

EFFECTIVENESS OF FOOD SAFETY MANAGERIAL TRAINING: FACE-TO-FACE OR COMPUTER-BASED DELIVERY

Catherine H. Strohbehn, PhD, RD, CP-FS^{1*}; Susan W. Arendt, PhD, RD, CHE²; Ungku Fatimah Ungku Zainal Abidin, MS³;
and Janell Meyer, MBA⁴

¹Extension Specialist and Adjunct Associate Professor, Iowa State University, Ames, IA, USA

²Associate Professor, Iowa State University, Ames, IA, USA

³PhD Candidate, Iowa State University, Ames, IA, USA

⁴Food Safety Project Coordinator, Iowa State University, Ames, IA, USA

ABSTRACT

Because cases of foodborne illnesses are estimated to exceed 40 million each year, current and future managers of retail foodservices must understand their role in training employees about food safety and influencing the work culture to ensure knowledge is practiced. Two educational modules to aid managers in motivating employees and establishing a positive food safety culture were tested among industry managers: recognition and discipline and communication. The effectiveness of two delivery methods, face-to-face and computer-based training, was also assessed with knowledge based questions and attitude statements. Mixed findings from participants (mostly over 30 years of age) regarding effectiveness of delivery method illustrate there is no “one best way” to providing training to managers.

Keywords: food safety, managers, motivation, training methods

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INTRODUCTION

Persons in charge of retail foodservices have the responsibility of training employees about food safety and monitoring their behaviors to ensure safe food handling practices are followed (U.S. Food and Drug Administration [FDA], 2009). However, research has found a gap between employees’ food safety knowledge and application of this knowledge in day-to-day operations (Clayton, Griffith, Price, & Peters, 2002; Henroid & Sneed, 2004). Barriers to following safe food handling behaviors have been identified, including lack of infrastructure and employee motivation (Roberts et al., 2008; York et al., 2009).

The benefits of employee food safety training have been explored in several studies, although results have been inconsistent. Several studies have found that training helps to improve overall employee knowledge of food safety (Costello, Gaddis, Tamplin, & Morris, 1997; Lynch, Elledge, Griffith, & Boatright, 2005; Roberts et al., 2008), while other studies have found that training is not consistently associated with improved knowledge (Egan et al., 2007; Pilling et al., 2008).

Studies have also found that food safety training is positively associated with increased food safety inspection scores (Cotterchio, Gunn, Coffill, Tormey, & Barry, 1998; Noble, Griffith, Thompson, & MacLaurin, 2009; Smith & Shillam, 2000) and self-reported changes in food safety practices (Clayton et al., 2002). Observational research

has found that actual behaviors consistently fall short of Food Code recommendations (FDA, 2000, 2004, & 2009; Strohbehn et al., 2008). Recently, researchers have begun to explore the link between knowledge and behavior. Roberts et al. (2008) explored food safety knowledge and behaviors of foodservice employees after employees completed a four-hour training class based on the ServSafe® food handler program. The researchers focused on the top three factors that contribute to foodborne illness: improper holding temperatures, poor personal hygiene, and cross contamination. Using a sample of 160 employees, the researchers found that even though overall employee knowledge improved, behavioral compliance remained low after the knowledge training, with little significant improvement.

Management culture is important in assuring safe food practices are followed (Griffith et al., 2010; Yiannas, 2008). Emerging research is highlighting the role of management in establishing an organization’s food safety culture. One model to explain foodservice employees’ motivation for following safe food handling practices was proposed by Arendt and Sneed (2008), with subsequent testing and refinement (Arendt, Ellis, Strohbehn, & Paez, 2011; Ellis, Arendt, Strohbehn, Meyer, & Paez, 2010). The initial model proposed supervisors had key responsibilities related to: 1) establishing policies and standards; 2) fulfilling expectations of accountability; 3) serving as role models; 4) controlling rewards and punishment; 5) providing training; and 6) providing resources. Using a mixed methods approach with qualitative (focus groups) and quantitative (national survey) data collected from nonsupervisory employees, current managers, and future managers, some of the challenges to following safe food practices were identified. Findings included inconsistent or unclear messages, lack of rewards/discipline, lack of resources, and need for internal motivation (Arendt et al., 2011). The need for training available in multiple forms of delivery was also identified (Roberts, Arendt, Strohbehn, Ellis & Paez, 2012). The refined model identified four clusters of motivators: internal drivers, recognition and discipline, communication and resources.

Research has investigated training delivery preferences and effectiveness among those working in retail foodservices. One study of school foodservice managers and line employees found a continued preference for face-to-face training (Sullivan, Harper & West, 2001), whereas Costello et al. (1997) found quick service managers receiving computer-based food safety training scored higher on food safety knowledge tests than those receiving the same content via face-to-face lecture. However, as new generations enter the workforce and Generation X and Y assume managerial roles, fewer challenges associated with computer-based training are present. Wilson (2007) found in her survey of hourly school foodservice staff in six Midwestern states that over 80% of the 671 employees owned a computer and “surfed” the Internet. Rajagopal

*Corresponding Author: Phone: 515-294-3527; E-mail: cstrohbe@iastate.edu

and Strohbahn (2011) reported hospitality college students' mean attitude ratings of the delivery mechanism of podcasting for a class assignment at 3.54 on a 5 point scale, indicating favorable views toward the "anytime anywhere" availability of this method. While students may have perceived other advantages of the access to resources such as podcasts, those reasons were not explored.

Those involved in providing food safety education and training to new generations in the workforce must recognize the need to establish a workplace culture that motivates employees to practice safe food handling behaviors. Those who provide training should understand the importance of incorporating new and changing technologies into the training sessions and consider the effectiveness of different methods of information delivery. Thus, the objective of this study was to compare effectiveness of two delivery methods of a research based SafeFood© Motivators Tool Kit for managers. Effectiveness was assessed based on knowledge gain and attitude change. The two methods of delivery of the two modules in the Tool Kit (which focused on topics of Recognition and Discipline and Communication) were face-to-face and computer-based instruction. An industry roll out of the modules was held through a workshop for managers in retail foodservices in Iowa. At the workshop, an assessment of the effectiveness of the modules and delivery modes was conducted.

METHODS

One outcome from past research (Arendt & Sneed, 2008; Arendt et al., 2011; Ellis et al., 2010; & Roberts et al., 2012) was the development of the SafeFood© Motivators Tool Kit, which consists of two versatile education modules on topics of Recognition and Discipline and Communication. The modules were developed for managers to improve their ability to establish a work culture of food safety and motivate employees to practice safe food handling. Each module consisted of six components: Pre-assessment; Checklist (self-assessment); Case Studies; Narrated Power Point Presentation; Standard Operating Procedures (SOPs)/Best Practices; and Post-assessment. Stated objectives of the modules are for managers to 1) use effective (oral and written) communication to motivate

employees to use safe food handling behaviors; 2) identify ways to consistently communicate appropriate food safety behaviors to employees; 3) describe ways in which the managers can serve as a role model to employees using nonverbal communication; 4) identify informal and formal disciplinary strategies and how this might be used as motivators, and 5) describe different ways to recognize employees who exhibit safe food handling behaviors.

Each module is available in two delivery modes: a self-contained tool kit with printed materials or a computer based version. A comprehensive four-phase review process, which included input from academic experts, industry practitioners, and students, was conducted with each of the educational modules prior to industry roll out. In this four-phase review, the Tool Kit was evaluated by knowledgeable colleagues, interviews were conducted with supervisors and students, managers in commercial and noncommercial foodservices reviewed the modules, and a final check was made by industry professionals and students. The SafeFood© Motivators Tool Kit including both modules is available at www.iowafoodsafety.org. Figure 1 presents an example of the on-line version of the Recognition and Discipline Module. The Institutional Review Board approved all materials and protocols used in data collection. The workshop to introduce both delivery formats of the final version of the SafeFood© Motivators Tool Kit to managers from retail foodservices in Iowa was held in October of 2010.

Recruitment of participants

Multiple methods were used to disseminate information about the workshop to reach as broad an audience as possible, including promotional flyers distributed by foodservice health inspectors, direct marketing to foodservices/restaurants and at professional meetings. Those interested in attending confirmed a reservation and identified preferred method of training: face-to-face or computer-based instruction. The workshop was held in a central location of the state from noon to 4 PM. Participants received mileage reimbursements and lunch.

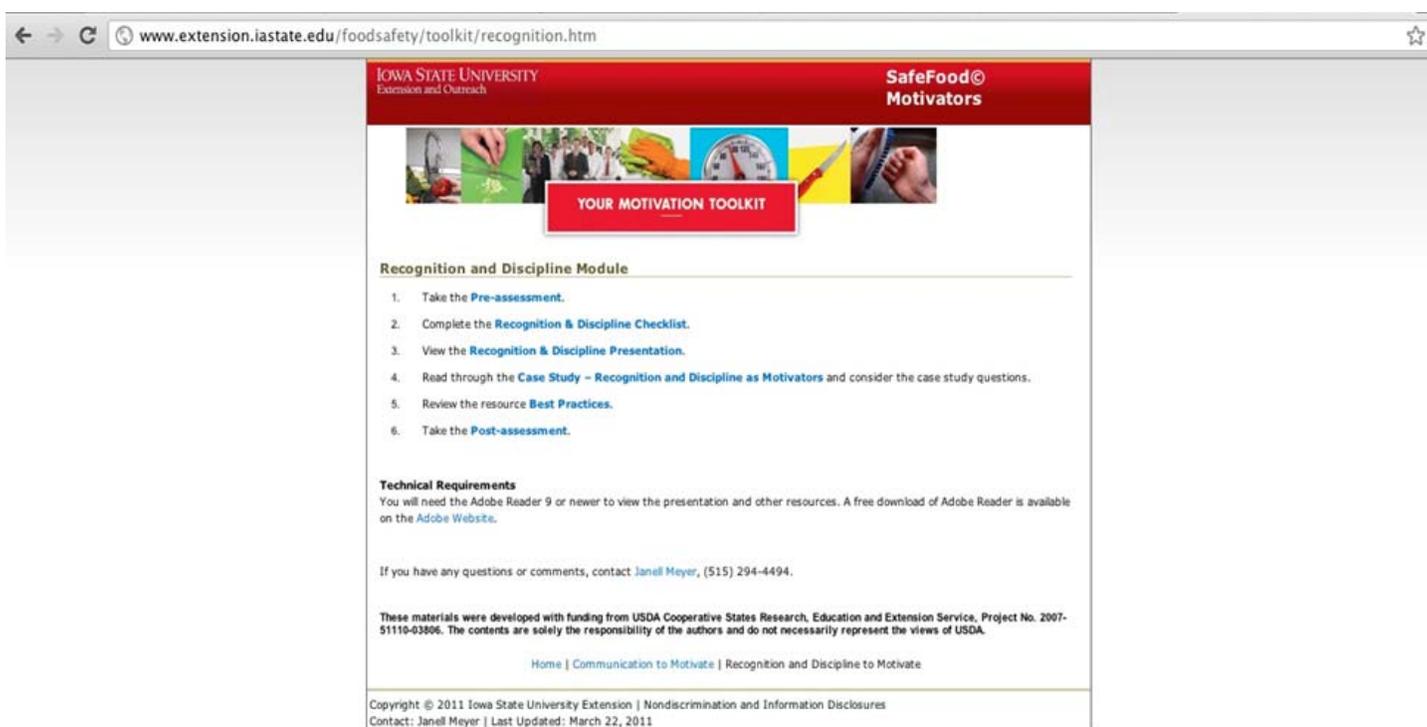


Figure 1. SafeFood© Motivators On-line Module

Note. Example of on-line module main page which allows viewers to preview the six components of the module

Workshop format

The 41 participants who attended the workshop completed a short demographic questionnaire about themselves (age, work title, number of years work experience in foodservice) and their work organizations (type and size) as they registered. Participants were from 23 commercial and noncommercial foodservices and a representative from the state restaurant association.

The workshop began with a welcome to all participants and an overview of the project. In addition, the components of each module were shown: Pre-assessment; Checklist; Case Studies; Narrated Power Point Presentation; SOPs/Best Practices; and a Post-assessment. All participants filled out the pre-assessment for each module and these were turned in as their “tickets” to the buffet lunch. See Appendix A for the Pre and Post Module Assessment.

Five multiple choice knowledge questions related to Recognition and Discipline and ten about Communication were presented on the pre- and post-module assessment using a multiple choice format. The difference in number of questions was due to extent of module content. Recognition and Discipline knowledge questions asked about internal and external types of rewards and benefits to implementing recognition and discipline procedures and programs. Communication knowledge questions asked about purposes and use of SOPs, types of communication, and barriers to effective communication.

Positively and negatively phrased attitude statements were presented on the pre- and post-module assessment with 15 statements related to Recognition and Discipline and 17 items about Communication. A five-point Likert-type rating scale was provided with 1 = Strongly Disagree and 5 = Strongly Agree.. An example of an attitude

Table 1: Characteristics of Participants

Characteristics ^a	Overall (n = 41)	By training method	
		Face-to-Face (n = 21)	Computer (n = 20)
Gender			
Female	27 (65.9%)	17 (80.9%)	10 (50.0%)
Male	12 (29.3%)	3 (14.3%)	9 (45.0%)
Age			
18-21 years	1 (2.4%)	0 (0%)	1 (5.0%)
22-25 years	1 (2.4%)	0 (0%)	1 (5.0%)
26-30 years	3 (7.3%)	1 (4.8%)	2 (10.0%)
31-40 years	15 (36.6%)	5 (23.8%)	10 (50.0%)
41-50 years	9 (22.0%)	4 (19.0%)	5 (25.0%)
51-60 years	6 (14.6%)	6 (28.6%)	0 (0%)
Over 60 years	5 (12.2%)	5 (23.8%)	0 (0%)
Years of experience in foodservice			
Less than 1 year	1 (2.4%)	0 (0%)	1 (5.0%)
1-3 years	1 (2.4%)	0 (0%)	1 (5.0%)
4-7 years	4 (9.8%)	2 (9.5%)	2 (10.0%)
8-12 years	11 (26.8%)	5 (23.8%)	6 (30.0%)
13-20 years	15 (36.6%)	6 (28.6%)	9 (45.0%)
Over 20 years	8 (19.5%)	8 (38.1%)	0 (0%)
Type of foodservice operation where currently working^b			
Restaurant	15 (36.6%)	7 (33.3%)	8 (40.0%)
Hospital or nursing home	12 (29.3%)	6 (28.6%)	6 (30.0%)
School	7 (17.1%)	6 (28.6%)	1 (5.0%)
Other	6 (14.6%)	2 (9.5%)	4 (20.0%)
Length of time worked at current operation			
Less than 1 year	7 (17.1%)	6 (28.6%)	1 (5.0%)
1-3 years	6 (14.6%)	1 (4.8%)	5 (25.0%)
4-7 years	6 (14.6%)	3 (14.3%)	3 (15.0%)
8-12 years	9 (22.0%)	4 (19.0%)	5 (25.0%)
13-20 years	6 (14.6%)	4 (19.0%)	2 (10.0%)
Over 20 years	4 (9.8%)	3 (14.3%)	1 (5.0%)
Length of time supervisory/ management responsibilities			
Less than 1 year	3 (7.3%)	2 (9.5%)	1 (5.0%)
1-3 years	3 (7.3%)	0 (0%)	3 (15.0%)
4-7 years	9 (22.0%)	5 (23.8%)	4 (20.0%)
8-12 years	9 (22.0%)	3 (14.3%)	6 (30.0%)
13-20 years	12 (29.3%)	8 (38.1%)	4 (20.0%)
Over 20 years	3 (7.3%)	3 (14.3%)	0 (0%)
Supervisory/management experience			
Prior to current operation	11 (26.8%)	6 (28.6%)	5 (25.0%)
Only at current operation	29 (70.7%)	15 (71.4%)	14 (70.0%)

^aResponses may not equal 100% due to non-response

^bIn addition to the primary workplace, four participants had a secondary workplace

statement related to Recognition and Discipline was “Every employee is motivated by the same rewards” while an example of an attitude statement from the Communication pre- and post-assessment was “Written SOPs for procedures such as handwashing are not needed”.

Participants were assigned, based on preferences indicated when registering for the workshop, to one of two delivery modes for completion of the modules: a method of face-to-face or computer-based instruction. Those in the computer group relocated to a computer lab while those in the face-to-face group stayed in the original meeting room. Each of the two trainings was facilitated by two members of the research team and co-developers of the Tool Kit, following establishment of presentation protocols.

The two groups reconvened for closing comments and to complete a workshop evaluation. The workshop evaluation consisted of ten Yes/No questions. Each participant received a SafeFood© Motivators Tool Kit for use in his/her work organization at the end of the workshop.

Description of face-to-face training

Twenty-one people from the entire group of 41 participants went through the Tool Kit modules in a face-to-face setting. This group began the training with an explanation and demonstration of the Tool Kit by facilitators. Next, this group completed the Communication Checklist (a self-assessment of behaviors related to the topic) using paper and pencil. The Checklists were collected before the narrated Power Point presentation with video clips shown. After this, trainers facilitated a case study based discussion related to the topic of Communication and the important role SOPs play. Participants then completed the Communication post-module assessment using paper and pencil. (See Appendix A). Following collection of Communication post-module assessments, the narrated Power Point presentation with video clips on the topic of Recognition and Discipline was shown. Because of time constraints, not all components of the Recognition and Discipline module were completed in face-to-face instruction, such as the Checklist or self-assessment of behaviors related to this module topic. Participants responded to discussion questions based on a case study which was a real-life scenario related to Recognition and Discipline. Following completion of these components of the module, participants completed the Recognition and Discipline post-module assessment. (See Appendix A).

Description of computer-based training

Following a short walk to the computer lab, the 20 participants in this group received passwords to log in to the computers. Each attendee determined which module to complete first following the instructed sequence of first completing the checklist before viewing the narrated Power Point presentation with video clips, responding to the case study’s discussion questions; and lastly, completing the post-module assessment. About half of the participants in the computer training

section self-selected the Communication module as their first choice while others completed the Recognition and Discipline module.

DATA ANALYSIS

Demographic information about participants, pre- and post-module assessments’ knowledge scores and attitude ratings, and evaluations of the workshop were analyzed using SPSS (Windows Version 18.0, 2009). Frequencies of correct responses to the knowledge questions were calculated for all participants and by attendees in the two training groups before and after the instruction. Frequencies, means, and standard deviations of the attitude ratings were calculated for all participants and by attendees in the two training groups pre- and post-workshop. Overall mean attitude ratings were also calculated for each module topic with alpha reliability coefficients determined. Negative phrased statements were reverse coded for calculating overall mean ratings for each module topic and alpha coefficient of reliability. The minimum alpha value of 0.60 was used and deemed to be acceptable for newly developed measurement (Gamble, 1999; Nunnally, 1978). Independent sample t-tests analysis was conducted to compare participants’ mean attitude ratings between pre- and post-workshop and between the two training modes.

RESULTS AND DISCUSSION

Profile of participants

At least a portion of the workshop evaluation and the pre- and post-module assessments were completed by 39 participants. Table 1 shows characteristics of the participants who completed the modules and assessments. Of the 39 individuals who completed the assessments, 27 were female and 12 were male. Of the age groups listed, the majority were in the 31- 40 years of age category. Twenty-eight of respondents identified their work sites with 60% of these indicating a commercial operation and the rest various onsite foodservice types. All attendees had supervisory responsibilities such as owner (n = 7), manager/chef (n = 19), supervisor/sous chef (n = 11), director (n = 2), or administrator (n = 2). The length of time reported as a supervisor or manager ranged from less than one year to over 20 years. Average length of time at current work location was 9 years, with a range of 1 month to 23 years.

Evaluation of workshop

Table 2 shows responses to yes/no questions on the workshop evaluation form regarding whether the instructional style used and the tool kit were helpful. A majority (95%) of participants indicated the instructional style used in the tool kit helped them to learn and that they would be inclined to use the tool kit information posted on the web and 90% noted they would be inclined to use this tool kit. Just over half (58%) of the participants indicated they would attend the workshop, even if there is a charge to participate in this workshop. However, 87% indicated the workshop did change their attitudes about the role they play in motivating employees to follow

Table 2. Participants’ Evaluation of Workshop

Evaluation items	Yes		No	
	n	%	n	%
Facilitator was effective	38	97	1	3
The location was accessible	38	97	1	3
Adequate time was allotted for the workshop	38	97	1	3
Instruction style helped me learn	37	95	2	5
Inclined to use Tool Kit information on the web	36	95	2	5
Attending this workshop was valuable	35	95	2	5
Inclined to use this Tool Kit	34	90	4	10
Changed my attitudes	34	87	5	13
Opportunities to learn this information other sources	23	59	16	41
I would pay a fee to come to this workshop	22	58	16	42

TABLE 3. Participants' Correct Responses on Knowledge Assessment by Training Method

Knowledge items	Pre-assessment correct responses	Post-assessment correct responses by training method ^a	
		Face-to-Face	Computer
Recognition and Discipline Module	(n = 39)	(n = 21)	(n = 15)
External reward example	37 (94.9%)	19 (90.5%)	14 (100.0%)
Internal reward example	33 (84.6%)	18 (85.7%)	15 (100.0%)
Consequences of rewarding employees safe food handling behaviors	32 (82.1%)	18 (85.7%)	9 (60.0%)
Precaution when using recognition or discipline as motivators	30 (76.9%)	14 (66.7%)	12 (80.0%)
Effect of discipline on employee's motivation	28 (71.8%)	12 (57.1%)	13 (86.7%)
Communication Module	(n = 40)	(n = 21)	(n = 20)
The best way to communicate proper handwashing to an employee who did not speak English as his/her first language	40 (100%)	20 (95.2%)	18 (100%)
Type of communication when a supervisor leaves a written note	39 (97.5%)	18 (85.7%)	18 (94.7%)
Steps in the flow of food which would not require an SOP	38 (65%)	21 (100%)	16 (100%)
Problem employees typically voice regarding supervisor communication	37 (92.5%)	21 (100.0%)	19 (100%)
Area which requires an SOP	37 (92.5%)	18 (85.7%)	19 (100%)
Emotional barrier to communication	36 (90%)	17 (85.0%)	19 (100%)
The usefulness of Standard Operating Procedures (SOPs) to management	33 (82.5%)	18 (85.7%)	19 (95%)
Situations which require food safety SOPs in a retail foodservice organization	33 (82.5%)	21 (100%)	17 (85.0%)
Minimum period for reviewing food safety SOPs with trained employees	27 (67.5%)	12 (57.1%)	9 (47.4%)
Factors of communication barrier	14 (35%)	12 (60%)	13 (68.4%)

^aPercentage of correct responses was calculated based on the total number of participants who responded to specific questions; answered correctly/total number of responses. The total number of responses varied for each knowledge item due to missing data.

safe food handling practices and 95% indicated attending the workshop was a valuable experience.

Knowledge scores

Correct responses to knowledge based questions about Recognition and Discipline and Communication on the pre- and post-module assessments by method of workshop training are shown in Table 3. Knowledge scores about the usefulness of SOPs increased for all participants regardless of type of training used with 33 of the participants (82.5%) responding correctly pre-assessment and 37 (90.2%) providing the correct answer after the training. However, a higher percent of those using computer-based method of training answered correctly after the workshop with 95% compared to 85.7% of those in face-to-face group. An increase in knowledge about situations in which it was best to communicate using SOPs was also noted with 82.5% of all participants indicating the correct response on pre-module assessment compared to 92.7% on the post. Yet for this question, 100% of the face-to-face group responded correctly on the post-training assessment whereas only 85% in the computer group did so. Overall, a higher percentage of participants using computer-based method of training answered correctly most questions in Recognition and Discipline and Communication post-assessments as compared to those receiving face-to-face training.

Attitude ratings

In one section of the pre- and post-module assessment, participants rated their attitudes to positively and negatively phrased statements on the topics of recognition and discipline (15 items) and communication (17 items) using a 5-point Likert-type scale (1 = Strongly disagree; 5 = Strongly agree). Negatively phrased statements were reverse coded in calculation of overall mean ratings for categories and alpha reliability coefficient. Table 4 shows means and standard deviations for pre-module assessments for all workshop participants and mean ratings on post-module assessments by training method (face-to-face or computer-based instruction). An overall pre-assessment mean rating of 3.85 ± 0.33 with an alpha reliability coefficient of 0.68 was calculated for the Recognition and Discipline attitude statements. An overall mean rating of 3.80 ± 0.40

(with an alpha reliability coefficient of 0.72) was calculated from the post-workshop assessment data, indicating little change. However, the overall post-workshop mean rating of Recognition and Discipline attitude statements for those who received face-to-face training was 3.84 ± 0.41 while those in the computer-based training section had an overall mean rating of 3.73 ± 0.38. Participants indicated more favorable attitude toward Communication post workshop (mean rating for all 17 items of 4.07 ± 0.36 with alpha reliability coefficient of .75) than pre-workshop (mean rating of 3.99 ± 0.32 with alpha reliability coefficient of .67). Those in the face-to-face group provided an overall post-workshop mean rating of 4.13 ± 0.41 while participants receiving computer-based training had an overall mean rating of 4.00 ± 0.29.

Recognition and discipline module

The item rated most positively by all participants before completion of the recognition and discipline module was, "I like my job" (M = 4.59 ± .50) while the pre-assessment items rated lowest were two negative phrased statements: "I dislike the employees I supervise" (M = 1.33 ± 0.62) and "It does not matter how I behave at work because employees will do what they want to despite my actions" (M = 1.54 ± 0.60). These findings suggest most participants enjoyed a positive work environment, which may have impacted their perceptions of the module's effectiveness. Workshop participants in both groups rated the item of "I like my job" highest post-module, with a mean rating of 4.40 ± 0.68 by the face-to-face group participants and a mean rating of 4.36 ± 0.67 by those in the computer group.

Significant differences were found between participants' mean ratings pre- and post-workshop and between participants in each training group for two items. "The employees who work for me should be punished when they do something wrong" statement was rated significantly higher (p ≤ .05) by all participants after the workshop (M = 3.15 ± 0.97) than before (M = 2.63 ± 0.88) and by those who completed computer-based training (M = 3.58 ± 0.52) than by those who received face-to-face training (M = 2.90 ± 1.09). The statement, "If employees were paid more for handling food

Table 4. Mean and Standard Deviations of Participants' Attitude Ratings by Delivery Method

Attitude items	Mean ± standard deviation of attitude ratings ^a		
	Pre-assessment	Post-assessment by training method	
		Face-to-Face	Computer
Recognition and Discipline Module	(n = 39)	(n = 21)	(n = 15)
1. I like my job	4.59 ± 0.50	4.40 ± 0.68	4.36 ± 0.67
2. I serve as a role model to my employees by my actions ^c	4.41 ± 0.64	4.38 ± 0.60	3.83 ± 0.94
3. If I had a good recognition system in place, all of my employees would be motivated	3.28 ± 0.79	3.43 ± 0.98	3.50 ± 0.80
4. I try to avoid disciplining my employees	2.67 ± 0.96	2.76 ± 1.04	2.46 ± 0.97
5. When something goes wrong, it is usually my fault, not my employees	2.66 ± 0.78	2.48 ± 0.81	2.58 ± 0.52
6. The employees who work for me should be punished when they do something wrong ^{bc}	2.63 ± 0.88	2.90 ± 1.09	3.58 ± 0.52
7. If I reward one employee, I feel like I need to reward them all	2.47 ± 0.83	2.38 ± 0.81	2.31 ± 0.86
8. It's easier to do something myself than to get one of my subordinates to do it	2.47 ± 0.80	2.19 ± 0.98	2.75 ± 0.75
9. If employees were paid more for handling food safely, they would do it ^b	2.46 ± 1.02	2.95 ± 1.16	3.57 ± 0.94
10. Every employee is motivated by the same rewards	1.87 ± 0.98	2.10 ± 1.04	1.77 ± 0.44
11. I believe that rewarding employees has no effect on their work performances	1.87 ± 0.80	1.70 ± 0.57	1.77 ± 0.44
12. It's impossible to give someone a reward at my workplace	1.77 ± 0.84	1.90 ± 0.70	1.92 ± 0.52
13. I plan to leave my job sometime within the next year	1.72 ± 0.94	1.76 ± 0.89	1.67 ± 0.89
14. It does not matter how I behave at work because employees will do what they want to do despite my actions	1.54 ± 0.60	1.67 ± 0.73	1.85 ± 0.56
15. I dislike the employees I supervise	1.33 ± 0.62	1.63 ± 1.01	1.60 ± 0.52
Overall mean attitude ratings^d	3.85 ± 0.33	3.84 ± 0.40	3.73 ± 0.32
Communication Module	(n = 40)	(n = 21)	(n = 20)
1. Through my actions, I can serve as a role-model to my employees	4.58 ± 0.78	4.43 ± 0.93	4.41 ± 0.51
2. How I communicate with my employees can serve as a motivator for them	4.44 ± 0.50	4.33 ± 0.91	4.41 ± 0.51
3. I like my job	4.42 ± 0.69	4.43 ± 0.60	4.26 ± 0.56
4. Written Standard Operating Procedures (SOPs) will help me as a manager instill a culture of food safety in the work place	4.14 ± 0.42	4.19 ± 0.87	4.17 ± 0.38
5. I believe written policies help employees practice safe food handling	4.06 ± 0.67	4.33 ± 0.48	4.05 ± 0.71
6. I enjoy working with others who are different from me	4.00 ± 0.76	4.00 ± 1.10	4.18 ± 0.53
7. Availability of written SOPs will help me do my job as a supervisor better ^b	3.83 ± 0.89	4.33 ± 0.48	4.32 ± 0.48
8. I believe I can influence my subordinates by talking nicely to them	3.83 ± 0.88	4.05 ± 0.74	4.26 ± 0.56
9. Written SOPs make me more confident so safe food handling practices are followed in my work situation	3.78 ± 0.64	4.10 ± 0.77	3.95 ± 0.52
10. Use of written SOPs as a training tool caters to a variety of learning styles	3.75 ± 0.69	3.76 ± 1.04	3.68 ± 0.89
11. Self-training through review of written SOPs is as effective as face-to-face training for new employees	2.69 ± 1.24	2.90 ± 1.38	2.68 ± 1.00
12. It's easier to do something myself than to get one of my subordinates to do it	2.63 ± 1.00	2.29 ± 1.23	2.98 ± 0.81
13. Developing SOPs takes too much time rather than verbally tell each employee what needs to be done	2.26 ± 0.83	1.84 ± 0.76	2.11 ± 0.83
14. Written SOPs are not necessary because employees will not read them	1.91 ± 0.83	1.60 ± 0.68	1.89 ± 0.66
15. I plan to leave my job sometime within the next year	1.81 ± 0.98	1.81 ± 0.75	1.89 ± 0.94
16. Written SOPs for procedures such as handwashing are not needed	1.56 ± 0.72	1.70 ± 1.08	1.53 ± 0.51
17. I dislike the employees I supervise ^c	1.53 ± 0.65	1.45 ± 0.60	1.89 ± 0.74
Overall mean attitude ratings^d	3.99 ± 0.32	4.13 ± 0.41	4.00 ± 0.29

^aRatings of 5-point scale used with 1 = Strongly disagree and 5 = Strongly agree

^bMean ratings for pre- and post-assessment are significantly different at $p < .05$

^cMean ratings for face-to-face and computer training methods are significantly different at $p < .05$

^dOverall mean ratings were calculated based on reverse coding items

safely, they would do it" was also rated significantly higher ($p \leq .001$) after the workshop by all participants than before, with mean ratings of 3.20 ± 1.11 and 2.46 ± 1.02 , respectively. The statement "I serve as a role model to my employees by my action" was rated significantly higher ($p \leq .05$) by those who received face-to-face workshop ($M = 4.38 \pm 0.60$) than by those in the computer-based training ($M = 3.83 \pm 0.94$).

Communication module

Items which showed the biggest change between pre- and post-module assessment ratings were related to SOPs. The item with the biggest change between pre- and post-assessment ratings was, "Availability of written SOPs will help me do my job as a supervisor

better"; pre-module mean rating by all participants of 3.83 ± 0.89 and post-module assessment overall mean rating significantly higher ($p \leq .05$) of 4.32 ± 0.47 . Those in the face-to-face group rated this item with a mean of 4.33 ± 0.48 while those in computer group rated the statement at 4.32 ± 0.48 .

There were also improved mean ratings, although not significant, to the statement "Written SOPs will help a manager instill a culture of food safety in the work place" with pre-training mean rating of 4.14 ± 0.42 and post module rating of 4.18 ± 0.68 by all participants. Those in the face-to-face group had a post-workshop mean rating of 4.19 ± 0.87 while participants in the computer group rated this statement

with a mean of 4.17 ± 0.38 . Managers rated the statement "Written SOPs make supervisors more confident so safe food handling practices are followed in the work situation" with a mean of 3.78 ± 0.64 before completion of the module. After the module, a mean rating by all participants of 4.03 ± 0.66 was shown, with those in the traditional group rating at 4.10 ± 0.77 and those in the computer group at 3.95 ± 0.52 . Only one significant difference was found in this category of attitude statements between those receiving face-to-face method versus those who used computer-based instruction. The statement, "I dislike the employees I supervise" received significantly different ($p \leq .05$) post-workshop mean ratings from those in face-to-face instruction ($M = 1.45 \pm 0.60$) than from those using the computer-based modules ($M = 1.89 \pm 0.74$). The attitude of managers toward staff they supervise may be indicative of communication capabilities and employee intelligence, which literature suggests is key to success in management (Law, Wong & Song, 2004).

Additionally, emerging research is finding the workplace environment is linked to the food safety culture. Use of non-face-to-face instruction may be more appealing to those with lower emotional intelligence, or this finding may simply suggest differences in workplaces and collegiality in the respective participants' workplaces. Overall these findings suggest that the face-to-face method of delivery resulted in favorable attitudes toward having written SOPs. Past research has shown SOPs or other forms of employee communications in written and verbal forms provide the vision and structure needed to establish a work place culture that supports food safety (Henroid & Sneed, 2004).

CONCLUSION AND RECOMMENDATIONS

Findings from this study suggested that variations in delivery of information did not result in significant changes in managers' knowledge or attitudes on the two topic areas of Recognition and Discipline and Communication. Most pre and post-module assessment knowledge scores and attitude ratings did not change significantly, although results did show that a higher percentage of participants in computer-based training responded correctly to most of the post-knowledge assessment questions than those receiving face-to-face instruction. In addition, although information included in the modules was available from other sources, knowledge scores and attitude rating changes suggested continual reinforcement is helpful. Over 90% of workshop participants indicated they would use the SafeFood© Motivators Tool Kit either in the hard copy form (90%) or via the web (95%).

These findings suggest that tool kits with information provided in a structured and organized format by topic of information and with self-assessments such as checklists and other guidance documents available in multiple formats are considered helpful to managers in retail foodservices. Multiple forms of availability of the structured modules can address needs of various learning styles and delivery preferences of future managers or those currently working in a variety of retail foodservice settings. Current managers who participated in the workshop self-selected the method of training, similar to choices that could be made available in the workplace. Findings from pre- and post-module knowledge and attitude assessments, for topics of Recognition and Discipline and Communication, show both delivery methods were effective because there were favorable changes in knowledge scores and attitude ratings.

This workshop had few participants under the age of 30 ($n = 4$), thus comparisons by age group were not feasible. While it has been noted in previous research (Rajagopal & Strohbahn, 2011) that computer-

based instruction is appealing to younger generations as they are considered "pre-skilled" in technology based learning, mixed findings from this study regarding effectiveness of delivery method show there is no "one best way" when providing continued education to practitioners. Another limitation is that there were few participants, it was held in one location only, and those that attended the workshop responded to an invitation to do so; thus participation was not representative of all managers in the retail foodservice industry. Manager participants in the workshop did represent various types of foodservices, levels of experience as managers, and gender; therefore findings do provide data regarding effectiveness of different training deliveries. Because of time constraints, not all components of the Recognition and Discipline module were completed in face-to-face instruction; thus this may have impacted post-module assessment attitude ratings and knowledge scores.

Given the multiple demands on managers in retail foodservice settings, multiple methods of delivery will provide many advantages, including convenience and appeal to various learning styles. Continual demand for anytime anywhere learning and increasing distance education supports availability of multiple methods of information delivery. With student interest in technology based learning, foodservice management educators might consider inclusion of content about the role of managers in influencing work culture and safe handling of food in addition to use of multiple methods of delivery in course curricula. Current managers are often faced with limited resources of time and money for professional development; packaging fundamental management concepts into modules available as tool kits (either in electronic or hard copy format) can provide resources to shape the workplace culture in a way that supports the practice of food safety knowledge. While findings from this study are not conclusive regarding which methods of delivery are most effective, it is clear there is a need for readily available tools for managers to use in developing and improving upon their skills to establish a culture supportive of safe food handling by employees, and tools for instructors to use in the classroom with future managers.

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Recognition & Discipline Pre- and Post-Module Assessment

Please circle the correct response.

1. Which of the following is an example of an external reward for an employee?
 - a. supervisor smiles and says “good job”
 - b. employee feels pride in doing a good job
 - c. supervisor implements a new SOP on temperature taking
 - d. supervisor disciplines employee for not following procedure
2. Which of the following is an example of an internal reward?
 - a. supervisor smiles and says “good job”
 - b. employee feels pride in doing a good job
 - c. supervisor implements a new SOP on temperature taking
 - d. supervisor disciplines employee for not following procedure
3. Discipline can serve as an employee motivator because employees will:
 - a. be motivated to avoid discipline
 - b. be motivated by inconsistent discipline
 - c. be inspired if disciplinary action is never used
 - d. all of the above
4. When using recognition or discipline as motivators, it is important to remember:
 - a. Established SOPs
 - b. Consistency in use
 - c. Not all employees will be motivated by the same thing
 - d. All the above
5. Rewarding employees for following safe food handling behaviors:
 - a. always costs a lot of money
 - b. can be relatively inexpensive
 - c. should be at employee’s discretion
 - d. will take a lot of planning

What do you think?

Please rate your level of agreement with the following statements.

Circle your response using this scale: 1 = Strongly Disagree, 2= Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. If employees were paid more for handling food safely, they would do it.	1	2	3	4	5
2. I believe that rewarding employees has no effect on their work performances.	1	2	3	4	5
3. The employees who work for me should be punished when they do something wrong.	1	2	3	4	5
4. When something goes wrong, it is usually my fault, not my employees.	1	2	3	4	5
5. It does not matter how I behave at work because employees will do what they want to do despite my actions.	1	2	3	4	5
6. Every employee is motivated by the same rewards.	1	2	3	4	5
7. If I reward one employee, I feel like I need to reward them all.	1	2	3	4	5
8. If I had a good recognition system in place, all of my employees would be motivated.	1	2	3	4	5
9. I serve as a role model to my employees by my actions	1	2	3	4	5
10. It’s easier to do something myself than to get one of my subordinates to do it.	1	2	3	4	5
11. I try to avoid disciplining my employees.	1	2	3	4	5
12. It’s impossible to give someone a reward at my workplace.	1	2	3	4	5
13. I dislike the employees I supervise.	1	2	3	4	5
14. I like my job.	1	2	3	4	5
15. I plan to leave my job sometime within the next year.	1	2	3	4	5

What about you?

1. Gender

- Female
- Male

2. Age:

- 18-21 years
- 22-25 years
- 26-30 years
- 31- 40 years
- 41-50 years
- 51-60 years
- over 60 years

3. What is the total number of years of your work experiences in food-service?

- less than 1 year
- 1-3 years
- 4-7 years
- 8-12 years
- 13-20 years
- over 20 years

4. In which type of foodservice operation are you currently working?

- restaurant, quick service
- restaurant, table service
- hospital
- nursing home
- school
- college
- other

(Please, specify type _____)

5. How long have you worked at this current foodservice operation?

- less than 1 year
- 1-3 years
- 4-7 years
- 8-12 years
- 13-20 years
- over 20 years

6. How long have you had supervisory or management responsibilities?

- less than 1 year
- 1-3 years
- 4-7 years
- 8-12 years
- 13-20 years
- over 20 years

7. Prior to having supervisory or management responsibilities, were you working at the same foodservice operation as you are now?

- Yes
- No

Communication Pre- and Post-Module Assessment

Please circle the correct response.

1. Standard Operating Procedures (SOPs) can be useful to management by:
 - a. Avoiding verbal repetition of organization policies
 - b. Maintaining the organization's and required food safety standards
 - c. Providing consistent communications to employees
 - d. All of the above
2. A retail foodservice organization should have food safety SOPs for which of the following situations:
 - a. Cleaning and sanitizing procedures
 - b. Proper food tasting
 - c. Visitors in the kitchen
 - d. All of the above
3. At the minimum, it is recommended management review food safety SOPs with trained employees once:
 - a. Every two weeks
 - b. Each month
 - c. Each year
 - d. No need to review
4. Which of the following requires an SOP?
 - a. Employee parking
 - b. Break room conversations
 - c. Employee Health
 - d. Music playing
5. Which of the following steps in the flow of food would NOT require an SOP?
 - a. Reheating
 - b. Serving
 - c. Cooling
 - d. Eating
6. Which of the following would not be a barrier to communication?
 - a. Perceptions
 - b. Emotions
 - c. Language
 - d. Good listening skills
7. When a supervisor leaves a written note for an employee at his/her work station, this is considered which type of communication?
 - a. One-way
 - b. Two-way
 - c. Verbal
 - d. Active listening
8. Which of the following would be the best way to communicate proper handwashing to an employee who did not speak English as his/her first language?
 - a. Place a poster near the handwashing sink detailing the steps in writing (English)
 - b. Bring the employee to the handwashing sink and show how to properly hand wash by demonstrating this to him/her
 - c. Reprimand the employee each time he/she did not wash hands properly
 - d. Explain the steps verbally (in English) to the employee
9. An example of an emotional barrier to communication is illustrated by which of the following:
 - a. Being upset because of what happened at home
 - b. Using sign language in the workplace
 - c. Speaking English as a second language
 - d. Hearing difficulties due to noisy kitchen
10. One problem employees typically voice regarding supervisor communication is:
 - a. Receiving too much communication from supervisors
 - b. Receiving conflicting messages from different supervisors
 - c. Receiving only positive communication
 - d. Receiving clear and concise messages from supervisors

What do you think?

Please rate your level of agreement with the following statements.

Circle your response using this scale: 1 = Strongly Disagree, 2= Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Self-training through review of written Standard Operating Procedures (SOPs) is as effective as face-to-face training for new employees.	1	2	3	4	5
2. Use of written SOPs as a training tool caters to a variety of learning styles.	1	2	3	4	5
3. Written SOPs for procedures such as handwashing are not needed.	1	2	3	4	5
4. Availability of written SOPs will help me do my job as a supervisor, better.	1	2	3	4	5
5. Developing SOPs takes too much time – it is faster for me to just verbally tell each employee what needs to be done.	1	2	3	4	5
6. I believe written policies help employees practice safe food handling.	1	2	3	4	5
7. Written SOPs aren't necessary because employees won't read them.	1	2	3	4	5
8. Written SOPs will help me as a manager instill a culture of food safety in the work place.	1	2	3	4	5
9. Written SOPs make me more confident so safe food handling practices are followed in my work situation.	1	2	3	4	5
10. I believe I can influence my subordinates by talking nicely to them.	1	2	3	4	5
11. How I communicate with my employees can serve as a motivator for them.	1	2	3	4	5
12. Through my actions, I can serve as a role-model to my employees.	1	2	3	4	5
13. I enjoy working with others who are different from me.	1	2	3	4	5
14. It's easier to do something myself than to get one of my subordinates to do it.	1	2	3	4	5
15. I dislike the employees I supervise.	1	2	3	4	5
16. I like my job.	1	2	3	4	5
17. I plan to leave my job sometime within the next year.	1	2	3	4	5

What about you?

1. Gender

Female

Male

2. Age:

18-21 years

22-25 years

26-30 years

31- 40 years

41-50 years

51-60 years

over 60 years

3. What is the total number of years of your work experiences in foodservice?

less than 1 year

1-3 years

4-7 years

8-12 years

13-20 years

over 20 years

4. In which type of foodservice operation are you currently working?

restaurant, quick service

restaurant, table service

hospital

nursing home

school

college

other

(Please, specify type _____)

5. How long have you worked at this current foodservice operation?

less than 1 year

1-3 years

4-7 years

8-12 years

13-20 years

over 20 years

6. How long have you had supervisory or management responsibilities?

less than 1 year

1-3 years

4-7 years

8-12 years

13-20 years

over 20 years

7. Prior to having supervisory or management responsibilities, were you working at the same foodservice operation as you are now?

Yes

No