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Consumers' Reactions to Sanitation in Casual Dining, Quick-Service, and Fine Dining Restaurants

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Abstract
Consumers' concern about food safety, sanitation, and health has increased since food-borne illnesses still frequently occur in the US. This article explored consumers' perceptions, emotions, and behavioral intention about the sanitation of the physical environment in three different restaurant settings, casual dining, quick-service, and fine dining restaurants. *Disgust* was the most strongly felt negative emotion, but no significant differences were found for negative emotional reactions to dirty conditions among the three types of restaurants. Positive emotional reactions were significantly different among the restaurant types. Behavioral intention was also significantly different among the three restaurant types as a reaction to *dirty food*. The findings help restaurant owners and managers understand how consumers feel and react to "dirty" food, service staff, or dining room tables in casual, quick-service and fine dining restaurant.

Keywords
Sanitation, Perceptions, Emotions, Casual dining restaurants, Quick-service restaurants, Fine dining restaurants

Cover Page Footnote
Consumers' Reactions to Sanitation in Casual Dining, Quick-Service, and Fine Dining Restaurants Haeik Park Purdue University park478@purdue.edu Barbara Almanza Purdue University almanzab@purdue.edu

Introduction

The number of Americans eating away from home has continued to increase over the last few decades (Kumcu & Kaufman, 2011). According to the National Restaurant Association (NRA) (2014), restaurant industry sales have been gradually increasing since the 1970s except during the recession and will reach $683.4 billion in 2014.

Unfortunately, according to the Centers for Disease Control and Prevention (CDC) (2013), foodborne illnesses also frequently occur in the U.S. although the food supply is one of the safest in the world. Indeed, about 48 million people get sick each year in the U.S. by eating contaminated food (CDC, 2013). In other words, one out of every six people gets foodborne illness every year in the U.S. As a result, consumers' concern about food safety, sanitation, and health has increased (Boo, Ghiselli, & Almanza, 2000; Michaelidou & Hassan, 2008; Srey, Jahid, & Ha, 2013; Ungku Fatimah, Boo, Sambasivan, & Salleh, 2011; Wilcock, Pun, Khanona, & Aung, 2004).

According to Campbell-Smith (1967), restaurant quality is determined by consumers with the three elements of food, atmospherics, and service. These three elements are generally considered to be among the most key factors that highly influence consumers' satisfaction and consumption behavior in restaurants (Bitner & Hubbert, 1994; Heung & Gu, 2012; Rust & Oliver, 1993; Woodside, Frey, & Daly, 1989). In addition, Kotler (1973) mentioned the importance of physical environment and atmospheric cues and their great effect on consumer behavior. Consumers are thought to use these environmental cues in assessing sanitation level or condition in restaurants, and their subsequent restaurant behavioral intentions (Aksoydan, 2007; Barber & Scarcelli, 2009; Barber, Goodman, & Goh, 2011; Henson et al., 2006; Lee, Niode, Simonne, & Bruhn, 2012; Worsfold, 2006; Ungku Fatimah et al., 2011).

From a sanitation perspective, the three elements of food, atmospherics, and service can be used by consumers as tangible evidence of the restaurant's sanitation. Because consumers are generally only exposed to the front of house in restaurants, the sanitary condition of the physical environment attributes such as the dining room, tables, servers, and restrooms are likely to play a significant role in consumers' sanitation perceptions, emotional reaction to the restaurant, and consumption behaviors.

The Mehrabian-Russell model is one of the most reliable psychological models explaining human reactions to their physical environment and consists of three parts: environmental stimuli, organism, and responses (Mehrabian & Russell, 1974). Previous studies have tested this model in restaurants settings (Jang & Namkung, 2009; Liu & Jang, 2009), however no studies have looked at the relationships among consumer perceptions about sanitation conditions, their

emotional responses to sanitation conditions, and their subsequent behavioral intentions. What is more, consumers' positive and negative emotional reactions to different sanitation conditions in restaurants have not been studied. It would be expected that consumers' would be unhappy with poor sanitation conditions, for example, however, positive emotional reactions to good sanitation conditions have not been studied. Are they pleased, for example, or are they neutral because regulatory systems exist to help ensure that sanitation standards are met by all restaurants?

The purpose of this exploratory study is therefore to 1) identify the specific positive and negative emotions that consumers feel in regards to restaurant sanitation, 2) identify the most important sanitation dimensions that influence consumers' emotional responses and behavioral intentions, and 3) use the sanitation emotions (purpose number one) and sanitation dimensions (purpose number two) to compare respondents' emotional responses and behavioral intentions to clean/dirty conditions among three different restaurant settings (fine dining, casual dining, and quick-service restaurants). The results of this study contribute to a better understanding of consumers' perceptions about sanitation conditions, and provide useful information for restaurant owners and managers in fine dining, casual dining, and quick-service restaurants. In addition, the development of emotion testing in this study is useful in future sanitation related research.

Literature Review

Mehrabian-Russell Model

Mehrabian & Russell's (1974) theoretical model shows the relationship among physical environment stimuli, human emotion, and behavior. This model consists of three elements, stimulus (S), organism (O), and response (R). Environmental stimuli (S) cause the individual's emotional responses (O). Then, individual's behavioral responses are influenced by their emotional response (R). The external elements to people are the physical environment. The organism plays a mediator role between stimuli and responses in this model. The behavioral response is divided into two parts, approach and avoidance behavior (Mehrabian & Russell, 1974).

An extended Mehrabian and Russell model was used to evaluate relationships amongst restaurant quality, consumers' emotional states, and consumers' behavioral intentions (Jang & Namkung, 2009). Quality factors including, service quality, product quality, and atmospherics, were applied to this model as stimuli, and a unipolar frame was used for emotional response. They confirmed the relationships among perceived quality (stimuli), consumer

emotions (organism), and behavioral intentions (responses) in the restaurant setting. They found that atmospherics and service enhance positive emotions while food quality is negatively related with negative emotions.

The Mehrabian & Russell model was also utilized to examine relationships among dining atmospherics, emotional responses, perceived value, and behavioral intentions in Chinese restaurants (Liu & Jang, 2009). This study found that dining atmospherics had significant effects on customer's positive and negative emotions, and perceived values.

The results of the previous studies indicate that consumer perception on restaurants attributes have a great effect on emotional responses and behavioral intention in restaurant settings.

Sanitation Dimensions

Sanitation condition refers to the state of tangible objects related to cleanliness in restaurants. Consumers can generally only assess the sanitation and safety level of the restaurant based on the front of the house areas. Typically they rely on their observations of tangible objects in the dining room to judge the sanitation level in restaurants.

According to Hightower, Brady, and Baker (2002), consumers are mainly influenced by physical environments because there is no such direct physical contact in service. On the other hand, Campbell-Smith (1967) stated that the three the key elements that increase the appeal of a meal experience are food, atmospherics, and service and these elements can be used as tangible cues for customers in assessing restaurant quality. In fact, food attributes have often been used in food sanitation research (Aksoydan, 2007; Leach, Mercer, Stew, & Denyer, 2001; Ungku Fatimah et al., 2011; Worsfold, 2006) with previous studies suggesting the importance of the presentation of food, foreign objects in food, and freshness. Quality of food is a key factor for customers in deciding where to eat (Cullen, 2005; Kivela, 1997). In addition, food quality is a critical factor in consumer satisfaction and behavior intention in restaurants (Sulek & Hensley, 2004; Namkung & Jang, 2007). Because of the importance of food as the primary purpose of a visit to a restaurant, it was used in hypotheses one through three shown below.

The concept of atmospherics (the physical environment) has also been introduced as a significant part of the service experience (Bitner, 1992; Kotler, 1973). Research studies have used a number of models to study the physical environment in the service industry, such as atmospherics, SERVICESCAPE, DINESERV, TANGSERV, and DINESCAPE (Baker, 1987; Bitner, 1992; Raajpoot, 2002; Ryu & Jang, 2008; Stevens, Knutson, & Patton, 1995). These

models have identified the importance of specific dimensions in the physical environment that have been widely applied to studies of consumer perceptions about food safety and sanitation in the restaurant setting (Aksoydan, 2007; Barber & Scarcelli, 2010; Ungku Fatimah et al., 2011). These include: cleanliness of the restroom, cleanliness of the dining table area, and cleanliness of the interior of the restaurant.

The last of Campbell-Smith's key elements is service. Although service itself is intangible, customers are able to observe servers' appearance and behaviors as possible cues for making assessments of sanitation level (Henson, et al., 2006). Servers' personal hygiene attributes could include the server's uniform, nails, and accessories. Server behaviors such as touching food with their bare hands may also be considered as an attribute of service cleanliness. Based on Campbell-Smith's key elements indicating three sanitation dimensions and research studies that have identified tangible conditions that may be used to assess sanitation for these key elements, the first three hypotheses were developed.

H1. The *dirty food* sanitation condition (as compared to *dirty service staff* or aspects of the physical environment, such as *dirty dining room table*) most strongly influences negative emotional responses in casual dining, fine dining, and quick-service restaurants.
H2. The *dirty food* sanitation condition (as compared to *dirty service staff* or aspects of the physical environment, such as *dirty dining room table*) most strongly influences positive emotional responses in casual dining, fine dining, and quick-service restaurants.
H3. The *dirty food* sanitation condition (as compared to *dirty service staff* or aspects of the physical environment, such as *dirty dining room table*) most strongly influences behavioral intentions in casual dining, fine dining, and quick-service restaurants.

Emotion and Behavioral Intention

Many researchers have attempted to define a comprehensive list of basic human emotions (Izard, 1977; Mehrabian & Russell, 1974; Plutchik, 1980; Richins, 1997; Watson, Clark, & Tellegen, 1988). Unfortunately, there are many theories, but little consensus.

The four emotion sets that are cited most frequently in psychology and marketing literature are: DES, Plutchik's eight primary emotions, CES, and Laros and Steenkamp's list of basic emotions. The Differential Emotions Scale (DES) includes the emotions of anger, discontent, worry, sadness, fear, shame, envy, loneliness, romantic love, love, peacefulness, contentment, optimism, joy,

excitement, and surprise (Izard, 1977). Plutchik's eight primary emotions suggest fear, anger, joy, sadness, acceptance, disgust, expectancy, and surprise (Plutchik, 1980). The Consumption Emotion Set (CES) assesses anger, discontent, worry, sadness, fear, shame, envy, loneliness, romantic love, love, peacefulness, contentment, optimism, joy, excitement, and surprise (Richins, 1997). The final emotion set by Laros and Steenkamp (2005) includes the basic emotions of anger, fear, sadness, shame, contentment, happiness, love, and pride.

Emotions have a great effect on an individual's physiological, subjective, and behavioral responses (Baumeister, Vohs, DeWall, & Zhang, 2007; Westbrook, 1987; Westbrook &Oliver, 1991). Attributes of atmospherics are thought to directly affect consumers' emotions (Mehrabian & Russell, 1974; Bitner, 1992; Lin, 2009). In fact, Jang & Namkung (2009) found that positive emotions were influenced by perceived atmospherics and service.

Restaurant Segments

Researchers typically categorize restaurants by type of service while others distinguish restaurants by the cost of the meal. This study uses both type of service and meal cost in its definition of casual dining restaurants, fine dining restaurants, and quick-service restaurants.

Government sources divide restaurants into two service styles, full service and limited service. According to the U.S. Census Bureau (2012), full service restaurant refers to establishments where food is provided to customers who order and are served while they are seated, and where customers pay after eating. Full service restaurants include casual restaurants, family/midscale restaurants, and fine dining restaurants.

Both casual and family/midscale restaurants are full service restaurants, however, the biggest difference between the two is the average check price per person. The average check price for casual restaurants is around $20 including an appetizer, a beverage, and a dessert while family/midscale restaurants' average check is around $15. Usually, family/midscale restaurants do not sell alcohol. In this study, casual and family/midscale restaurants are not expected to be different in terms of sanitation because of their similar layout and average check size. Therefore, casual dining restaurants refer to both casual and family/midscale restaurants in this study.

A fine dining restaurant is also a full service restaurant. Typically, fine dining restaurants serve high quality food and offer exceptional service by well-trained service staff in a high end dining environment (Kivela, 1997, Ha & Jang, 2013). The average check for fine dining is more than $25 per person (Mintel, 2014; NRA, 2014).

Limited service restaurants are establishments which provide food to customers who generally order or select items and pay before eating (US Census Bureau, 2012). We often call this type restaurant a fast-food restaurant or quick-service restaurant. In this study, the term quick-service restaurant was used to describe limited service restaurants.

In summary, we divided restaurants into three types, casual dining restaurants, fine dining restaurants, and quick-service restaurants. It was expected that each restaurant would offer different expectations to consumers because of the food cost, level of service, and atmospherics among the three restaurant segments. Therefore, hypotheses seven through nine were the following.

H4. Consumers' positive emotional responses to sanitation conditions are different among the three types of restaurants.
H5. Consumers' negative emotional responses to sanitation conditions are different among the three types of restaurants.
H6. Consumers' behavioral intentions in regards to sanitation conditions are different among the three types of restaurants.

Methodologies

Data and Measurement

Four samples were collected to assess consumers' perceptions, emotional responses, and behavioral intentions in regards to clean and dirty sanitation conditions in the three restaurant types. This study employed a 2x3 factorial between-subject design. The first factor was sanitation condition: clean (control) and dirty (treatment). The second factor was restaurant type: casual dining restaurants, fine dining restaurants, and quick-service restaurants.

A scenario approach was used in the questionnaires. Each questionnaire included two scenarios, one in which all dimensions were clean (control) and one scenario in which one dimension was dirty (treatment). The *all clean condition* scenario described a restaurant where all sanitation dimensions that consumers would observe during their dining experience were perceived as clean. Treatment scenarios described a restaurant where all sanitation dimensions were clean except for one ("*dirty" dining table area or "dirty" service staff or "dirty" food*). Examples of conditions that were suggested to demonstrate "dirty" *dining table area* were: dirty tables and chairs, dirty menu, dirty silver ware, and dirty cups.

In each scenario, an explanation of each restaurant's service style was given in addition to typical meal costs. Quick-service restaurants' costs were described as being under $10. Casual dining restaurants offered a range of meal

prices between $15 and $20. Fine dining restaurants' costs were described as being more than $25 per person.

Table 1. Research Design

	Casual dining Restaurants (n=225)				Quick-Service Restaurants (n=313)				Fine dining Restaurants (n=280)			
	A	B	C	D	A	B	C	D	A	B	C	D
Sample 1	49			49	49			49				
Sample 2	21	21	21		21	21	21					
Sample 3					38	38	38	38	38	38	38	38
Sample 4		32	32						32	32	32	32
Total (n)	70	53	53	49	108	59	59	87	70	70	70	70

Note: A=all clean; B=all clean but *dirty dining table area*; C=all clean but *dirty service staff*; D=all clean but *dirty food*

Table 1 shows the manipulation of scenarios for each sample. In sample one, four scenarios in casual dining and quick-service restaurants were tested and used to compare the "*all clean"* condition with the "*dirty food"* condition. Sample two consisted of six scenarios in casual dining restaurants and quick-service restaurants and was used to confirm the differences with more conditions in different restaurant settings. The third sample had four scenarios in quick-service and fine dining restaurants and was used to assess differences between these two types of restaurants. Lastly, sample four was collected using 9-point Likert scales and sliding scales with 100-point to see the differences in responses with scale variance. "*All clean"* and "*dirty dining table area"* scenarios had questions with 9-point Likert scales while the "*dirty service staff*" and "*dirty food"* scenarios were used with 100-point sliders. To analyze data, the 9-point Likert scale and 100-point scales were adjusted to a 7-point Likert scale by multiplying by .78 and .07 respectively.

Based on the scenarios, respondents were asked to select the number that best matched their opinions. Opinions were asked for three types of questions including the safety level of the scenario, ten emotional responses (*anger, contempt, discontent, disgust, worry, acceptance, contentment, happiness, interest*, and *joy*), and behavioral intention on a 7-point Likert scale, such as 1 (I would not feel this at all), 7 (I would feel this strongly).

To collect data for sample one, a convenience sampling approach was used in a food-court lobby in a mid-western university in the U.S. The surveys were randomly administered by the investigator to customers of the food-court. Data for samples two, three, and four were collected by hiring a research

company, Amazon Mechanical Turk. The same questionnaire was used for the four samples. Data collection dates were in the same one month period.

A series of one-way multivariate analysis of variance (MANOVA) tests were conducted to compare consumers' perceptions, emotional responses, and behavioral intentions about sanitation conditions in the three different restaurant settings. Statistical software SPSS 20 was utilized for the data analysis.

Results

Profile of Respondents

Females accounted for 49% of the total responses and males for 51%. For age, 57% of the respondents were between the ages of 18-29 years old, 29% of respondents were 30-39 years old, 12% were 40 years or older, and 2% of respondents did not answer the question about their age. In addition, the average respondents' dining experience (during the previous four weeks) at each type restaurant was reported to be at least 3.2 times in casual dining, quick-service, and fine dining restaurants. All respondents had visited the three types of restaurants and were expected to be able to distinguish the differences among different restaurants.

Table 2. Emotional Reactions to "*All Clean"* Conditions in Casual, Quick-Service, and Fine Dining Restaurants

	Casual dining (n=70)		Quick-Service (n=108)		Fine dining (n=70)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Anger	1.03^{a}	0.17	1.39^{a}	1.15	2.16^{b}	1.83	***
Contempt	1.53^{a}	1.38	1.80^{a}	1.69	2.56^{b}	1.95	**
Discontent	1.07^{a}	0.26	1.51^{b}	1.25	2.09^{c}	1.67	***
Disgust	1.07^{a}	0.26	1.49^{b}	1.21	2.06^{c}	1.68	***
Worry	1.23^{a}	0.84	1.71^{b}	1.38	2.30^{c}	1.84	***
Acceptance	5.77	1.46	5.44	1.40	5.47	1.49	
Contentment	5.85	1.48	5.47	1.50	5.56	1.48	
Happiness	5.91^{a}	1.30	5.39^{b}	1.47	5.93^{a}	1.28	*
Interest	5.51^{a}	1.55	5.19^{b}	1.66	5.94^{a}	1.27	**
Joy	5.56	1.39	5.18	1.65	5.71	1.45	
Behavioral Intention	6.50^{a}	0.83	6.01^{b}	1.20	6.21^{ab}	1.15	*

Note: Means with different superscripts are significantly different at *p<.05, **p<.01, ***p<.001. A 7-point Likert scale was used with 1=I would not feel this at all and 7= would feel this strongly.

Table 2 shows the results of the multivariate analysis of variance (MANOVA). According to the tests of between-subject effects, type of restaurant had a significant effect on most of the variables, including seven emotional responses (*anger, contempt, discontent, disgust, happiness,* and *interest*), and behavioral intention. To see the specific group differences among three different restaurant types, a post hoc test, LSD, was conducted.

Under the "*all clean"* condition, mean scores for perceived safety level were significantly different between casual dining restaurants and quick-service restaurants ($F(2, 245) = 3.84$; $p<.05$), but not between casual dining restaurants and fine dining restaurants ($p=.354$) or quick-service restaurants and fine dining restaurants ($p=.097$). Based on the mean values of food safety perception, quick-service restaurants were considered to be the least safe type of restaurant. Mean scores for two positive and five negative emotions were significantly different for the "*all clean"* scenario in the three types of restaurants. The two positive emotions, *happiness* and *interest*, were felt strongly by the respondents in all three types of restaurants, however these two positive emotions were felt significantly less in quick-service restaurants. One possible explanation may be that consumers may have had prior perceptions about poor sanitation conditions in quick-service restaurants which influenced their responses to the "*all clean"* scenario making them react less positively to this type of restaurant.

In addition, the results of Table 2 indicate that respondents also felt negative emotions differently depending on the type of restaurant. *Anger* and *contempt* emotions were felt significantly less in casual dining and quick-service restaurants in comparison to fine dining restaurants. *Discontent, disgust*, and *worry* emotions were also felt differently among the three types of restaurants. These three negative emotions were felt most strongly in the fine dining restaurants. Respondents felt negative emotions less strongly in casual dining restaurants. Again, one possible explanation may be that prior expectations may have been higher for fine dining restaurants so that respondents may have reacted more negatively to a scenario that was simply *"all clean"*. Similarly, it is possible that the *"all clean"* scenario matched respondents' expectations for casual dining restaurants so that they reacted less negatively.

Table 3. Emotional Reactions to a "*Dirty Dining Table*" in Casual, Quick-Service, and Fine Dining Restaurants

	Casual dining (n=53)		Quick-Service (n=59)		Fine dining (n=70)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Anger	3.43	1.82	3.86	1.95	3.86	2.04
Contempt	3.26	1.65	3.81	1.94	3.59	2.00
Discontent	3.89	1.64	4.29	1.88	4.17	1.89
Disgust	3.96	1.79	4.27	1.74	4.23	1.92
Worry	4.13	1.69	4.17	1.78	4.09	1.95
Acceptance	3.58	1.93	3.31	1.82	3.56	1.83
Contentment	3.55	1.72	3.02	1.92	3.63	1.93
Happiness	3.91	2.03	3.05	1.89	3.66	2.15
Interest	3.83[a]	2.14	2.93[b]	1.83	3.86[a]	2.23
Joy	3.83	2.32	2.92	1.97	3.56	2.24
Behavioral Intention	4.06	1.97	3.56	1.64	3.97	2.04

Note: Superscripted means are significantly different at p<.05. A 7-point Likert scale was used with 1=I would not feel this at all and 7= would feel this strongly.

Table 4. Emotional Responses to "*Dirty Service Staff*" in Casual, Quick-service, and Fine Dining Restaurants

	Casual dining (n=53)		Quick-Service (n=59)		Fine dining (n=70)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Anger	4.53	1.59	4.81	1.79	4.66	1.70	
Contempt	4.28	1.61	4.51	1.98	4.34	1.73	
Discontent	5.17	1.30	5.02	1.75	4.77	1.58	
Disgust	5.11	1.55	5.29	1.53	5.03	1.54	
Worry	5.06	1.49	5.19	1.48	4.86	1.53	
Acceptance	2.96[a]	1.86	2.24[b]	1.43	3.16[a]	1.77	**
Contentment	3.13[a]	1.88	2.17[b]	1.45	3.03[a]	1.77	**
Happiness	2.81[a]	1.92	2.10[b]	1.36	3.09[a]	1.96	**
Interest	2.87[ab]	1.95	2.22[a]	1.53	3.06[b]	2.02	**
Joy	2.68[ab]	1.96	2.08[a]	1.59	2.97[b]	2.03	*
Behavioral	3.00	1.90	2.56	1.62	3.27	1.83	

Intention		

Note: Superscripted means are significantly different at *p<.05, **p<.01. A 7-point Likert scale was used with 1=I would not feel this at all and 7= would feel this strongly.

Few significant differences in emotional reactions to a "*dirty dining room table"* were found among the three restaurant types (Table 3). The only significantly different emotion among the three restaurant types was the positive emotion of *interest* (F (2, 179) = 3.84; p<.05). Quick-service restaurant had the lowest *interest* response.

Similar negative emotions were expressed as a reaction to "*dirty service staff"* for the three restaurant settings (table 4). However, three positive emotions, *acceptance* (F (2, 179) = 5.032, p<.01), *contentment* (F (2, 179) = 5.635, p<.01), and *happiness* (F (2, 179) = 5.094, p<.01), were significantly higher in casual dining and fine dining restaurants. *Interest* (F (2, 179) = 3.462, p<.01) and *joy* (F (2, 179) = 3.644, p<.05) emotions were also felt differently between the quick-service and fine dining restaurants, however differences were not found between casual dining and quick-service restaurants or between casual dining and fine dining restaurants. Respondents felt the least *interest* and *joy* in quick-service restaurants with "*dirty service staff*".

Table 5. Emotional Responses to the "*Dirty Food"* in Casual, Quick-Service, and Fine Dining Restaurants

	Casual dining (n49)		Quick-Service (n=87)		Fine dining (n=70)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Anger	4.78	1.87	5.07	1.88	5.21	1.69	
Contempt	4.49	1.92	4.87	1.89	4.87	1.98	
Discontent	5.24	1.85	5.24	1.87	5.20	1.80	
Disgust	5.69	1.74	5.57	1.66	5.47	1.67	
Worry	5.63	1.69	5.38	1.80	5.29	1.54	
Acceptance	1.97[a]	1.21	2.20[a]	1.64	2.80[b]	1.96	*
Contentment	1.77[a]	1.10	1.99[a]	1.59	2.81[b]	1.95	**
Happiness	1.69[a]	1.11	1.90[a]	1.53	2.87[b]	2.23	***
Interest	1.69[a]	0.99	1.95[a]	1.59	2.93[b]	2.35	***
Joy	1.58[a]	0.94	1.94[a]	1.70	2.76[b]	2.24	**
Behavioral Intention	1.87[a]	1.15	2.25[a]	1.69	2.89[b]	2.27	*

Note: Superscripted means are significantly different at *p<.05, **p<.01, ***p<.001. A 7-point Likert scale was used with 1=I would not feel this at all and 7= would feel this strongly.

Table 5 showed similar results to Table 4. When customers reacted to a "*dirty food"* scenario, negative emotions were strong, but not significantly different among the restaurant types. Customers expressed the strongest positive emotions for fine dining restaurants. With the "*dirty food"* condition, consumers' behavioral intention was significantly different between fine dining restaurants and the other two types of restaurants. Similar to their positive emotion responses, respondents had the highest behavioral intentions in regards to fine dining restaurants. This may have occurred because a visit to a fine dining restaurant is not only for food but to experience the luxury environment and higher level of service. Thus, based on the results of Tables 3, 4, and 5, hypotheses 4 and 6 were partially supported while hypothesis 5 was not supported.

Table 6. Comparison of Different Sanitation Conditions in Casual Dining Restaurants

	All clean (n=70)		Dirty dining table area (n=53)		Dirty service staff (n=53)		Dirty food (n=49)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Anger	1.03^{a}	0.17	3.43^{b}	1.82	4.53^{c}	1.59	4.78^{c}	1.87
Contempt	1.53^{a}	1.38	3.26^{b}	1.65	4.28^{c}	1.61	4.49^{c}	1.92
Discontent	1.07^{a}	0.26	3.89^{b}	1.64	5.17^{c}	1.30	5.24^{c}	1.85
Disgust	1.07^{a}	0.26	3.96^{b}	1.79	5.11^{c}	1.55	5.69^{d}	1.74
Worry	1.23^{a}	0.84	4.13^{b}	1.69	5.06^{c}	1.49	5.63^{d}	1.69
Acceptance	5.77^{a}	1.46	3.58^{b}	1.93	2.96^{b}	1.86	1.97^{c}	1.21
Contentment	5.85^{a}	1.48	3.55^{b}	1.72	3.13^{b}	1.88	1.77^{c}	1.10
Happiness	5.91^{a}	1.30	3.91^{b}	2.03	2.81^{c}	1.92	1.69^{d}	1.11
Interest	5.51^{a}	1.55	3.83^{b}	2.15	2.87^{c}	1.95	1.69^{d}	0.99
Joy	5.56^{a}	1.39	3.83^{b}	2.32	2.68^{c}	1.96	1.58^{d}	0.94
Behavioral Intention	6.50^{a}	0.83	4.06^{b}	1.97	3.00^{c}	1.90	1.87^{d}	1.15

Note: Superscripted means are significantly different at $p<.001$. A 7-point Likert scale was used with 1=I would not feel this at all and 7= would feel this strongly.

Table 6 shows the results of the MANOVA analyses comparing the three types of dirty conditions and the "*all clean"* condition in casual dining restaurants. All emotional responses and behavioral intention were significantly different ($p<.001$) among the different sanitation conditions. As expected, the "*all clean"*

condition and other three dirty conditions were significantly different for both positive and negative emotions. Behavioral intention was also significantly different between the "*all clean"* condition and the other dirty conditions. "*Dirty food"* and "*dirty service staff"* were perceived similarly since *anger, contempt*, and *discontent* emotions were not significantly different for the casual dining restaurant segment. The "*dirty food"* condition had a greater effect on *disgust* and *worry* emotions than did the other three sanitation conditions while "*dirty dining table area"* had the least influence on *anger*, *contempt*, and *discontent* emotions.

For positive emotions, it was clear that the lowest positive emotional responses were associated with the "*dirty food"* condition in casual dining restaurants. The importance order for sanitation conditions was *food*, *service staff*, and *dining table area* for most emotions except *acceptance* and *contentment* in casual dining restaurants. Behavioral intention ($F(2, 221) = 104.77$, $p<.001$) was also found to be significantly different among the sanitation conditions. With the "*dirty food"* condition, consumers had the lowest behavioral intention. Among the three dirty conditions, "*dirty dining table area"* was the least important in terms of behavioral intention. The order from the most significant effect to the least significant effect in casual dining restaurants was: *food, service staff,* and *dirty dining table area* (one aspect of atmospherics*).*

Table 7. Comparison of Different Sanitation Conditions in Quick-Service Restaurants

	All clean (n=108)		Dirty dining table area (n=59)		Dirty service staff (n=59)		Dirty food (n=87)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Anger	1.39^a	1.15	3.86^b	1.95	4.81^c	1.79	5.07^c	1.88
Contempt	1.80^a	1.69	3.81^b	1.94	4.51^c	1.98	4.87^c	1.89
Discontent	1.51^a	1.25	4.29^b	1.88	5.02^c	1.75	5.24^c	1.87
Disgust	1.49^a	1.21	4.27^b	1.74	5.29^c	1.53	5.57^c	1.66
Worry	1.71^a	1.38	4.17^b	1.78	5.19^c	1.48	5.38^c	1.80
Acceptance	5.44^a	1.40	3.31^b	1.82	2.24^c	1.43	2.20^c	1.64
Contentment	5.47^a	1.50	3.02^b	1.92	2.17^c	1.45	1.99^c	1.59
Happiness	5.39^a	1.47	3.05^b	1.89	2.10^c	1.36	1.90^c	1.53
Interest	5.19^a	1.66	2.93^b	1.83	2.22^c	1.53	1.95^c	1.59
Joy	5.18^a	1.65	2.92^b	1.97	2.08^c	1.59	1.94^c	1.70
Behavioral Intention	6.01^a	1.20	3.56^b	1.64	2.56^c	1.62	2.25^c	1.69

Note: Superscripted means are significantly different at $p<.001$. A 7-point Likert scale was

used with 1=I would not feel this at all and 7= would feel this strongly.

Table 7 shows the comparison of the sanitation scenarios in quick-service restaurants. All the positive and negative emotions and behavioral intention were significantly different among the four sanitation conditions. These results were similar to those found in casual dining restaurants. The only difference was the relationship between the "*dirty food"* and "*dirty service staff*" conditions. In casual dining restaurants, *anger, contempt,* and *discontent* emotions were not significantly different, but they were in quick-service restaurants. A "*dirty dining table area"* was the least important among the three dirty conditions in quick-service restaurants. The sanitation conditions of "*dirty food"* and "*service staff"* were perceived as similarly important for customers at quick-service restaurants.

Table 8. Comparison of Different Sanitation Conditions in Fine Dining Restaurants

	All clean (n=70)		Dirty dining table area (n=70)		Dirty service staff (n=70)		Dirty food (n=70)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Anger	2.16^{a}	1.83	3.86^{b}	2.04	4.66^{c}	1.70	5.21^{c}	1.69
Contempt	2.56^{a}	1.95	3.59^{b}	2.00	4.34^{c}	1.73	4.87^{c}	1.98
Discontent	2.09^{a}	1.67	4.17^{b}	1.89	4.77^{c}	1.58	5.20^{c}	1.80
Disgust	2.06^{a}	1.68	4.23^{b}	1.92	5.03^{c}	1.54	5.47^{c}	1.67
Worry	2.30^{a}	1.84	4.09^{b}	1.95	4.86^{c}	1.53	5.29^{c}	1.54
Acceptance	5.47^{a}	1.49	3.56^{bc}	1.83	3.16^{bc}	1.77	2.80^{c}	1.96
Contentment	5.56^{a}	1.48	3.63^{b}	1.93	3.03^{c}	1.77	2.81^{c}	1.95
Happiness	5.93^{a}	1.28	3.66^{bc}	2.15	3.09^{bc}	1.96	2.87^{c}	2.23
Interest	5.94^{a}	1.27	3.86^{b}	2.23	3.06^{c}	2.02	2.93^{c}	2.35
Joy	5.71^{a}	1.45	3.56^{bc}	2.24	2.97^{bc}	2.03	2.76^{c}	2.24
Behavioral Intention	6.21^{a}	1.15	3.97^{b}	2.04	3.27^{c}	1.83	2.89^{c}	2.27

Note: Superscripted means are significantly different at $p<.001$. A 7-point Likert scale was used with 1=I would not feel this at all and 7= would feel this strongly.

Table 8 shows the comparison of the different sanitation conditions in fine dining restaurants. These results are also very similar to the previous comparisons

in casual dining and quick-service restaurants. All emotions and the behavioral intention were significantly different among four different sanitation conditions with a p-value, $p<.001$. For negative emotional responses, "*dirty food"* and "*dirty service staff"* were perceived as the most important conditions and they were not significantly different each other. For the positive emotions, *acceptance, happiness*, and *joy*, significant differences were found between the "*dirty food"* and "*dirty dining table area"* conditions. The "*dirty service staff"* condition was not significantly different as compared to "*dirty dining table area"* and "*dirty food"* conditions. Except *acceptance, happiness,* and *joy* emotions, the sanitation conditions of "*dirty food"* and "*dirty service staff"* were considered equally important. There was no significantly different behavioral intention between the "*dirty service staff"* and "*dirty food"* conditions in fine dining restaurants while the "*dirty dining table area"* condition was significantly different to other two dirty conditions. The "*dirty dining table area"* condition had the lowest behavioral intention among the dirty conditions in fine dining restaurants. Thus, based on the results of Tables 6, 7, and 8, hypotheses 1, 2, and 3 were partially supported.

Conclusion and Discussion

This study assessed the differences in consumers' perceptions, emotional responses, and behavioral intentions to four sanitation conditions in casual dining, quick-service, and fine dining restaurants. Sanitation conditions assessed the effects when one of three key elements, *food, service* (as measured by their reaction to service staff appearance and behavior) and *atmospherics* (as measured by their reaction to a dining table area), was dirty, as well as when all three elements were clean. One limitation of this study was that the sample of 818 responses was collected at a food court in a mid-western university and through an on-line survey service and may not be representative of the U.S. population as a whole.

For the results, this study found that consumers react differently to sanitation conditions based on restaurant type. This indicates that consumers' expectations about sanitation are different for each type of restaurant. Consumers may expect a different sanitation level because the meal cost and service offered in each type of restaurant is different. As an example, when all conditions in the restaurant were said to be clean, consumers felt slightly stronger negative emotions in fine dining restaurants. This may show a higher expectation of sanitation levels in fine dining restaurants.

For the "dirty" scenarios, no significantly different negative emotional responses were found among the three types of restaurants. On the other hand,

significantly different positive emotional responses were found. This may indicate that customers feel similar negative emotions even under different restaurant environments, but their positive emotions are based on restaurant type. Customers' behavioral intention was different among the three types of restaurants except when the "*dirty food"* scenario was described. Consumers' behavioral intention under the "*dirty food"* condition was highest for the fine dining restaurants as compared to the other two types of restaurants. This suggests the importance of other factors to consumers in fine dining restaurants besides food.

This study found that food sanitation is the most important sanitation dimension that influences both positive and negative emotions, as well as behavioral intention among all three types of restaurants. "*Dirty food"* is apparently never considered acceptable because consumers' primary purpose in visiting a restaurant is to eat food.

Interestingly, consumers also perceived that clean *service staff* is very important in all three types of restaurants, perhaps because service staff handles food in restaurants. The cleanliness of the *dining table area* was the least important sanitation dimension for all types of restaurants.

In addition, this study found that the most strongly felt emotion was *disgust* under most of the dirty sanitation conditions in all restaurant types. In terms of the positive emotions, *acceptance, contentment,* and *happiness* emotions were felt most commonly in casual dining and quick-service restaurants. However, in fine dining restaurants, consumers felt *interest* more strongly. This again shows differences in consumers' reactions to sanitation in fine dining restaurants as compared to other types of restaurants.

Results of this study suggest that there is no significant difference in the negative emotions felt in response to dirty sanitation conditions in the three different restaurants. In other words, dirty is dirty. On the other hand, consumers felt positive emotions differently based on the different restaurant types. Consumers felt relatively higher positive emotions at fine dining restaurants. This means that consumers may feel better about sanitation in high-end environments as compared to casual or quick-service dining environments.

The findings of this study suggest that dirty sanitation conditions strongly impacted respondents' perception in all three types of restaurants. Therefore, from the consumers' perspective, the same efforts are required for maintaining clean restaurants no matter what kind of restaurant it is. In addition, food sanitation is not the only significant element. Service staff's neat appearance and professional behavior are also important in their perception of the safety of the food. Results suggest that restaurant managers may wish to focus resources on sanitation training of employees rather than some of the other dimensions, such as the dining room tables.

This study contributes to both managerial and theoretical implications. This study showed how consumers respond to sanitation in three types of restaurants. The findings of this study help practitioners understand consumers' perception about sanitation in restaurants. The emotion scales can also be applied to any sanitation related study. In future studies, more specific sanitation dimensions should be tested to determine how consumers react to sanitation conditions. What is more, studies should investigate differences based on socio-demographic information, such as age, gender, and education level.

References

Aksoydan, E. (2007). Hygiene factors influencing customers' choice of dining-out units: Findings from a study of university academic staff. *Journal of Food Safety, 27*(3), 300-316

Barber, N. & Scarcelli, J. M. (2009). Clean restrooms: How important are they to restaurant consumers? *Journal of Foodservice, 20*(6), 309-320.

Barber, N., & Scarcelli, J. M. (2010). Enhancing the assessment of tangible service quality through the creation of a cleanliness measurement scale. *Managing Service Quality, 20*(1), 70-88.

Barber, N., Goodman, R. J., & Goh, B. K. (2011). Restaurant consumers repeat patronage: A service quality concern. *International Journal of Hospitality Management, 30*(2), 329-336.

Baker, J. (1987). The role of the environment in marketing services: The consumer perspective. In: Czeoeil, J., Congram, C.A., & Shanahan, J. (Eds.). *The Services Challenge: Integrating for Competitive Advantage*. American Marketing Association, Chicago, 55–80.

Baumeister, R. F., Vohs, K. D., DeWall, C. N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review, 11*(2), 167-203.

Bitner, M. J. (1992). Servicescapes: the impact of physical surroundings on customers and employees. *The Journal of Marketing*, *56*(2), 57-71.

Bitner, M. J., & Hubbert, A. R. (1994). Encounter satisfaction versus overall satisfaction versus quality. *Service quality: New directions in theory and practice*, 72-94.

Boo, H. C., Ghiselli, R., & Almanza, B. (2000). Consumer perceptions and concerns about the healthfulness and safety of food served at fairs and festivals. *Event management, 6*(2), 85-92.

Campbell-Smith, G. (1967). *Marketing of the meal experience: A fundamental approach*. Guildford: University of Surrey.

Centers for Disease Control and Prevention (CDC). (2013). Food Safety. Retrieved from http://www.cdc.gov/foodsafety/facts.html#howcontamination

Cullen, F. (2005). Factors influencing restaurant selection in Dublin. *Journal of Foodservice Business Research, 7*(2), 53-85.

Ha, J., & Jang, S. S. (2013). Attributes, consequences, and consumer values: A means-end chain approach across restaurant segments. *International Journal of Contemporary Hospitality Management, 25*(3), 383-409.

Heung, V., & Gu, T. (2012). Influence of restaurant atmospherics on patron satisfaction and behavioral intentions. *International Journal of Hospitality Management, 31*(4), 1167-1177.

Izard, C. E. (1997). Human Emotions. Boom Koninklijke Uitgevers: Springer

Henson, S., Majowicz, S., Masakure, O., Sockett, P., Jones, A., Hart, R., . . . Knowles, L. (2006). Consumer assessment of the safety of restaurants: The role of inspection notices and other information cues. *Journal of food safety, 26*(4), 275-301.

Hightower Jr, R., Brady, M. K., & Baker, T. L. (2002). Investigating the role of the physical environment in hedonic service consumption: an exploratory study of sporting events. *Journal of Business Research, 55*(9), 697-707.

Jang, S. C. S., & Namkung, Y. (2009). Perceived quality, emotions, and behavioral intentions: Application of an extended Mehrabian-Russell model to restaurants. *Journal of Business Research, 62*(4), 451-460.

Kivela, J. J. (1997). Restaurant marketing: Selection and segmentation in Hong Kong. *International Journal of Contemporary Hospitality Management, 9*(3), 116-123.

Kotler, P. (1973). Atmospherics as a marketing tool. *Journal of Retailing, 49*, 48–64.

Kumcu, A., & Kaufman, P. (2011). Food spending adjustments during recessionary times. *Amber Waves, 9*(3), 10-17.

Laros, F. J., & Steenkamp, J.-B. E. (2005). Emotions in consumer behavior: a hierarchical approach. *Journal of business Research, 58*(10), 1437-1445.

Leach, J., Mercer, H., Stew, G., & Denyer, S. (2001). Improving food hygiene standards–a customer focused approach. *British Food Journal, 103*(4), 238-252.

Lee, L. E., Niode, O., Simonne, A. H., & Bruhn, C. M. (2012). Consumer perceptions on food safety in Asian and Mexican restaurants. *Food Control, 26*(2), 531-538.

Liu, Y., & Jang, S. C. S. (2009). The effects of dining atmospherics: An extended Mehrabian–Russell model. *International Journal of Hospitality Management, 28*(4), 494-503.

Lin, I. Y. (2009). The combined effect of color and music on customer satisfaction in hotel bars. *Journal of Hospitality Marketing & Management, 19*(1), 22-37.

Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*: the MIT Press.

Michaelidou, N., & Hassan, L. M. (2008). The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *International Journal of Consumer Studies, 32*(2), 163-170.

Mintel (2014). Full service restaurants-US April 2014. Retrieved from http://academic.mintel.com.ezproxy.lib.purdue.edu/display/702155/

Namkung, Y., & Jang, S. (2007). Does food quality really matter in restaurant: Its impact of customer satisfaction and behavioral intentions? *Journal of Hospitality and Tourism Research, 31*(3), 387–410.

National Restaurant Association (NRA) (2014). Facts at a glance. Retrieved from http://www.restaurant.org/News-Research/Research/Facts-at-a-Glance

National Restaurant Association (NRA) (2014). Restaurant operations report. Retrieved from http://www.restaurant.org/News-Research/Research/Operations-Report

Plutchik, R. (1980). *Emotion: A psychoevolutionary synthesis*: Harper & Row New York.

Raajpoot, N. A. (2002). TANGSERV: A multiple item scale for measuring tangible quality in the foodservice industry. *Journal of Foodservice Business Research, 5*(2), 109-127.

Richins, M. L. (1997). Measuring emotions in the consumption experience. *Journal of Consumer Research, 24*(2), 127-146.

Rust, R. T., & Oliver, R. L. (1993). *Service quality: New directions in theory and practice*: Sage Publications.

Ryu, K., & Jang, S. (2008). DINESCAPE: A scale for customers' perception of dining environments. *Journal of Foodservice Business Research, 11*(1), 2-22.

Srey, S., Jahid, I. K., & Ha, S.-D. (2013). Biofilm formation in food industries: A food safety concern. *Food control, 31*(2), 572-585.

Stevens, P., Knutson, B., & Patton, M. (1995). DINESERV: A tool for measuring service quality in restaurants. *The Cornell Hotel and Restaurant Administration Quarterly, 36*(2), 5-60.

Sulek, J.M. & Hensley, R.L. (2004). The relative importance of food, atmosphere, and fairness of wait, *Cornell Hotel and Restaurant Administration Quarterly*, *45*(3), 235-47.

Ungku Fatimah, U. Z. A., Boo, H. C., Sambasivan, M., & Salleh, R. (2011). Foodservice hygiene factors—the consumer perspective. *International Journal of Hospitality Management, 30*(1), 38-45.

United States Census Bureau (2012) North American Industry Classification System: 2012 NAICS definition, Retrieved from http://www.census.gov/cgibin/sssd/naics/naicsrch?code=722511&search=2012%20NAICS%20Search

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063.

Westbrook, R.A. (1987). Product/consumption-based affective responses and post-purchase processes. *Journal of Marketing Research, 24*(3), 258–270.

Westbrook, R.A., & Oliver, R.L. (1991). The dimensionality of consumption emotion patterns and consumer satisfaction. *Journal of Consumer Research,* 84–91.

Wilcock, A., Pun, M., Khanona, J., & Aung, M. (2004). Consumer attitudes, knowledge and behavior: a review of food safety issues. *Trends in Food Science & Technology, 15*(2), 56-66.

Woodside, A. G., Frey, L. L., & Daly, R. T. (1989). Linking service quality, customer satisfaction, and behavioral intention. *Journal of health care marketing, 9*(4), 5-17.

Worsfold, D. (2006). Eating out: Consumer perceptions of food safety. *International Journal of Environmental Health Research, 16*(03), 219-229.