in the phone) June, do you remember if you wore gloves when you were cutting up the fruit salad yesterday?....Ahuh....well, whether you are sick or not, just washing your hands isn't always enough…Ahuh! …Well, take care of yourself and get well! Bye.

MRS. MILLER dials the Principal…

- I think the virus might have been spread by a foodservice worker who came in sick instead of taking the day off.

- The symptoms she described sounded like the symptoms of the children…

Principal asks how she is going to handle this (we don't hear this).

- I'm going to keep looking at other possibilities.

- Will definitely do a refresher training on safety techniques in the kitchen next week…
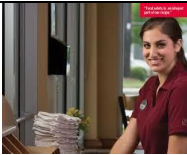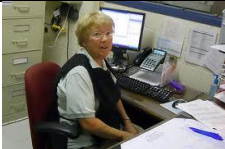
She hangs up and dials the Supply Company.

MRS. MILLER: This is Glenda Miller at Franklin Elementary School. Has my order gone out yet? Good! I need to add 2 cases of gloves to it. Thank you!

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Appendix F – Story Script

Glenda's Horrible Day Story Script

Scene	Dialog	Notes	Visual
	Overview of story: This is a suspenseful story of a school foodservice supervisor, Glenda, who finds herself in the middle of a foodborne illness investigation. Was a costly error made by her staff or is there another explanation?		
	The story begins with Glenda returning to work after a few days off. The principal has called her into his office to tell her that a large number of the school's students are absent from school due to flu-like symptoms. Parents have been calling the school, and it sounds like there is going to be an investigation.		
	At first, Glenda is immobilized by fear of the unknown. She worries about what the future holds for her, her staff and the ill students. After a good cry, she begins with resolve to determine what may have caused the students' illness.		
	She checks the menu and begins to investigate each of the ingredients and preparation steps. She finds out that an employee who was ill came in to work the day before and handled RTE food without wearing gloves. They ran out of gloves yesterday morning. She rules out some possible sources of contamination- the employees are diligent with hand washing and sanitizing work surfaces, however taking end-point temperatures is a possible problem area.		
	She constructs some possible explanations, but is unable to conclusively determine the cause of the outbreak. Later, the investigation determined that Norovirus was the cause of the outbreak. The ill foodservice employee tested positive for Norovirus. Most of the ill children reported eating the fruit salad that had been prepared by the ill employee. The school administration responded by initiating a thorough disinfecting of the kitchen and updating their policies and procedures concerning ill employees.		

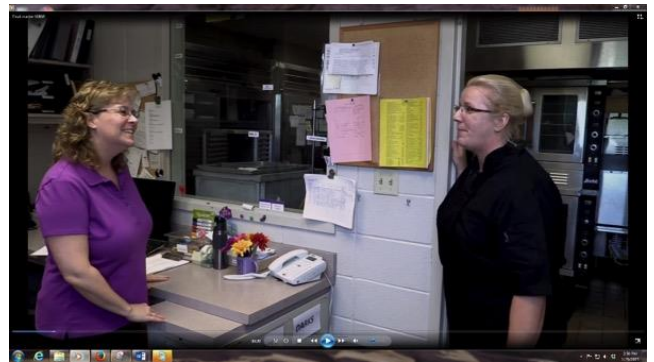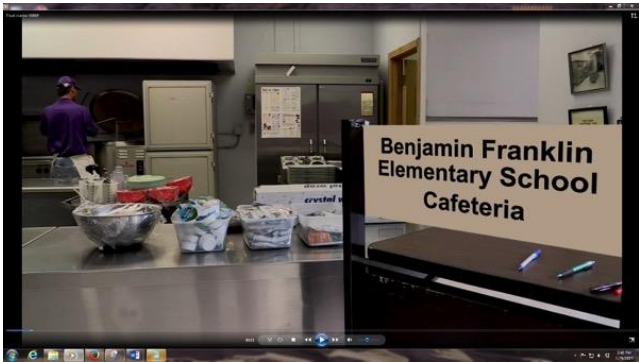|			
	Mrs. Glenda Miller – Foodservice Supervisor – Karen Myers-Bowman Principal Bellinger – Kevin Sauer PLACE: Benjamin Franklin Elementary School, anywhere USA.		
1	SCENE ONE: The school kitchen	Screen with words:	"Benjamin Franklin Elementary School foodservice supervisor, Glenda Miller returns to work after a few days off."
	SCHOOL FOODSERVICE STAFF MEMBER: Hi Mrs. M.- welcome back! I left you a note- we're out of gloves.		
	GLENDA: (looks for note) Yep, here it is- thanks.		
	The phone rings. It's Principal Bellinger. GLENDA: Kitchen, this is Glenda. (Concerned voice) Sure, I'll be right there.		
2	SCENE TWO: The Principal's Office	Screen with words:	"8:38 AM. Principal Bellinger calls an urgent meeting with Glenda
	GLENDA enters the Principal's office. PRINCIPAL BELLINGER is on the phone at his desk. He motions her in. He has look of disapproval on his face.		
	PRINCIPAL BELLINGER: Come on in, Glenda- have a seat. We need to talk. We've got a big problem. I've been getting calls from parents and health authorities, and what I'm hearing is that several of our children are sick.	Principal comes down hard on Glenda.	
	As far as I can tell, they all ate lunch yesterday in the cafeteria. You're the manager, right? Did you cause a horrible mistake?		

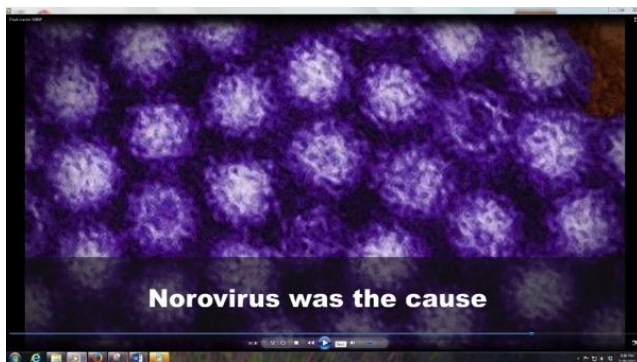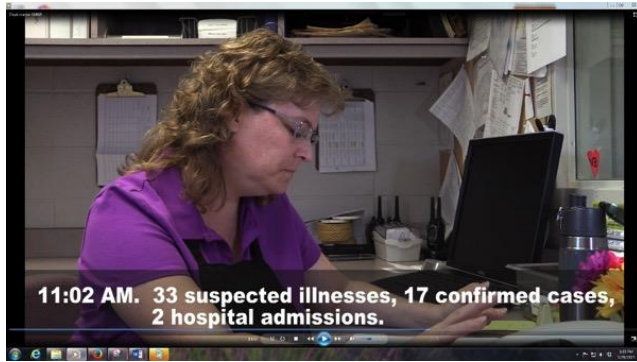|			
	There's going to be an investigation. A whole team is coming to the school tomorrow. They are going to look at everything- and I hope things are up to par. Now I need you to get to the bottom of this and get me some answers!		
	GLENDA is horrified and embarrassed.		
3	SCENE THREE: The Kitchen Supervisor's Office		
		Screen with words:	"9:25 AM, 19 suspected related illnesses"
	GLENDA is back in her office. She's very nervous, anxious, upset and fearful.		
	Glenda thinks about some of the awful things that could happen… • The children are so sick they are admitted to the hospital	Show flashes of what she is thinking about	
	• I'm fired from my job • I'm sued	Can we insert images of these things?	
	• The news media broadcasts the story on television	Insert some sort of *pounding* sound with each image. The music intensifies with each additional image and then stops abruptly when the phone rings.	

	She is interrupted by the phone ringing. It's June Richter, another foodservice worker, calling in sick. We don't hear the other end of the conversation – just Glenda's side GLENDA: Hello, kitchen, this is Glenda... Hi June…. I'm sorry you're not feeling well … you've been sick for a few days… I thought I saw that you came in to work while I was gone… You didn't find somebody to come in and work for you? Well, what did you do while you were here- what foods did you prepare? I see…OK…no, you shouldn't come in. You should stay home when you're ill…yes, take care of yourself. Bye.	Show Glenda on the phone Music increases in volume as the conversation progresses.	
		Screen with words:	"10:05 AM, 26 suspected illnesses, 15 confirmed cases"
	She sits at her desk with her head in her hands. She has a turning point, replacing fear with resolve. She is determined to find out what happened. She begins to ask herself questions, trying to figure out what could have gone wrong yesterday:	Show Glenda's transformation; Show Glenda talking to herself	
	• Well, I guess I'm going to have to figure this out. What foods did we serve over the last few days? It would have been…hamburgers, fajitas, fresh fruit salad, green salad…	Do we have B-Roll of students going through the lunch line where the entrée isn't obvious?	
	• Did we check the end temps of the hamburgers?… Did we get it logged? I'll check into that…	B-Roll of taking temps of hamburgers	
	• I know everyone has been working hard, keeping everything clean…and I've seen them checking the concentration of the sanitizer…..	B-Roll of cleaning counter	
	• I've seen them washing their hands….	Show B-Roll washing hands in kitchen hand sink	
	• I wonder about that new employee, Trudy. She hasn't been here very long. I'm pretty sure I covered everything in her training.	B-Roll of employees preparing food	

	• I wonder if they were wearing gloves when they prepared the fruit salad.	Show cutting up cantaloupe with gloves	
		Show Glenda's face- she's trying to figure out what is the most likely explanation.	
		Screen with words:	"11:02 AM, 33 suspected illnesses, 17 confirmed cases, 2 hospital admissions"
	Principal Bellinger comes to her office to check on her progress. She is uneasy, as she knows that she doesn't have any good news. PRINCIPAL BELLINGER: Hey Glenda- what's the latest?		
	GLENDA: (Sighs) I've checked out a lot of different possibilities, and I think we are starting to narrow it down, but I don't really have enough concrete evidence to know, exactly, what caused the problem. We have lots of policies and procedures in place, and my staff is good at following them, but I don't have documentation on everything. I know that just a little food safety "slip up" can lead to big problems.		
	The school district's Foodservice Director, Linda Braeburn, was contacted, and she set up a meeting with Glenda and her entire staff to discuss what they would do next.		Still shot of District Foodservice Director, Linda Braeburn
	The investigation determined that Norovirus was the cause of the outbreak. The ill foodservice employee tested positive for Norovirus.		The word "Norovirus"
	Most of the ill children reported that they ate the fruit salad, which had been prepared by the ill employee. Since Norovirus is air-borne, wearing gloves would not have prevented the transmission.		Dish of fruit salad

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	Foodservice Director Braeburn scheduled a thorough disinfecting of the kitchen. She then worked with Glenda and her staff to review and reinforce their policies and procedures concerning safe food handling, recordkeeping and not working when ill.		Still shot of District Foodservice Director, Linda Braeburn
	All of the children eventually recovered. The school district is still in settlement negotiations with parents seeking to recover medical care costs.		Still shot of child in hospital bed.

Appendix G – Video Still Shots

11:02 AM. 33 suspected illnesses, 17 confirmed cases, 2 hospital admissions.

District's food service director met with Glenda and her entire staff

Norovirus was the cause

All of the children recovered

Appendix H – Project Approval

TO: Kevin Sauer   Proposal Number: 7242
         HMD
         105 Justin

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

DATE: 07/04/2014

RE: Proposal Entitled, "Storytelling as a Food Safety Training Tool: Narrative Persuasion and Transportability"

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written – and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §46.101, paragraph b, category: 2, subsection: ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

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.

Appendix I – Expert Panel Review Results

Expert Panel Review Results

Riley County Public Health Department

In the situation described in your script the parents would be able to call the health department, but we would send them along to the Kansas Department of Agriculture. KDA receives all complaints online and then works with the Kansas Department of Health and Environment Infectious Disease Epidemiology and Response Division to initiate the investigation. At that point KDHE would either conduct the investigation themselves or they would contact the disease investigation nurse at the health department to do the human investigation, while KDA does the food part of the investigation. If there is an epidemic then the local health officer (usually the director of the health department) would be able to shut down the establishment, in this case the school foodservice program, and quarantine as needed. However, though that is the health department's jurisdiction to quarantine and shut down, often KDHE ends up doing so, the jurisdiction lines in investigations are a bit fuzzy.

A few years ago KDA took responsibility for all food safety inspections, thus the control is at the state rather than local level. If I can help any more please don't hesitate to let me know. Also, it may be beneficial to call KDA to clarify their response algorithm.

Kansas Department of Agriculture, Division of Food Safety and Lodging

Our program does inspect and license food establishments including schools. In your example many phone calls can and will be made. Parents will call the school, some will call the Department of Education in Topeka, some will call our office, and people would also call the local health department. Once the initial calls are made, the schools would inform the Department of Education, the local health departments will call the Kansas Department of Health and Environment division of Epidemiologist (EPI). We will take the call and task an inspector to perform a complaint inspection at the school, and at the same time we would inform EPI in case they have not been informed yet. By statute EPI takes the lead in all foodborne illness outbreaks. EPI and my office will talk about what type of sampling is requested and questions to ask. Our program will handle collecting samples of the food that may be left over and ask questions about ill employees. EPI will instruct the local health department to interview kitchen staff and to collect fecal samples if possible.
Our role in a foodborne illness outbreak is not to determine the cause; EPI handles that portion of the outbreak. We are the "boots on the ground" gathering information.

Kansas Department of Agriculture, Division of Food Safety and Lodging

I'm sure this film is the fear of all school foodservice workers and you will get their attention. One thing I might point out is that your story paints a story of what the foodservice worker is thinking and trying to determine what caused the illness. I do have a few comments:
· Does the school have an ill employee policy? And if so why wasn't it followed?
· The school never contacted a regulatory authority about the foodborne illness.
· I can tell you from experience that four weeks later you will probably have a report confirming Norovirus, but a final report from EPI usually takes 6-8 weeks.
· It will be nearly impossible to implement the one food worker as the reason because of Norovirus spreads so quickly. It will be likely it was an ill food employee, but EPI will never say it was June.
· Once Glenda found out June was sick and working yesterday and calling in sick again today, Glenda should of found out what duties June performed yesterday.
· The story ends with the principle telling Glenda she did a good job, but in my opinion Glenda's staff did not follow protocol by allowing an ill employee work, and Glenda really didn't do anything to merit being congratulated.
I hope you take this as constructive criticism coming from the eyes of a person who deals with this on a regular basis. Please don't take this as being negative.

Kansas Department of Education, Child Nutrition and Wellness Program

I do think a scenario such as this will keep the interest of the school foodservice professional! Thank you for the chance to review and provide comments!

In general, I think there should be less of Glenda's emotional state and more about procedure-what should have happened and what was instituted to prevent the problem in the future. Who is the audience for this film? Should the role of the local/state health department be included?

Not sure about the sentence: "Did you cause a horrible mistake?" Could you replace with what could have happened? Also, I wonder also if the principal at that point would know she was the manager.

Where is the foodservice director in this skit and why is he/she not involved? How was the glove situation resolved? Where was the discussion with foodservice staff, who would have also been very concerned and would have been responsible for disinfecting the kitchen? What happened to the kids- especially the ones in the hospital?

Kansas Department of Education, Child Nutrition and Wellness Program

"Did they take the end point temp of the hamburger?"
Is this a hamburger patty or the ground beef for the taco mixture? Will the picture be the same for whatever it will be? It would be better if it is the taco meat that is on the menu for the elementary students in the story.

"She had heard that one school had received strawberries that were contaminated…. Were theirs OK? "
I recommend changing it to read "She had heard in the news that another school district had received cantaloupe that was contaminated. Was their cantaloupe contaminated too?" I think we should add something about the possibility that the cantaloupe may have been left at room temperature after cutting them to further advance the chance that they could have caused the foodborne illness.

"You can't come in to work today… sick? … Felt nauseous yesterday? ... Why didn't you stay home?"
I recommend changing it to read "You can't come in to work today… sick? ... You were sick yesterday too?"