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Food Safety Training Attitudes and Reported Behaviors of Chinese Restaurateurs in the United States

ABSTRACT

This study explored factors influencing behavioral intention to provide food safety training and identified preferred food safety training methods among Chinese restaurateurs in the U.S. Five hundred randomly selected owners/operators of independent, traditional, full-service Chinese restaurants across the U.S. received questionnaires via mail, personal visits, or faxes. Descriptive and inferential statistical analyses, such as an exploratory factor analysis (EFA), hierarchical multiple regression, and ANOVA, were conducted to describe and explore core Chinese cultural values (CCVs) and relationships among variables. Seventeen CCVs related to food safety behaviors, training, and relationships with health inspectors were identified from 261 completed surveys (52.2% response rate). "Courtesy, respect", and "harmony" were the three most important CCVs. Customers, family members, and business partners were the most important personal influences for Chinese restaurateurs. Employees' fatigue, learning capability, and financial resources were the top three barriers

to providing food safety training. Of five CCV factors, "interpersonal relations" significantly affected the food safety training provision intention. Chinese restaurateurs preferred the use of food safety training manuals in Chinese over other methods. Food safety professionals and inspectors may utilize the findings to develop efficient strategies to encourage safe food handling and food safety training in these restaurants.

INTRODUCTION

In recent decades, minority populations, especially Asian Americans, have increased greatly in the U.S. (45). The Asian population, estimated at 14.7 million in 2010 (34), is expected to reach 34.4 million by 2050. Chinese Americans comprise the oldest and largest Asian ethnic group in the U.S. Their immigration and settlement history can be traced back to the late 1840s (31). According to the U.S. Census Bureau (45), there were more than 4.1 million Chinese Americans (1.3% of the total U.S. population) in 2010. When immigrants move to the U.S., they adopt many aspects of American culture through enculturation,

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the process of incorporating specific aspects of the new environment into the person's original culture (28). Cultural background has a significant influence on risk perception, cognition, and behaviors (15).

Inglehart and Welzel (18) found that the Chinese culture is most strongly influenced by Confucianism and "Ex-Communism." Mok and DeFranco (32) indicated that three major elements make up the modern Chinese cultural value system: traditional Chinese culture, including Confucianism, Taoism, and Buddhism; communist orthodoxy; and Western influences. Pye (37) stated that Confucianism has the strongest influence on Chinese culture, noting that it forms the foundation of Chinese cultural traditions and the basic norms for Chinese interpersonal behaviors. Scholars who have studied Chinese cultural values (CCVs) and beliefs have determined that *trust, reciprocity, face, time, harmony, hierarchy, professional distance, and long-term orientation* influence business practices of Chinese people (2, 13, 29, 40, 44). *Face*, a unique and important element in Chinese culture, refers to avoidance of disgracing oneself or one's family (26).

Researchers have contended that the existence of Chinese restaurants in the U.S. stimulates cultural interactions between Chinese immigrants and Americans (5, 47). A Chinese restaurant is not only a business establishment, but a social institution that influences mainstream society by introducing Chinese culture, values, and rules (47). Concurrent with the increase in the Asian population, the number of Asian restaurants has also increased significantly and now represents one of the two leading restaurant industry sectors owned by the two largest ethnic minority groups (Hispanics and Asians) in the U.S. (45, 46). As the ethnic minorities have increased and people have traveled more frequently outside the U.S., Americans have become more exposed to and interested in ethnic foods. Chinese food is one of America's favorite ethnic cuisines, as evidenced by the existence of more than 46,000 Chinese restaurants throughout the U.S. (7).

Despite the progress made in reducing food safety risks in the U.S., foodborne illnesses remain a challenge, especially in the production and service of ethnic foods (24). The U.S. Centers for Disease Control and Prevention (CDC) reported that foodborne illness outbreaks associated with ethnic foods increased from 3% in 1990 to 11% in 2000, with most of these illnesses associated with Mexican, Italian, and Asian foods (43). According to a review of health inspection data, ethnic restaurants had more critical and non-critical violations and more frequent inspections than non-ethnic restaurants (24). To reduce the number of foodborne illness outbreaks, the CDC recommends training and certifying managers in food safety in all restaurants (4).

Several food safety training programs are available for restaurants, including the most widely used ServSafe® program through the National Restaurant Association

Education Foundation. A 4-hour ServSafe® food safety training session improved knowledge and food safety behavioral compliance in terms of hand washing, use of thermometers, and safe handling of work surfaces (39). However, knowledge alone did not increase the behavioral intention to handle food properly (39).

According to the results from a meta-analysis (35), consumer food safety knowledge and practices vary considerably across demographic categories, with socioeconomic and cultural differences. Although management concerns due to cultural differences apply to all restaurants, the increasing number of Chinese restaurants and the cultural differences between Chinese and American approaches to food handling may present unique food safety challenges for Chinese restaurateurs in the U.S. (26). Chinese restaurant owners often felt that inspectors sometimes misinterpret what they have seen in a busy kitchen because of the inspectors' "unfamiliarity with traditional Chinese cooking methods" (26). Despite the potential difficulties of working with these ethnic Chinese restaurant operators, some research has been conducted to identify needs and challenges related to food safety training in Chinese restaurants or possible cultural influences on food handling and food safety training at these restaurants. Therefore, the purpose of this research was to explore the variables that influence the behavioral intention of Chinese restaurateurs in the U.S. regarding attitudes toward safe food handling and the provision of food safety training in their restaurants. In addition, this study sought to identify the most preferred food safety training method and language among Chinese restaurants.

MATERIALS AND METHODS

Approval for the research protocol and the use of human subjects was obtained from Kansas State University Institutional Review Board (IRB) prior to contacting the participants for this study.

Participants and recruitment

The target population of this study was Chinese restaurateurs who are currently operating independent, traditional, full-service Chinese restaurants in the U.S. A list of Chinese restaurants was obtained through ChineseMenu.com, a sub-organization of *Chinese Restaurant News*. Subscribers to *Chinese Restaurant News* include owners and operators of Chinese restaurants in the U.S. who share their restaurant information online for marketing purposes (n = 7,188). Only full-service, non-buffet Chinese restaurants (n = 1,031) were selected from the list of subscribers in order to minimize variations due to different restaurant settings and service styles. From the list of these Chinese restaurants, 400 were selected randomly from various municipalities and regions. In addition, *Chinese Restaurant News* offered to contact an additional 100 of their unlisted subscribers via faxes

without revealing the subscribers' contact information to the researchers. Thus, a total of 500 Chinese restaurants were contacted for the survey. A drawing for one of ten \$50 gift cards was used as an incentive to participate in the study.

Model and instrument development

Based on a literature review and the results of an elicitation study utilizing individual interviews with Chinese restaurateurs (27), an instrument was developed that estimates potential relationships among CCV, attitudes, personal influences, perceived barriers, past experiences, and behaviors regarding food safety training. Questions in each

identified construct were formulated according to specific concepts established under each theme (27). The instrument included questions regarding the respondent's perception of selected CCVs (n = 17), behaviors related to food safety training (n = 2), attitudes toward food safety training (n = 4), personal experiences of providing food safety training (n = 5), perceived barriers to providing food safety training (n = 6), past experiences with food safety training and food inspections (n = 6), and preferred food safety training methods and language. Demographic information about the establishments and the participants was also included and was used to characterize the sample. All questions, except the

TABLE 1. Results of back translation

(Translation phrases including CCV, attitude, past experiences and behavioral intention)

Words/phrases	短语	Level of Agreement ^a Mean ^b ± SD ^c
<i>Chinese Cultural Values</i> Courtesy	礼貌	5.50 ± 1.50
Reciprocity	互惠互利	5.55 ± 1.48
Thriftiness	节俭	5.08 ± 1.44
Diligence	勤奋	5.11 ± 2.14
<i>Benefit of Food Safety Training</i> Improve employee food handling practices	提高员工处理食品的实践操作	5.67 ± 1.67
Ensure my restaurant serves safe food	确保我餐厅提供安全的食物	6.08 ± 1.16
Provide safe food to my customers	确保为客人提供安全的食物	5.83 ± 1.40
Provide quality food to my customers	确保为客人提供高质量的食物	5.42 ± 1.73
<i>Perceived Barriers to Providing Food Safety Training</i> I have enough staff to cope when employees are taking part in food safety training.	当员工去参加食品安全培训时，我餐厅可以有足够的人手应付客人。	5.33 ± 1.61
<i>Past Experiences of Health Inspection</i> I agree with health inspectors' evaluations.	我同意食品安全检查员的评估。	5.92 ± 1.16

^aThe authors determined the acceptable level was 5.00 or greater.

^bBased on a 7-point Likert-type scale, with 7 being exactly the same and 1 being completely different.

^cSD = Standard deviation

demographic questions, used Likert-type scales on which the participants indicated their level of agreement.

Instrument translation and validation

Food safety experts and Chinese restaurateurs ($n = 7$) reviewed the initial questionnaire (in English) to ensure the content validity and the clarity of the instructions. The expert panel provided recommendations regarding wording of items and flow. At this stage, some questions were eliminated to reduce duplication and to shorten the length of the instrument. Following the review, a bilingual researcher translated the questionnaire into the official Chinese language, Mandarin. To ensure the accuracy of the translation, another bilingual researcher, who had not been involved with the initial translation, translated the Chinese version of the questionnaire back into English.

A panel of 20 native English speakers then reviewed the original and the back-translated versions of the instrument. Some questions were translated word-for-word and achieved 100% agreement and therefore were not included in this process. Other questions in the Chinese version were considered acceptable if the average mean score for agreement between the two English (i.e., original and back-translated) versions reached 5.0 on a 7-point scale. If the mean score was lower than 5.0, the question was revised and re-tested until a mean score of agreement between the two versions reached 5.0. [Table 1](#) shows the final results of the back-translation evaluation of the questions.

Data collection

Prior to data collection, 20 Chinese restaurateurs from the surrounding area participated in a pilot study to evaluate the inter-item reliability and usability. Analyses indicated that all constructs (CCVs, attitude, personal influence, perceived barriers, past experiences, and intention) achieved an acceptable Cronbach's alpha ($\alpha \geq .70$) meaning that they are reliable as construct measures. No further revisions were made to the questionnaire after the pilot study.

Individuals in the sample were contacted via mail, email, fax, or personal visits to encourage their participation. Four hundred randomly selected Chinese restaurateurs received printed questionnaires via mail ($n = 400$). Personal visits to surrounding areas were made by the researchers and other assistants in the U.S. to further encourage participation.

The participants received an envelope with a copy of the questionnaire, a postage-paid self-addressed return envelope, and a cover letter that explained the purpose of the research, data collection procedures, and the confidentiality statement. Participants were asked to return the completed questionnaire in the envelope provided. In addition to the mailed survey, *Chinese Restaurant News* faxed the questionnaire to 100 Chinese restaurateurs who were not listed on ChineseMenu.com. Recipients of the faxed survey were asked to return their completed

questionnaires via fax or mail. Two weeks after the initial contact, the participants received a fax from *Chinese Restaurant News* or a follow-up phone call encouraging them to complete and return the questionnaire (11).

Data analysis

Descriptive statistics, including frequencies, means, standard deviations, and cross-tabulations, were calculated to summarize the data. An exploratory factor analysis with VARIMAX rotation, which is commonly used to extract and categorize a relatively large set of variables, was applied to group the 17 CCVs into 5 core CCVs and to identify the relevant factors affecting Chinese restaurateurs' intention to provide food safety training. To identify the relationships among the variables related to safe food handling and training, hierarchical multiple regression analyses and a one-way ANOVA were applied. Descriptive statistics were also utilized to identify the Chinese restaurateurs' most preferred food safety training method and language. Data were analyzed using the SPSS for Windows Version 17.0 (2007, SPSS Inc., Chicago, IL). Statistical significance was defined as $P \leq 0.05$.

RESULTS

Demographic characteristics of respondents and operations

A total of 261 completed surveys were returned via fax ($n = 118$), mail ($n = 69$), personal visits ($n = 69$), or E-mail ($n = 5$). The majority ($n = 148, 56.7\%$) of the participants were male and had a high-school education or less (57.5%) ([Table 2](#)). The majority ($n = 220, 84.3\%$) had been operating restaurants in the U.S. for less than 10 years. Of the 261 respondents, the majority ($n = 163$) had a restaurant with 100 seats or less and 96 had a restaurant with 101–200 seats.

The majority ($n = 191, 69.3\%$) of the participants had received food safety training previously. Of those who had received food safety training, the majority ($n = 148$) had received it from the local health department, 22 from the National Restaurant Association (ServSafe®), and 21 from other sources, such as the owners of the restaurants. Seventy participants, however, did not indicate the food safety training provider; either they have not received any food safety training or they did not recall the information.

Descriptive of measurement items

Descriptive statistics indicated that the participants considered many of the CCVs highly important (mean $[M] \geq 6.00$ on the 7-point scale) ([Table 3](#)). In general, they viewed many CCVs as very important to their restaurant operations and as highly influential on Chinese restaurateurs' intentions to provide food safety training to their employees (construct $M \pm$ standard deviation $[SD] = 6.46 \pm 0.92$). Among the 17 specific CCVs identified in the qualitative research, the participants perceived "courtesy" (6.95 ± 0.24),

TABLE 2. Respondents' demographic characteristics

Characteristic		Frequency	Percent (%)
Sex (<i>n</i> = 261)			
	Male	148	56.7%
	Female	113	43.3%
Education (<i>n</i> = 261)			
	Less than high school degree	18	6.9%
	High school degree/GED	132	50.6%
	Some college	40	15.3%
	Bachelor's degree or higher	71	27.2%
Years of restaurant operation (<i>n</i> = 261)			
	< 5 years	116	44.4%
	6–10 years	104	39.8%
	11–15 years	26	10.0%
	16–20 years	11	4.2%
	N/A	4	1.5%
Food safety training experience (<i>n</i> = 261)			
	No	70	26.8%
	Yes	191	73.2%
Food safety training provider (<i>n</i> = 191)			
	Local health department	148	56.7%
	National Restaurant Association	22	8.4%
	Your company	5	1.9%
	Other	16	6.1%
	No responses	70	26.8%

“respect” (6.87 ± 0.47), and “harmony” (6.85 ± 0.41) as the three most important values.

The Chinese restaurateurs' attitudes with regard to providing food safety training to employees was very positive (6.88 ± 0.35). The average personal influence score on the

provision of food safety training was high (5.34 ± 1.73), indicating the importance of personal influence on food safety training provision. More specifically, respondents perceived the opinions of customers (5.74 ± 1.71), family members (5.73 ± 1.60), and business partners ($5.49 \pm$

TABLE 3. Descriptive statistics of measurement items for predictor variables and Intention

Variable	Measurement Items*	Mean ± SD ^a
	Chinese cultural values (CCV)	6.33 ± 0.86
	Courtesy	6.95 ± 0.24
	Respect	6.87 ± 0.47
	Harmony	6.85 ± 0.41
	Diligence	6.79 ± 0.56
	Carefulness	6.72 ± 0.62
	Confidence	6.71 ± 0.67
	Trust	6.69 ± 0.66
	Adaptability	6.67 ± 0.73
	Sincerity	6.65 ± 0.67
	Reciprocity	6.51 ± 0.85
	Friendship	6.43 ± 0.75
	Thriftiness	6.36 ± 1.00
	Tolerance	6.16 ± 0.91
	Humbleness	5.79 ± 1.29
	Authority	5.52 ± 1.57
	Face	5.01 ± 1.71
	Professional distance	4.96 ± 1.60
	Attitude (ATT)	6.88 ± 0.35
	Improve employees' food handling practices	6.93 ± 0.27
	Ensure my restaurant serves safe food	6.91 ± 0.28
	Reduce the likelihood of foodborne illness outbreaks	6.89 ± 0.35
	Increase health inspection scores in my restaurants	6.80 ± 0.51
	Personal influence (PI)	5.34 ± 1.73
	Customers think I should offer food safety training in my restaurant.	5.74 ± 1.71
	Family members think I should offer food safety training in my restaurant.	5.73 ± 1.60
	Business partners think I should offer food safety training in my restaurant.	5.49 ± 1.57
	Employees think I should offer food safety training in my restaurant.	4.90 ± 1.78
	Other restaurant managers think I should offer food safety training in restaurant.	4.83 ± 1.98

Table 3 continued on next page

TABLE 3. Descriptive statistics of measurement items for predictor variables and Intention (cont.)

Variable	Measurement Items*	Mean ± SD ^a
	Perceived barriers (PB)	4.38 ± 2.11
	Too exhausted at work to provide food safety training.	5.89 ± 1.58
	Lack of employees' capability to learn food safety.	4.80 ± 1.97
	Lack of financial resources to provide food safety training.	4.56 ± 2.19
	Lack of employees' willing to attend food safety training.	4.34 ± 2.26
	Lack of time for food safety training.	3.83 ± 2.39
	Lack of adequate staffs to operate restaurants when employees are gone for food safety training.	2.87 ± 2.28
	Past experiences (PE)	6.39 ± 1.05
	I think health inspections are helpful in preventing foodborne illness.	6.67 ± 0.70
	I was satisfied with the last health inspection.	6.46 ± 1.04
	I agree with food safety inspectors' comments.	6.39 ± 0.91
	I think food safety training is very effective.	6.34 ± 1.23
	When I read the health inspection report, I can understand it completely.	6.25 ± 1.16
	It is easy for me to follow the food safety inspectors' instructions.	6.23 ± 1.27
	Behavioral intention (BI)	6.46 ± 0.92
	I plan to provide food safety training to my employees in the future.	6.50 ± 0.89
	I intend to provide food safety training to my employees in the future.	6.41 ± 1.11

1.57) as the most important. Among six perceived barriers to the provision of food safety training, the participants rated employee fatigue (5.89 ± 1.58), employees' learning capability (4.80 ± 1.97), and financial resources (4.56 ± 2.19) highest. Participants disagreed on having sufficient staff to cover the operation if employees are absent because they have gone to training (2.87 ± 2.28). Restaurateurs believed that the operation lacked sufficient coverage during training sessions; on the other hand, Chinese restaurateurs perceived employees' time for training as a less significant barrier (3.83 ± 2.39) than their staff coverage.

Categorizing variables: Exploratory factor analysis

An exploratory factor analysis with VARIMAX rotation helped us to categorize the core CCVs and the relevant elements of the behaviors of the Chinese restaurateurs regarding provision of food safety training. The KMO score

was 0.589, indicating that the factor analysis was appropriate for this study. Bartlett's test of sphericity ($\chi^2 = 2774.34$, $df = 136$, $P < .001$) indicated that the correlation between the items was sufficiently large for factor analysis. Five factors emerged from the 17 CCVs analyzed in this study (Table 4). Factor I includes six CCVs (30.27% of variance explained) addressing *work attitudes*: diligence, adaptability, thriftiness, carefulness, reciprocity, and trust. Factor II consists of four CCVs related to *customer relations*: tolerance, friendship, humility, and sincerity (13.69% explained). Factor III is made up of three CCVs related to *work relations*: power distance, authority, and face (12.86% explained). Factor IV is comprised of three CCVs related to *interpersonal relations*: respect, harmony, and confidence (9.05% explained). Factor V consists of only one CCV, *courtesy*, but it explained a significant amount of variance (6.06% explained). Table 4 illustrates the results from the factor analysis.

TABLE 4. Five-factor principal component exploratory factor solution (n = 261)

Exploratory Factor Analysis Loadings					
	Work Attitudes	Customer Relations	Work Relations	Interpersonal Relations	Courtesy
Work Attitudes					
Diligence	.778	.232	-.032	-.023	.263
Adaptability	.749	-.013	.174	.138	-.216
Thriftiness	.673	-.024	.333	-.193	.295
Reciprocity	.603	.078	.192	-.222	.497
Carefulness	.588	.272	.139	-.039	.391
Trust	.581	.272	.139	-.039	.391
Customer Relations					
Tolerance	-.084	.826	.237	.203	.025
Friendship	.264	.819	-.014	.224	.000
Sincerity	.325	.800	-.074	.023	-.072
Humbleness	.064	.767	.218	-.327	.245
Work Relations					
Professional distance	.252	.069	.837	.248	.006
Authority	.281	.040	.806	-.072	-.012
Face	-.043	.327	.706	.429	.007
Interpersonal Relations					
Respect	-.080	.145	.201	.879	.008
Harmony	.108	-.150	.364	.581	.527
Confidence	.267	.125	-.032	.436	.461
Courtesy					
Courtesy	.055	.014	-.089	.069	.846
Percentage of variance explained	30.27%	13.69%	12.86%	9.05%	6.06%
(71.93% total)					
Eigen values	5.146	2.327	2.186	1.538	1.030
KMOS	0.589				

EFA: Extraction Method: principal component with variant rotation

CCVs and factors affecting food safety training

Hierarchical multiple regression analysis was used to identify the relationships among CCVs, attitudes, personal influence, perceived barriers, past experiences, and behavioral intention related to providing food safety training in Chinese restaurants

(Table 5). In Model 1, results showed that the CCV factors were significant ($F = 10.47, P < .001$), meaning that there was a statistically significant relationship between CCV factors and behavioral intention to provide food safety training. These five CCV factors explained 24.2% of the variance. After attitude,

TABLE 5. Hierarchical multiple regression results

Behavioral Intention (BI)

Variable	Model 1			Model 2			Model 3			Model 4			Model 5		
	B	SE B	Beta	B	SE B	Beta	B	SE B	Beta	B	SE B	Beta	B	SE B	Beta
Work attitude	-.128	.150	-.076	-.103	.152	-.062	-.007	.158	-.004	.033	.157	.019	.207	.152	.124
Customer relations	.204*	.106	.161	.210*	.107	.166	.263*	.109	.208	.148	.116	.117	.014	.113	.011
Work relations	.039	.058	.054	.033	.058	.045	-.050	.071	-.068	.043	.079	.059	-.023	.075	-.032
Interpersonal relations	1.456***	.248	.446	1.471***	.248	.451	1.475***	.246	.452	1.530***	.243	.469	1.378***	.231	.422
Courtesy	-.270	.335	-.062	-.254	.335	-.058	-.185	.334	-.042	-.170	.329	-.039	-.432	.314	-.099
Attitude (ATT)				-.245	.240	-.072	-.322	.241	-.095	-.375	.238	-.110	-.358	.224	-.105
Personal influence (PI)							.114*	.057	.170	.063**	.060	.094	.040	.057	.060
Perceived barriers (PB)										.163	.064	.205	.140**	.061	.175
Past experience (PE)													.403***	.086	.334
R Square (Adjusted R Square)	0.242 (0.219)			0.247 (0.219)			0.265 (0.233)			0.293 (0.258)			0.378 (0.343)		
F Change	10.468***			1.046			3.982*			6.422*			21.780***		

Note. * $P < .05$, ** $P < .01$, *** $P < .001$.

personal influence, perceived barriers, and past experiences were added to the model, Model 5 significantly improved, explaining 37.8% of the variance. *Interpersonal relations* ($\beta = 1.378, P < .05$), perceived barriers ($\beta = 0.140, P < .01$), and past experiences ($\beta = 0.403, P < .001$) were significantly associated with behavioral intention to provide food safety training to employees in Chinese restaurants.

Independent sample *t*-tests were used to determine the significance of differences in the five CCV factors based on gender. Among all five factors, significant differences existed between genders for the CCV factor related to *customer relations* ($t = 2.46, P < .05$) and for the CCV factor related to *interpersonal relations* ($t = -6.02, P < .001$). The male respondents perceived CCVs related to *customer relations* (6.36 ± 0.72) to be more important than the female

respondents did (6.13 ± 0.77). On the other hand, the females (6.96 ± 0.21) ascribed more importance to CCVs related to *interpersonal relations* than the male respondents did (6.70 ± 0.47).

Behavioral intention to provide food safety training differed based on education levels ($F = 5.905, P < .01$). The behavioral intention to provide food safety training was higher for the respondents with a high school diploma (6.67 ± 0.34) or lower (6.64 ± 0.55) than for those with a bachelor's degree or higher ($6.08 \pm 1.46, P < .001$). The number of years of experience in restaurant operation did not influence the participants' behavioral intention to provide food safety training ($P > .05$). For food safety training material preference, Chinese restaurateurs preferred using training manuals (6.17 ± 1.23) for employee food safety

training. The preferred language was Chinese (6.13 ± 1.33), as expected, rather than English (3.98 ± 2.04).

DISCUSSION

The purpose of this study was to explore the variables that influence the food safety training behaviors of Chinese restaurateurs in the U.S. and to identify the most preferred food safety training methods and language for their employees. Previous research identified 17 CCVs as variables affecting Chinese restaurant operations (27). The Chinese restaurateurs participating in this study perceived courtesy, respect, and harmony as the three most important CCVs, a finding that is consistent with previous findings (2). Courtesy (*limao*) in Chinese culture, which refers to greeting people in society by rank and title, is closely linked to the standards of morality used to regulate society and prevent conflict (12). In the 21st century, courtesy is applied in the business setting because of its influence within a relationship (12). Zhu and Yao (49) concluded that harmony and courtesy may apply to management philosophy and operational behavior and provide strategies for business management practices.

Although the Chinese restaurateurs in this study did not perceive face (*lian* and *mian-zi*) to be as important as courtesy, respect, and harmony; “face” is the foundation of many CCVs and is directly related to respect, which is ranked second highest (25). Chinese people place great importance on being respected by others. Although respect has not been discussed individually in previous studies, “face,” as the element primarily associated with respect, has been recognized and explored more often. Although our study did not find “face” to be significant, other studies have found it to be an important component in Chinese culture (23). “Face” represents the reputations that Chinese people build within the community during their lives (17) and is associated with their confidence, reputation, and relationship to the community (8).

The Chinese prefer to avoid competition and conflict and to maintain harmony by following the Confucian “Doctrine of the Mean” (6). Harmony plays a critical role in a two-party relationship. Without harmonious relationships, face and trust cannot continue successfully in the community, and this will prevent the establishment of “*guanxi*,” or a relationship (3, 6, 10). Tolerance is also an essential component of harmony. To avoid conflict, the Chinese prefer resolving issues in an “implicit and mild” way (32).

Understanding these cultural values is important when addressing behaviors and relations pertinent to business and relationships within the business environment, including relationships with health inspectors and food safety educators. If health inspectors and food safety educators show courtesy and respect and maintain a harmonious relationship with Chinese restaurateurs, the latter’s intention to cooperate with them may improve. To the Chinese, respect can be interpreted as mutual respect

(36); Chinese restaurateurs who receive respect from food safety educators and health inspectors will show their respect in return by following their recommendations. As face is the foundation of Chinese culture, food safety educators and health inspectors could utilize this unique characteristic to improve the food safety performance of Chinese restaurants. For example, a Chinese restaurateur who has foodborne illness outbreaks or numerous food code violations in his or her restaurant and whose restaurant inspection results are disclosed to the public will lose face in the Chinese community. If Chinese restaurateurs are aware of such negative consequences, they may be more willing to provide food safety training to their employees. The Chinese restaurateurs in this study also identified humbleness as an important CCV. Being humble in a business setting shows one’s respect for one’s partners, and this approach, in turn, may benefit the business partnership and employees’ attitudes toward their jobs (21).

The Chinese restaurateurs in this study perceived the opinions of customers, family members, and business partners as the most important personal influences affecting their intention to provide food safety training. According to Rice and Hamilton (38), most small business managers preferred to make decisions based on their own accumulated experience. Some studies indicate that small business managers rely less on formal sources and more on informal sources, such as family and friends, in making business decisions (9, 19). Additionally, customers, suppliers, employees, and competitors have been identified as information resources affecting Chinese restaurateurs’ business practices (14, 20, 22).

The Chinese restaurateurs identified employee fatigue, employees’ capability to learn, and financial resources as the top three barriers to the provision of food safety training in Chinese restaurants. In previous research, eight control beliefs for restaurateurs emerged: employee availability, managers’ time, financial resources, lack of off-site food safety training availability, lack of on-site food safety training availability, lack of targeted training materials, employees not following what they learn from food safety training, and the time commitment required for food safety training (39). Previous research also identified a lack of resources, time constraints, the attitudes of the employees, and language barriers as contributing factors in inadequate food safety training in ethnic restaurants (30, 39, 41, 48). The results indicated that Chinese restaurateurs in this study were similar to those in previous studies, despite different cultural backgrounds.

The findings regarding food safety training were also consistent with those of previous studies conducted with non-Chinese restaurant owners/operators, which underrepresented Chinese restaurateurs. Food safety educators need to consider these barriers when designing and providing food safety training for Chinese restaurant employees. Food safety training materials for these

populations should be quickly and easily learned, as their ability to understand the topic and their physical energy and time for training are limiting factors (27). Our participants perceived that lack of financial resources was the third barrier to providing food safety training. This may also explain why the participants expressed a preference for low- or no-cost food safety training, which may be offered by state or local health departments or cooperative extension agencies.

The restaurateurs need to be mindful about potential risks of foodborne illness outbreaks caused by failure to follow safe food handling practices and consider that the cost of the food safety training may be worthwhile. Food Safety Net (16) reported that a Chinese restaurant in the United Kingdom was fined almost £65,000 (approximately \$100,000) after 50 customers reportedly became ill after eating there. Food safety educators and health inspectors may need to inform Chinese restaurateurs about the importance of food safety training and the negative consequences of foodborne illness outbreaks (such as losing face, customer complaints and lawsuits or fines). This may cause the restaurateurs to be more willing to participate in and provide food safety training.

Five CCV factors emerged from the exploratory factor analysis (i.e., CCVs related to *customer relations, work attitude, work relations, interpersonal relations, and courtesy*). Of the five CCV factors identified in this study, *interpersonal relations* significantly affected the behavioral intention of food safety training provision. As Pye (37) stated, Confucianism has the greatest influence on Chinese culture. Friendships and relationships are valued highly in Chinese culture; scholars (17) have suggested that once a Chinese person establishes a relationship, this bond is unlikely to be broken, and once a relationship is broken, it is very unlikely to be recovered. Sincerity is a critical component in the establishment of social networks among Chinese people, and communication relies not only on what is said but also on what is felt (42). Accordingly, an individual will gain trust from the other party by showing sincerity. By establishing long-term friendships, receiving respect, and gaining trust within the community, the Chinese restaurateurs will have more confidence in their relationships with health inspectors and customers.

Researchers in different fields have used attitude to predict future behavior. According to Roberts et al. (39), attitude plays a critical role in behavioral control. However, our results showed that attitude was not significantly associated with the Chinese restaurateurs' intention to provide food safety training. This discrepancy may be due to the multicollinearity between the five CCV factors and attitude (33).

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Limitations of the study

This study is limited to Chinese restaurants in the U.S. Thus, the results cannot be generalized to other types of restaurants, ethnic or non-ethnic, in the U.S. or to restaurants located outside the U.S. Second, the study did not explore the relationship between behavioral intention and actual behavior. Although behavioral intention cannot explain 100% of actual behavior, previous studies have shown that a strong correlation exists between behavioral intention and actual behavior (1). Therefore, the behavioral intentions identified in this study may be used as a surrogate measure of the participants' future behaviors.

Finally, this study did not address nonresponse bias. The Chinese restaurateurs who participated in the study may be more aware of the need for food safety training and therefore might already have more positive attitudes and favorable past experiences than those Chinese restaurateurs who did not participate in this study.

CONCLUSIONS

This study explored the variables that influence the behaviors of Chinese restaurateurs in the U.S., including CCVs that are related to the provision of food safety training in their restaurants; the authors also identified the most preferred food safety training methods and language among the participants. The results showed that courtesy, respect, and harmony were the three most important CCVs for Chinese restaurateurs and that the opinions of customers, family members, and business partners were perceived as the most important personal influences affecting their intention to provide food safety training. Employees' fatigue, employees' learning capability, and lack of financial resources were the top three barriers to providing food safety training in Chinese restaurants.

Health inspectors may find the results from this study useful when inspecting Chinese restaurants, assisting Chinese restaurateurs to improve their food safety performance, providing necessary food safety training to employees, and interacting with the owners/operators. Food safety professionals and health inspectors may also utilize the findings to develop efficient strategies to encourage safe food handling and food safety training in Chinese restaurants in the U.S.

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