

CONSUMER IMPULSE BUYING OF FOOD AT FESTIVALS AND EVENTS:  
UNDERSTANDING THE ROLE OF SENSORY CUES

by

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B.S., Kyunghee University, Korea, 2000

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AN ABSTRACT OF A DISSERTATION

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DOCTOR OF PHILOSOPHY

Department of Hospitality Management  
College of Human Ecology

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Manhattan, Kansas

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## **Abstract**

Impulse buying has gained interest from both researchers and practitioners because of its contribution to sales and profits. The past decade has seen a dramatic increase in the number of mobile food vending in the United States. Open-air selling by vendors may encourage consumers to buy food on impulse. Food sold on streets involves sensory cues that strongly induce impulse buying. Unlike normal buying behavior, impulse buying is greatly affected by emotion, but it may also be explained by cognition. Although impulse buying of food is a prevalent phenomenon, little academic research has been conducted regarding food consumption impulse. Further, there remains a lack of clear understanding of the link between emotions and impulse buying.

The purpose of this study was to explore and empirically test consumers' impulse buying behavior of food from street vendors and to identify determinants such as sensory cues, arousal and pleasure as emotional responses, perceived risk as a cognitive response, and the urge to buy impulsively. In particular, Study 1 proposed a theoretical model identifying the effects of sensory cues on arousal, pleasure, and perceived risk and, in turn, the urge to buy impulsively and impulse buying behavior. Study 2 proposed food neophobia and perceived human crowding as a possible moderator that may function in the relationship between emotions and impulse buying.

Data were collected from 361 consumers who were 18 years or older and had purchased food from mobile vendors at a participating festival or event in the United States. The proposed relationships were tested using structural equation modeling and hierarchical multiple regression analysis. In terms of direct effects, Study 1 found that sensory cues were positively related to arousal, pleasure, and the urge to buy impulsively and were negatively related to perceived risk; arousal and pleasure were positively associated with the urge to buy impulsively; perceived risk

was negatively associated with the urge to buy impulsively; and the urge to buy impulsively was positively linked with impulse buying behavior. Further, arousal, pleasure, and perceived risk partially mediated the relationship between sensory cues and the urge to buy impulsively. Study 2 concluded that perceived human crowding moderates the effect of arousal and pleasure on the urge to buy impulsively and, in turn, impulse buying behavior. Food neophobia had no moderating effect.

The study findings add to the understanding of consumer impulse buying in the context of street food. In addition to its contribution to the literature, practical applications that mobile food businesses could use to attract and retain customers are provided. The study concludes with general discussions of limitations and areas for future research.

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## **Dedication**

This dissertation is dedicated to my dad, Gwangjin Choi and my mom, Gunsook Lee, whose unconditional love, support, patience, and continuous sacrifice has made all of my accomplishments possible. I owe everything to them. I also dedicate this work to my grandma, Geumjong Lee, in heaven. I miss her so much.

## **Chapter 1 - Introduction**

Impulse buying is a widespread phenomenon. Nearly everyone shops on impulse (BetaBait, 2013, December). Based on best estimates, approximately 40% of consumer spending is on impulse (C&E Vision, 2011, March). Impulse buying results in up to 62% of supermarket sales and 80% of all sales in some categories of consumer products (Luo, 2005). Unplanned shopping increases the chances of impulse buying by 20% (BrandonGaille, 2014). Therefore, industry marketers invest billions of dollars to find ways to trigger consumers' impulse buying in consumers of their products with the goal of increasing short-term sales (Dholakia, 2000; Kacen, Hess, & Walker, 2012). People tend to buy things on impulse when they feel bored, guilty, or stressed (Rook & Gardner, 1993). No matter how (un)happy consumers are before impulse buying, they believe buying on impulse puts them in a better mood (Zillmann, 1988). People who are already in a good mood are also willing to spend money to maintain that mood (Rook & Gardener, 1993). Some consumers who are under stress may act on a whim and buy on impulse to make themselves feel better (Baumeister, 2002).

Impulse buying usually occurs when consumers are given a strong, positive signal associated with a certain product. Very often impulse buyers cannot avoid attractive appeals found in the store. These appeals are detected by human senses including sights, sounds, and smells, and these senses heavily influence individual preferences. Human senses have long been overlooked in research despite their crucial importance and applications to retail business. Moreover, although one or more of the human senses are stimulated as part of this sensory experience, the role of each sense or combination of senses is not thoroughly understood (Hultén, Broweus, & van Dijk, 2009).

Food choices are influenced by a number of things (Ko, 2009), among them sensory attributes (Köster, 2009). Sensory cues like smell, color, and sound are especially important in foods and beverages (Troye & Supphellen, 2012). Food products are bought on impulse more than other products (Bellenger, Robertson, & Hirschman, 1978). Not surprisingly, impulse buying studies have focused heavily on food supermarkets (E. I. du Pont de Nemours and Company, 1965). For example, 14% of total impulse purchases are food items sold at grocery stores (BetaBait, 2013, December). Many people affected by impulse shopping find delicious looking food items alluring (BetaBait, 2013, December). Among food items, bakery products are most often subject to impulse buying (Bakers Journal, 2012, May).

Impulse buying is also part of the street food scene although low cost and convenience are also important. Defined as ready-to-eat foods and beverages sold by vendors in the streets (Food and Agriculture Organization of the United Nations [FAO], 2009), street foods are consumed by approximately 2.5 billion people worldwide each day (FAO, 2007). Several U.S. cities, including Los Angeles, Washington, D.C., Austin, Miami, San Francisco, New York, and Philadelphia, have seen significant growth in street food businesses in recent years (Business Insider, 2014, May).

In the United States, these foods are mostly served from mobile trucks or stationary carts or booths, all equipped to cook and sell food. From 2011 to 2013, the number of food trucks in the U.S. increased by approximately 197% (Business Insider, 2014, May). Another selling format is a food cart. Portland has registered more than 500 food carts that present an amazing street food scene (Food Carts Portland, 2015). Regardless of selling format (lunch wagons, taco trucks, or even snack shacks) these foods have caught the attention of food-loving tourists and local residents. Because of recent spotlights on street food, studies of the mobile food industry

have received greater attention from both researchers and practitioners (Burt, Volel, & Fikel, 2003; Choi, Lee, & Ok, 2013; Esparza, Walker, & Rossman, 2014; Omemu & Aderoju, 2008).

Mobile eateries and traditional restaurants are distinct from one another. Food trucks or carts are usually set up on sidewalks, but not constrained to parks or even parking lots. They most often offer a small number of menu items, have no indoor/outdoor seating, and have limited business hours (Food Carts Portland, 2015). Since street food vendors have no concerns with interior design and layout due to their operational simplification, businesses must rely more on the food itself to be marketable. Thus, sensory cues from the food itself are vital to enticing consumers to buy and eat (e.g., Brunso, Fjord, & Grunert, 2002; Steptoe, Pollard, & Wardle, 1995). Moreover, because sensory stimulation is naturally conveyed to potential consumers, sudden, unplanned buying may depend on how these stimuli are presented. Street food vendors must understand how to present their products to consumers who are in the vicinity.

### **Statement of the Problem**

People generally assume that they act rationally. However, people buy things on impulse without much consideration of price, quality, or time. Why do consumers make such unplanned purchases? Interest in understanding impulse buying has led researchers to make it their sole field of study over the past decades (Chang, Eckman, & Yan, 2011; Peck & Childers, 2006; Rook, 1987; Stern, 1962).

The first question on impulse buying is what do consumers buy on impulse? Some early researchers have worked on sorting out products that were likely/unlikely bought on impulse using product features (Rook & Fisher, 1995). One view suggests that individual impulse buying patterns are rooted in personal characteristics, not special product attributes (Rook & Fisher, 1995; Rook & Hoch, 1985). However, the general consensus is that some merchandise is more

subject to impulse buying than others. Experiential products like clothing and cosmetics are more likely to be impulsive purchases (Bellenger, Robertson, & Hirschman, 1978).

Food may also be an impulse purchase, but food choices, although they are among the most frequent purchases, are complex human behaviors involving many interacting factors (Köster, 2009). These interactions involve more than one academic domain, among them biology, physiology, psychology, sociology, and economics. However, interdisciplinary food choice studies are relatively sparse (Köster, 2009). More specifically, food studies on sensory perceptions and consequent consumer behavior should involve both physiological and psychological approaches (Furst, Connors, Bisogni, Sobal, & Falk, 1996). Some studies found the connection between sensory cues and buying food (e.g., Costell, Tárrega, & Bayarri, 2010; Galloway, Mitchell, Getz, Crouch, & Ong, 2008). All of us have actually experienced the sensation of mouths watering when we smell food. However, it is uncertain that how far we can take this, or whether personal experience and observations are useful in this situation (Costell et al., 2010). Further, food decision making studies have advanced little in methodology, generally using experimental (Köster, 2009) or descriptive approaches (Murray, Delahunty, & Baxter, 2001).

Much of the existing literature on impulse buying has focused on retailing, with less on impulse buying of food (Youn & Faber, 2000). In particular, studies of retail impulse buying have adopted environmental psychology because store environment tends to drive this behavior. Retail products cannot be experienced unless people approach them, nor can they appeal to people at a distance. That is why retail marketers often infuse fresh scents into products and work to make the product appear attractive. In contrast, food is cooked after the order is placed, and through the cooking process, it develops rich varieties of smells through the use of different

ingredients. Ambient sounds during cooking may also affect food choice, but the effect has not been investigated (Stroebele & de Castro, 2004). Tifferet and Herstein (2012) have suggested that offering food that both smells and tastes good is a crucial part of engaging consumers in impulse buying, but no empirical research has been conducted. To date, research in the foodservice industry has investigated impulse buying of snack meals in cafeterias (Duarte, Raposo, & Ferraz, 2013), unhealthy snacks (e.g., chocolate, cookies, and chips) (Verplanken, Herabadi, Perry, & Silvera, 2005), desserts (Miao & Mattila, 2013), and wine (Dodd, 1997). These studies did not explore the effects of the intrinsic nature of food, so the effect of sensory cues on impulse buying remains largely unexplored. Because we assume that the exposure to sensory cues leads to food temptation, food-related sensory cues may be one of the main drivers of impulse buying of food. In other words, foodservice urgently needs research on the connection of sensory effects and impulse buying.

What, then, is the role of sensory cues in consumer impulse buying? Specifically, what essential elements of the senses affect emotional and cognitive evaluation particularly in impulse buying? Some buying decisions are determined through wholly impulsive processes while others are determined through both impulsive and reflective processes (Strack, Werth, & Deutsch, 2006). Interestingly, people are mostly unaware of how their decisions are affected by sensory stimulation nor even when sensory stimulation is received and which sense is even involved (Chartrand, 2005; Dijksterhuis, Smith, van Baaren, & Wigboldus, 2005). Recent food studies suggest that sensory appeals affect both the affective (i.e., satisfaction) and the cognitive (i.e., quality perception) processes although sensory appeals are more associated with impulse buying through an emotional mechanism (Chang et al., 2011).

Selling street food involves the sense of smell, but it also involves hearing and seeing as well. Further, street food elicits positive emotions, but brings up the idea of perceived risk as a counterbalance to impulse buying. Food neophobia offsets impulse buying, especially for people having difficulties inherent in food choice. Human crowds around a street vendor can also be a clue to impulse buying. Despite the argument that food impulse buying is a function of both emotion and cognition (Anić, Rajh, & Rajh, 2014), no general understanding of food-related consumers' impulsive buying decision has been uncovered.

To address this gap in the literature, this study attempted to examine empirically consumer impulse buying behaviors in response to food sensory cues. It tested a conceptual model that incorporates food-related sensory cue elements, arousal and pleasure as emotion, and perceived risk as cognition to explain consumer food buying behavior on impulse. This study also tested the moderating effects of food neophobia and perceived human crowding to better understand consumer impulse buying of food products affected by food sensory cues.

### **Purpose of the Study**

Consumer dining behavior has always been a popular research subject; however, impulse buying studies have been limited in dining out contexts despite its potential impact on practice. The fundamental question in this study began with identifying factors that drive people to shop for and buy food on impulse. Using street foods, this study explored the following research questions: 1) In what ways do food-related sensory cues influence both consumer emotion and cognition?; 2) Do emotion and cognition influence consumers to buy food impulsively?; and 3) How do individual characteristics and situational variables moderate the proposed relationships?

## Hypotheses

The conceptual models of this study involved a total of 13 hypotheses: eight for the first model and five for the second model. In the first model, emotional responses of consumers (both arousal and pleasure) and a cognitive response (perceived risk) were predicted by sensory cues provided by street foods, and in turn, these responses should affect the urge to buy impulsively and impulse buying itself. In the second model, two separate moderating effects were investigated in the proposed relationships. First, the moderating effect of food neophobia was examined in the relationship between emotional responses (arousal and pleasure) and the urge to buy impulsively. Next, the moderating effect of perceived human crowding was tested in the relationship between emotional responses (arousal and pleasure) and the urge to buy impulsively and between the urge to buy impulsively and impulse buying behavior. To achieve the purpose of this study, hypotheses tested follow:

### *Hypotheses in Study 1*

- H1:** Sensory cues are positively related to the urge to buy impulsively.
- H2a:** Sensory cues are positively related to arousal.
- H2b:** Sensory cues are positively related to pleasure.
- H3:** Sensory cues are negatively related to perceived risk.
- H4a:** Arousal is positively related to the urge to buy impulsively.
- H4b:** Pleasure is positively related to the urge to buy impulsively.
- H5:** Perceived risk is negatively related to the urge to buy impulsively.
- H6:** The urge to buy impulsively is positively related to impulse buying behavior.

## *Hypotheses in Study 2*

**H7:** Food neophobia moderates the relationship between arousal and the urge to buy impulsively.

**H8:** Food neophobia moderates the relationship between pleasure and the urge to buy impulsively.

**H9:** Perceived human crowding moderates the relationship between arousal and the urge to buy impulsively.

**H10:** Perceived human crowding moderates the relationship between pleasure and the urge to buy impulsively.

**H11:** Perceived human crowding moderates the relationship between the urge to buy impulsively and impulse buying behavior.

## **Significance of the Study**

This study considered both the theoretical and managerial aspects of a mobile food establishment, a segment of the foodservice industry that has recently grown exponentially. This study explored whether sensory cues influence consumers in buying street foods on impulse. Theoretically, this study will contribute to the literature of impulse buying and how sensory cues affect impulse buying. This study may provide a clear understanding of consumer decision-making using the dual-system theory of consumer behavior and the ego depletion theory. Linked to the heuristic and systematic processing theory, consumers often act on whim, a buying behavior distinct from traditional consumer behaviors. Therefore, study findings will broaden the boundaries of existing theories, which posit that consumers get product information through sensory input and reach buying behavior through the process of feel-learn.

Study findings will provide street food operations with insight into how sensory techniques can be applied to menu development and quality control (Skelton, 1984). Ingredient substitutions or quality characteristics may be determined through sensory evaluation. In addition, this study will add to body of knowledge since product-specific senses have not previously been explored relative to impulse buying in foodservice operations. Foodservice marketers will benefit from better understanding cue-induced dual processes to explain why consumers buy impulsively. Specifically, biologically driven sensory impacts that involve human emotion and thought will be thoroughly discussed so practitioners can use sensory techniques to sell products/services. Further, a better understanding of the influence of emotion and thought on buying behavior may help practitioners create better strategies to influence impulse buying among consumers.

### **Definition of Terms**

**Impulse Buying:** Impulse buying is defined as experiencing a sudden, often powerful and persistent urge to buy something immediately (Rook, 1987, p. 191).

**Sensory Cues:** Sensory cues are human senses used for understanding consumers' sensation, perception, and further attitude, learning/memory and behavior (Krishna, 2012).

**Emotion:** Emotion is an affective response occurring during experiences (Bagozzi, Gopinath, & Nyer, 1999).

**Arousal:** Arousal is the degree to which a person feels excited, stimulated, alert or active (Fiore & Kim, 2007).

**Pleasure:** Pleasure is the degree to which a person feels good, joyful, or happy (Fiore & Kim, 2007).

**Cognition:** Cognition is belief, thought, or perception formed through direct interactions with products, services, and/or information sources like referrals or advertisements (Blackwell, Miniard, & Engel, 2001).

**Risk Perception:** Risk perception involves binary dimensions: uncertainty which is an individual's probabilistic beliefs (Peter & Tarpey, 1975) and adverse consequences interpreted as "the amount at stake in a buying situation ... in attempting to achieve a particular set of buying goals" (Cox & Rich, 1964, p. 33) or simply "importance of loss" (Taylor, 1974. p. 57).

**Food Neophobia:** Food neophobia is a type of personality trait and defined as the reluctance to eat and/or avoidance of novel or unfamiliar foods (Pliner & Hobden, 1992).

**Perceived Human Crowding:** Perceived crowding is a state of psychological stress resulting from the excess of an individual's demand for a space toward the supply (Stokols, 1972). Human crowding is perceived based on the number of people and the amount of social interactions made in a space.

**Street Food:** Street foods are defined as "ready-to-eat foods and beverages prepared and/or sold by vendors or hawkers especially in the streets and other similar places" (Food and Agriculture Organization of the United Nations, 2009). Mobile trucks, motorized or non-motorized carts, booths, or stands serve these types of food (Powell, Brodber, Wint, & Campbell, 1990).

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## **Chapter 2 - Review of Literature**

This chapter provides a review of the literature on impulse buying, sensory cues, arousal, pleasure, perceived risk, and urge to buy impulsively. The review of related literature includes the conceptualization of the constructs and theories that support relationships between the constructs. General consumer behavior is explained by the dual-system model of reflective and impulsive processes. In particular, impulse buying behavior is described by two theoretical approaches in this study, namely, the heuristic and systematic processing theory and the ego depletion theory. Based on the literature review, hypotheses were developed.

### **Street Food Industry**

To use street food as the source of evidence for impulse buying, this study first needs to define and detail what street food actually means. The Food and Agriculture Organization (FAO) of the United Nations (2009) defined street foods as “ready-to-eat foods and beverages prepared and/or sold by vendors or hawkers especially in the streets and other similar places.” These foods are sold in diverse selling formats, including mobile trucks and (non)motorized carts, booths, or stands (Powell, Brodber, Wint, & Campbell, 1990). This mobile food business is an emerging enterprise, serving from simple, comfort food to gourmet food (Esparza, Walker, & Rossman, 2014).

While some mobile food vendors are undocumented, more and more government regulations requiring a license/permit and a food safety certificate help vendors successfully stabilize their businesses (Burt, Volel, & Finkel, 2003). Mobile street vending is mostly small business and is exclusively self- or family-operated, providing the vendors a livelihood (Mosupye & von Holy, 1999). According to the Intuit (2012, December), mobile eateries generate approximately \$650 million in annual revenue (1% of total U.S. restaurant sales). The

mobile food vending is projected to be a \$2.7 billion national industry (3 to 4% of total U.S. restaurant sales) by 2017. This represents a fourfold increase from 2012. The potential for this business cannot be underrated.

U.S. consumers are exploring ethnic cuisines and new flavor experiences more than ever before. This interest has driven innovations in a number of different snacking categories (Datamonitor, 2006), some of which have been introduced by mobile food vendors. These vendors highlight the “cultural connotations of nouvelle cuisine” (Stein, 2010, March). Mobile food establishments are thus high quality alternatives to traditional fast-food restaurants (Intuit, 2012). Hence, street foods are a niche consumer category (Esparza et al., 2014), and the demand for street food is growing (Choi, Lee, & Ok, 2013).

One notable benefit of an industry selling food in the open air is that potential customers can easily access a variety of foods in a single location. When several people go out together, one can buy food at a taco truck, another can buy hot dogs from a hot dog vendor, and no argument is necessary to select one restaurant. Usually located in busy areas, food trucks or carts have a large floating population to appeal to potential customers. These types of open air restaurants have a fairly high turn around because they have limited or no table(s) and seat(s), no waiting area, and limited menu offerings, so customers choose foods quickly (Food Carts Portland, 2015).

### **Dual-system Model of Consumer Behavior: Reflective and Impulsive**

Consumers use a dual mechanism when they make decisions. According to Strack, Werth, and Deutsch (2006), both reflective and impulsive processes have relative contributions to decisions that consumers make. Transaction utility in purchasing a product is explained by two components: the value of the product and the favorability of the deal (Thaler, 1999). Human

choice is understood by bounded rationality with its focus on the maximum utilization. Savvy consumers determine the value of a product/service by comparing gains and losses (Tversky & Kahneman, 1981). In other situations, however, consumers make a transaction, choosing a favorable deal, without considering the value of a product/service (Strack et al., 2006). Shoppers often indulge in buying items on sale that have little or no use (BetaBait, 2013, December). This example represents the act of impulse buying. This kind of buying involves impulsive powers that override reflective assessments of utility (Strack et al., 2006). In sum, both mechanisms can work jointly and coincidentally but also can compete with one another, where both have an influence on buying behavior (Strack et al., 2006).

### **Heuristic and Systematic Processing Theory**

The heuristic and systematic processing theory explains that individuals are persuaded using information and is thus useful in understanding buying behavior. This theory holds that an individual uses either heuristic processing or systematic processing or both in making judgments. In a systematic view of persuasion, information recipients focus on content. Systematic strategies are used in decisions made through effortful searches for information and comparison (Trumbo, 1999). During this process, non-content cues (sensory-mode information) might be used collaterally with content-based cues. The amount and comprehensiveness of information as well as the validity of a persuasive line of reasoning will be more persuasive than source credibility or favorability (Chaiken, 1980).

By contrast, heuristic processing occurs when simple rules are applied to judgment or decision-making to determine whether information is valid (Trumbo, 1999). Such simple decision rules may include non-content cues, social consensus, or past experiences (Chaiken, 1980). For example, a color serves as a heuristic cue in consumer decision making (Puccinelli,

Chandrashekar, Grewal, & Suri, 2013). Emotionally-toned pictures of a product are examples of a type of heuristic message (Pallak, Murrone, & Koch, 1983). Because message content is judged based on non-content cues, or environmental/sensory cues relying on intuition, heuristic strategies are often viewed as less reliable for making decisions (Chaiken, 1980). Nonetheless, the heuristic processing is economically advantageous because decisions are reached more easily and quickly using little effort and few resources (Chaiken, 1980).

### **Ego Depletion Theory**

The ego depletion theory was first posited by Baumeister, Bratslavsky, Muraven, and Tice (1998) and refers to the state of reduced ability to self-regulate or control the self. Self-regulation is central to striving to alter patterns of feeling, thinking, or behaving (Baumeister, Sparks, Stillman, & Vohs, 2008). Consumers are continually bombarded with a large variety of products to buy. To make their best choice, consumers must analyze and compare various kinds of information about these items: price, size, durability, and even customer reviews. Such complexity in choice-making makes consumers lose track of true values, and become passive, which in turn causes ego depletion (Baumeister et al., 2008).

Resources involved in self-regulation help manage emotions and/or thoughts, direct attention, or override urges to align behaviors with original task goals (Muraven & Baumeister, 2000). All acts of self-regulation converge upon the same resource pool, and the strength of will is limited because only a finite number of impulses can be overridden at once (Muraven & Baumeister, 2000). In other words, exerting self-regulation results in a temporary deficit in resources; this depletion leads to decreased willpower available for subsequent self-regulatory acts (Baumeister et al., 1998). People find it more difficult to inhibit deviant actions or behaviors

in a state of ego depletion and are thus more likely to yield to temptation and buy impulsively (Baumeister, 2002).

The depletion effect appears when control of emotions involves suppressing negative feelings (Muraven, Tice, & Baumeister, 1998) and behaviors like faking gestures (Baumeister, DeWall, Ciarocco, & Twenge, 2005). The theory of ego depletion has been applied in diverse settings, including ad-lib alcohol consumption (Christiansen, Cole, & Field, 2012), physical exercise among athletes (Dorris, Power, & Kenefick, 2012), overeating among dieters (Vohs & Heatherton, 2000), human resources management (Chan & Wan, 2012), and academic performance (Price & Yates, 2010). Impulse buying behavior of food has not been investigated.

### **Sensory Cues, Emotion and Cognition, and Impulse Buying (Study 1)**

The first study aims to explicate clearly the role of emotion and cognition between sensory cues and the urge to buy impulsively and impulse buying behavior. To achieve this goal, this study considers arousal and pleasure as emotional responses and perceived risk as a cognitive response.

### **Impulse Buying**

Among the earliest studies on impulse buying were the DuPont Consumer Habits Studies, conducted from 1945 to 1965, to identify impulse buying levels across countries (E. I. du Pont de Nemours and Company, 1965). Impulse buying is quite important both practically and theoretically. Researchers in psychology and economics are particularly interested in finding out why people buy impulsively and how much it contributes to the local/national economy (Dittmar, Beattie, & Friese, 1996).

Impulse buying is characterized by unplanned purchases, responses to stimuli, deliberately planned to benefit from special offers, thrill seeking, decisions made at the spur of

the moment, and so on (Piron, 1991). One of the most accepted definitions of impulse buying that encompasses those characteristics is “experiencing a sudden, often powerful and persistent urge to buy something immediately” (Rook, 1987, p. 191). For decision making purposes, impulse buying can be described as “purchases resulting from a decision to buy after the shopper entered the store” (Bellenger, Robertson, & Hirschman, 1978, p. 17). Impulse buying is “an inter-temporal choice” (Miao & Mattila, 2013, p. 462). Impulsive purchases are often hedonically pleasing and exciting (Sengupta & Zhou, 2007). People who buy impulsively are more receptive to emotional appeals than non-impulsive buyers (Rook & Gardner, 1993). The behavior often provides immediate gratification (Li, 2008), but the consumer has little interest in what will result from the purchase (Dodd, 1997).

According to Stern (1962), there are four types of impulse buying: pure, reminder, suggestion, and planned impulse buying. Pure impulse buying occurs when a purchase is entirely made based upon emotions evoking consumers to proceed with the purchase of an item. This purchase is very easy to distinguish because pure impulse buyers escape from their usual buying pattern to experience novel products/service. Relatively few impulse purchases are made with no forward planning. Therefore, some may argue that pure impulse buying is truly an impulse. Reminder types of impulse buying refer to a buying situation where buying is prompted by previous experiences or by memory. For example, a scent in a product may invoke childhood memories, creating nostalgia, and pushing a consumer to buy. The third type is suggestion impulse buying, which occurs when a consumer sees a product the first time and decides to buy with no prior knowledge of the product. For example, a housewife is planning on a surprise dinner party for family right after seeing brand-new dinner plates while grocery shopping. She feels that she wants to have it now, and thus buy them on impulse. Items bought on suggestion

impulse can be both rational and emotional purchases, whereas, pure impulse buying is merely inspired by emotional appeals. Planned impulse buying, which may sound contradictory, involves buying a product as planned but choosing additional items to go with it on impulse. For instance, in buying a laptop computer, you might on impulse also pick up a mouse and a carrying case for the computer, and maybe a game as well although these were not a part of the original plan.

Because people often make quick, on-the-spot decisions without full consideration, impulse buying does not fit into existing consumer behavior frameworks (Verplanken, Herabadi, Perry, & Silvera, 2005). Reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and planned behavior (Ajzen, 1985; Ajzen, 1991) models, for example, comply with conventional views that consumers make decisions rationally and economically (Sharma, Sivakumaran, & Marshall, 2010). On the other hand, consumers who buy products impulsively are more stimulated and tempted but less thoughtful than those who demonstrate planned buying behavior (Kacen & Lee, 2002); they behave, however, less addictively, pathologically, and excessively than compulsive consumers (Vohs & Faber, 2007). For instance, when a consumer is involved in odd or excessive behavior, buying can indicate addictive, out of control behavior (Dittmar et al., 1996; Scherhorn, 1990). An alcoholic abuser, a binge eater, a drug addict, a kleptomaniac, and a compulsive buyer who does not consume after purchases on impulse (Vohs & Faber, 2007) can be all addictive consumers with an inability to resist purchasing an item or possibly with impulse control disorders (American Psychiatric Association, 1994).

Impulsive and compulsive buying are often confused for each other (Psychiatric Times, 2008, July). Two behaviors differ in their frequency of occurrence, motivation, consequence, and severity (O'Guinn & Faber, 1989). To distinguish these two behaviors, it must be noted that

wanting is not liking in behavioral and neuroscience literature (Berridge, 2003; Mela, 2006). Wanting is motivated by incentive salience that calls attention to reward-predicting stimuli and causes desire and attraction (Zhang, Berridge, Tindell, Smith, & Aldridge, 2009). Liking, however, is a pleasurable, hedonic state of post-consumption or stimulation, whereas, wanting is a non-hedonic state (Mela, 2006). Liking and wanting are often synchronized, but they operate in different neurological systems (Berridge, 2003). Put simply, wanting does not guarantee liking. In this context, impulse buying is driven by wanting because people lose control in response to stimuli, but do not necessarily expect long-term pleasure. In sum, the impulsive behavior, while still in the normal range, appears to border on abnormal behaviors (Psychiatric Times, 2008, July).

### ***The Influential Factors of Impulse Buying***

Many things influence impulse buying: situation, demographic and socio-cultural factors, internal stimuli, and external stimuli (Muruganatham & Bhakat, 2013). Situation and product related factors include time and/or money available (Beatty & Ferrell, 1998) and product characteristics (e.g., fashion products, new products); these are among the primary triggers of impulse buying. Demographic and socio-cultural factors, among them gender, age, income, education, and culture, also affect impulse buying (Muruganatham & Bhakat, 2013). Internal stimuli involve personal characteristics like self-control or variety-seeking. Those who easily lose self-control cannot avoid buying products on impulse. The level of product involvement or hedonism is also regarded as an internal stimulus. Those motivated by fashion trends often buy on impulse, especially new styles or designs (Park, Kim, & Forney, 2006). Similarly, especially when consumers shop for clothing or music, they are more likely to make impulse purchases (Jones, Reynolds, Weun, & Beatty, 2003).

### ***Situational Factors***

Researchers have investigated the types of impulse buying. According to Han, Morgan, Kotsiopoulos, and Kang-Park (1991), consumers often buy new products (like clothing with new styles or designs) without planning. Iyer (1989) studied the effects of two triggers for impulse buying: time pressure as a situational factor during shopping and knowledge of the in-store environment (i.e., store layout; an external factor). The in-store environment provides external informational cues to help consumers recognize their need for a product, so those consumers rely on memory of the in-store environment when under time pressure. The study concluded that unplanned purchases are usually made when consumers know little about the store layout and are under no time pressure. Xu (2007) studied time pressure on shoppers together with perceived crowding as situational factors of impulse buying. Overall, perceived crowding was a negative influence on pleasure when shoppers experienced time pressure during their stay in the store. To the contrary, when no time pressure was experienced, crowded store environments made shoppers feel pleasurable. Regardless of time availability, shoppers bought items impulsively in the crowded store.

### ***Demographic and Socio-cultural Factors***

Women, as a demographic, generally buy on impulse more often than men. However, men and women differ in which products and services they will buy on impulse. Dittmar et al. (1996) found self-image influences impulse buying. Specifically, females impulsively buy symbolic and self-expressive goods like jewelry and body care products because these items reflect their self-image. On the other hand, males consider independence and usefulness and are more likely to purchase leisure and/or sports items on impulse.

Mattila and Wirtz (2008) studied the moderating effect of employee friendliness between perceived crowding and impulse buying. They also tested the main effect of perceived stimulation (i.e., pleasure). Stimulation levels were divided into three categories: under-stimulation, neutral, and over-stimulation. The researchers found that highly pleasant store environments, where excitement and stimulation are common, results in unplanned buying by consumers. Interactive effects on impulse buying were found between the two social factors of employee assistance and perceived crowding (Mattila & Wirtz, 2008). Luo (2005) asserted that social influence, that is who the consumer shops with, best describes impulse buying. He compared the effects of peers and family on impulse buying. When peer groups are present, shoppers buy more impulsively than when they shop with family. Thus, those who shop with parents or other family members tend to remember economic concerns and worry about wasting money on impulse purchases (Luo, 2005).

### ***Internal Stimuli***

The effect of internal motivators has also been well documented. Sharma et al. (2010) argued that impulse buying stems from specific personality traits. For example, impulsive individuals buy products without planning to do so and easily lose cognitive control (Sharma et al., 2010). Shopping enjoyment is another driver of impulse buying, coupled with buying impulsiveness (Beatty & Ferrell, 1998). The results showed that those who enjoy shopping are also highly likely to buy impulsively. Some consumers can easily resist temptation and thus approach tempting goods, but others use avoidance strategies. Such approach/avoidance behavior may be well explained by the theory of regulatory focus (Higgins, 2002), which involves a prevention focus and a promotion focus. A prevention focus steers a consumer away from negative outcomes while a promotion focus orients a consumer toward positive outcomes.

Prevention-oriented individuals focus on losses and non-losses, so they rely on concrete informational cues. Individuals with promotion focus monitor gains and non-gains and weigh positive affective cues like feeling good (Dholakia, Gopinath, Bagozzi, & Nataraajan, 2006). Consumers who focus on promotion strategies are more highly motivated to possess or experience a product, so when they are tempted, they will possibly act on a whim.

### ***External Stimuli***

External stimuli and store environment are prompt motivators for products or product sales promotions and include sensory stimulation, self-service technology, or shopping channels (Muruganatham & Bhakat, 2013). Dodd (1997) highlighted the use of external stimuli like direct point-of-purchase sale materials; placing a wine list in a menu might promote wine impulse sales at restaurants. More interestingly, shopping with others provides a social influence in favor of impulse because consumers care about what others think of them and how others behave in purchase situations (Luo, 2005). New technology like ATMs in shopping areas and online shopping also encourage impulse spending (Vohs & Faber, 2007).

### ***Food Impulse Buying***

Impulse buying complies with the demands made upon product lines (Bellenger et al., 1978), which means that some products are more appealing to potential impulsive consumers. For example, buying a new car usually involves more reflection on its utility than buying a new mouthwash. Food, however, is a product category subject to immediate consumption. Duarte, Raposo, and Ferraz (2013) asserted that for impulse buying, food may be comparable to convenience goods, which are less complex and relatively low cost (Kacen, Hess, & Walker, 2012), requiring low levels of cognitive effort from the consumer. Merely placing a dessert on a

tray can increase diner interest and influence impulse buying (Dodd, 1997). Rook (1987) stated that snack foods, like bags of potato chips or candy bars, are all impulse items.

Impulse buying in restaurant selling coincides with the point of purchase (Miao & Mattila, 2013). According to Dodd (1997), wine sales are often made after diners enter a restaurant even if the diner did not consider drinking. To investigate methods to increase wine impulse sales at restaurant, Dodd (1997) examined the effect of a menu design on wine consumption and found customers tended to buy wine impulsively if the wine list was actually on the food menu. In Miao and Mattila's (2013) study, consumers buy restaurant food for health reasons and/or as comfort food. Eating comfort food soothes people and regulates their emotional states. In this study, participants were asked to assess their level of intent to buy impulsively either cheesecake or salad to test the two primary food motives (health and indulgence).

### **Sensory Cues**

In retail settings, sensory cues involve atmospheric cues, marketer-controlled cues, and marketing mix stimuli (Youn & Faber, 2000). Clearly, sensory perception in consumer behavior is a growing research area. In fact, more than a third of academic papers published within the last five years focused on sensory perception (Peck & Childers, 2008). Apart from academic research, many service firms have begun initiating marketing strategies using five human senses.

This fundamental interest in the human senses is growing steadily because it may provide answers on how to treat customers instead of how to acquire new customers. Human senses help in providing a more individualized and personalized approach to consumers than ever before (Hultén, Broweus, & van Dijk, 2009). Using one or more human senses allows the consumer to make emotional and cognitive associations with the message of a product. More and more firms,

as they try to understand the process of purchase and consumption, focus on sensorial marketing to create and deliver holistic sensory experiences for customers (Hultén et al., 2009).

This sensory marketing effectively applies research on the human senses, especially in understanding the sensations, perceptions, and attitudes, learning/memory, and behavior of consumers (Krishna, 2012). Humans become conscious of firms and their products/services and brands through the five senses (Hultén et al., 2009). Starbucks Coffee Company is well-known for sensory marketing that integrates the five senses (i.e., haptics, olfaction, audition, taste, and vision) to appeal to customers. Starbucks Coffee strives to provide a total sensory experience: the aroma and taste of fresh coffee, relaxing jazz background music, and a cozy ambience represented by wooden decorations and lighting (Lindström, 2005). In this sensory appeal, they have been quite successful. Whole Foods grocery retail chain also offers customers sensory-rich experiences. At the entrance, customers are welcomed by the natural scents of products (e.g., freshly baked bread, flowers, fruits, cheese). Music is carefully selected to create the brand's signature sound from the wide variety of music genres. In terms of sight, olive-green and yellow colors and lighting provide customers with a feeling of being close to nature. Nearly all departments in the store allow sampling. The chocolate fountain may be a symbol for Whole Foods in this sense. Customers can dip almost everything from fruits and a chunk of cheese or cake into the fountain, and this taste experience reinforces impulse buying. Moreover, to increase the physical interaction with customers, hot and cold foods can be touched and picked by customers themselves in the store (Hultén et al., 2009). Again, a company uses the senses to market successfully.

Once a firm chooses to focus on the human senses in their strategic marketing, chances to differentiate products/service proliferate, and consumers receive a comprehensive, personalized

experience via sensation, the ultimate goal of sensory marketing (Hultén et al., 2009). The research into the human senses are rooted in psychology and sociology, so using sensorial strategies in a personalized, individualistic approach to marketing (Hultén et al., 2009) is new to business.

Sensory marketing appears to have only short-term sales benefits, but it also has long-term value by increasing brand awareness among customers (Hultén et al., 2009). Successful sensory experience allows a company to enhance the quality of customer treatment, core values, and personal satisfaction (Ko, 2009). No matter how traditional the product or service a company is selling, sensory marketing can use human senses to persuade.

Sensory perception has been empirically examined by many researchers as one of the most important factors in choosing and eating food (e.g., Coelho, Polivy, Herman, & Pliner, 2009; Furst, Connors, Bisogni, Sohal, & Falk, 1996; Larsen, Hermans, & Engels, 2012; Mela, 2006; Stroebele & de Castro, 2004), in desiring to eat or craving foods (e.g., Fedoroff, Polivy, & Herman, 2003), in brand satisfaction and loyalty (e.g., Abercrombie & Fitch, Apple/iPod, Disney, Nike, Starbucks, W Hotel; Brakus, Schmitt, & Zarantonello, 2009), in brand memory (e.g., Krishna, Lwin, & Morrin, 2010; Morrin & Ratneshwar, 2000, 2003), and in impulse buying or the impulsivity trait (e.g., Larsen et al., 2012; Morrin & Chebat, 2005), which is the primary focus of our research.

Scents help consumers recall and recognize brands, goods or services (Morrin & Ratneshwar, 2000, 2003). Our nose is so sensitive that every little change in the environment is distinguishable. Further, people can remember more than 10,000 scents at a time (Benderly, 1988), so many firms emphasize marketing using scent effects (Hultén et al., 2009). For example, the air care market is steadily growing with its fragranced products like candles,

potpourri, and air fresheners. Barnes & Noble bookstore chains, for instance, sell fresh-brewed coffee with a full aroma. Using scents, either natural or artificial, contributes to consumer loyalty or revisit intentions (Bone & Ellen, 1999; Goldkuhl & Styvén, 2007; Heung & Gu, 2012). Because of the close association with human memories and well-being (Hultén et al., 2009), food scents may have among the strongest impacts on the senses, and for this study particularly, food is the representative, natural setting of the sense of smell.

The human eyes may be the most important sensory organs with two-thirds of all the sensory receptors in our body found in the eyes (Mindjet, 2013). Eyes allow us to be aware of position, shape, color, material, texture, distance, and movement. People tend to trust what they see, and thus most our daily decisions are guided by sight impressions (Clement, 2007). Because the sight sense builds brand awareness, visualization has often been used in marketing strategies. Marketing largely involves visual expressions, so firms endeavor to better picture the items they sell to attract customers (Daily Mail, 2014, January). In buying food, presentation is important. For instance, color contrast between food and plate affects the appetite; steak served on a white plate would be one example (Hultén et al., 2009).

Auditory sensations can be useful technique in drawing the attention of potential customers. In a service environment, the human hearing helps identify a firm's brand and products or services, as well as the character of the brand and the products or services (Lindström, 2005). People are well aware of changes in pitch and beat. Sound is often used in advertisements, particularly music. The music a restaurant also plays affects how much people eat (Daily Mail, 2014, January). However, the use of sound effects in any type of food may be best able to tempt potential consumers and reinforce buying behavior. Food and cooking sounds are an important clue for texture and therefore quality (Sifferlin, 2015, March). Food generates

attractive sounds as it cooks, for instance, chicken teriyaki sizzles on the grill or sauce simmers in a pot. The sound of funnel cakes deep-frying in a wok is also likely to stimulate a passerby.

More and more firms are realizing the power of taste. Taste buds on the tongue help individuals differentiate the flavors of a particular brand and provide them with surplus value (Hultén et al., 2009). Taste buds are involved in discerning four basic types of taste: salty, sour, sweet, and bitter. Recently, umami (or savory) has been included as the fifth taste to detect anchovy, soy sauce, and fish sauce. Each taste functions differently on different parts of the tongue (Collings, 1974). Therefore, the sense of taste is called the gastronomic sense. Furthermore, unlike other senses, taste cannot be sensed from a distance, and so is called “the intimate sense” (Hultén et al., 2009, p. 115). Furst et al. (1996) suggested that taste can be a key consideration in nearly all food and drink establishments. For example, a grocery store may want to provide customers with more tastings and demonstrations. One excellent way to promote sales is to let customers sample in the store. Another possibility would be taste strips, also called peel and taste, attached to advertisements in newspapers if the product does not have a natural association with a taste.

Touch has emerged as an important sense. Guinard and Mazzucchelli (1996) stated that both texture and mouthfeel are decisive for consumer acceptance and preferences for foods and beverages. Texture generally involves firmness, crispness, creaminess, smoothness of foods; mouthfeel means the way food feels in your mouth. Mouthfeel qualities like astringency and mouthcoating (e.g., beer) are related to touch until foods/beverages are swallowed after being placed in the mouth.

In sum, businesses should be fully aware of what customers expect from products or services and how sensory treatments create supreme experiences. Service is also a large part of

promoting food products, so interacting with customers as well as the sensory impact of the food makes the sale (Hultén et al., 2009). Food choice is a complicated behavior (Köster, 2009), so it is important to understand what causes consumers to buy food. Some researchers have found a firm relationship between food and sensory cues (Ko, 2009; Schiffman, 1993). Using both exploratory and confirmatory factor analyses, Steptoe, Pollard, and Wardle (1995) concluded sensory attributes were a major determinant of food choice (i.e., health, mood, convenience, price, familiarity, etc.). Brunsø, Fjord, and Grunert (2002) stated that, of the quality cues that consumers are exposed to, “only the sensory properties of food are really accessible to consumers” (p. 52).

As a marketing stimulus, sensory cues consist of positive and negative cues in predicting consumer behavior. This study only considered three sensory cues (smell, sight, and hearing) of street foods as positive stimuli. When people walk by a street food vendor, good smell is likely the first sense that attracts them as potential consumers. Attractive presentation of food may also be influential. Finally, appealing sounds from food preparation and cooking capture our ears. On the other hand, taste and touch cannot be sensed until the customer actually eats the street foods (Hultén et al., 2009).

## **Emotion and Cognition**

Emotion and cognition are two important areas of consumer behavior that researchers have investigated. When it comes to buying, most consumers begin by comparing what they must sacrifice against how they can benefit from buying. Consumers often use quality cues to infer the expected quality of a product/service (Brunso et al., 2002). These quality cues differ as buying situations differ; such things as the time allowed for shopping affect the perception of

quality cues, as well as the amount of information gathered while shopping, and even if the purchase is planned (Brunsø et al., 2002).

However, if a certain sensual stimulus captures their attention, people tend to become more reckless, buying an unplanned item. Canonical models using only rational choice may not account for all forms of consumer behaviors or consumption decisions (Dubé et al., 2008; Erevelles, 1998). Today, non-traditional consumer behavior is emerging as a research subject. In non-rational choice models, emotion increasingly has a direct role in purchase choices. In some cases, cognition is shaped through affect (Cacioppo & Gardner, 1999). No matter how a consumer's emotional state is formed, affect is dominant in consumer behavior (Silvera, Lavack, & Kropp, 2008). For these reasons, the relative impact of emotion and cognition has been a topic of interest to researchers (Shiv & Fedorikhin, 1999).

Emotion has been conceptualized in diverse disciplines. In psychology and philosophy, emotion is a subjective, conscious feeling and sentiments characterized primarily by psychophysiological expressions or biological reactions (Baron, Byrne, & Kantowitz, 1980). This complex state of feeling is driven by instinct or intuition, distinct from reasoning or knowledge (Rubinstein, 2007). Emotion often leads to goal-directed and adaptive behavior (Kleinginna & Kleinginna, 1981). Emotion functions as a distinct motivator, a control system of human behaviors (Macht, 2008). Emotion is often used interchangeably with positive or negative affect, referring to a trait or chronic disposition (Silvera et al., 2008) and understood as a general dimension (Laros & Steenkamp, 2005).

Emotion is fundamental to understanding consumption experience (Oliver, 1997). That is why marketers work to develop products/services, brands, and various marketing stimuli that elicit favorable emotion. Emotion has also become foundational in an emerging body of research

in recent decades (Holbrook & Hirschman, 1982). Emotion has been evaluated in various contexts, including advertising (Derbaix, 1995), complaining (Stephens & Gwinner, 1998), service failures (Zeelenberg & Pieters, 1999), and product attitudes (Dubé, Cervellon, & Jingyuan, 2003). Further, both direct and indirect emotional effects have been extensively investigated in prior foodservice studies. The direct effect of consumer emotions on dining satisfaction (e.g., Ladhari, Brun, & Morales, 2008) and dining behavioral intentions (e.g., Jang, Ha, & Park, 2012; Ryu & Jang, 2007) have been examined. The mediating role of emotion in the relationships of service quality perceptions to customer loyalty in hotels and hotel restaurants (e.g., Gracia, Bakker, & Grau, 2011) and of restaurant owner leadership styles to customer orientation of employees (e.g., Lee, Kim, Son, & Lee, 2011) have been confirmed.

Cognition, on the other hand, is a set of all mental activities related to acquiring knowledge, among them attention and memory (Fiore & Kim, 2007). Cognition can be shaped through direct interaction with products/services as well as information sources like referrals or advertisements (Blackwell, Miniard, & Engel, 2001). The cognitive process involves “appraisals, interpretations, schemas, attribution, and strategies” (Berkowitz, 1993, p. 12). Thus, cognition underlies rational decisions based on the functional properties of a product/service (Holbrook & Hirschman, 1982). Beliefs, thoughts, or perceptions are also part of cognition (Blackwell et al., 2001), mainly produced in service encounters (Morrin & Ratneshwar, 2000).

Unlike the conventional view of savvy contemporary consumers, consumers often make food choices non-rationally and unconsciously (Dittmar, 2005). With limited resources available for making a decision, consumers are likely influenced more by affective reactions than cognitive ones (Shiv & Fedorikhin, 1999). Because affective reactions usually occur with very low perceptual and cognitive encoding, emotion-based decisions can be quickly made (Zajonc,

1980). For example, those who feel a need for touch are motivated to retrieve information through touch (Shiv & Fedorikhin, 1999). In other words, economic and utilitarian value obtained from buying products, the more cognitive approach, is less useful in certain buying situations, in this case for food, than psychological benefits, the more affective approach (Dittmar, 2005). Today's consumers are largely motivated by psychological advantages: achieving a positive self-image, enhancing self-esteem, or having better social interactions through buying goods (Dittmar, 2005). Irrational behavior arises as a consequence of emotional reactions. Impulse buying can give consumers a feeling of elation, comfort, excitement, or pride.

### *Arousal and Pleasure*

Emotional states are often assessed on the pleasure-arousal-dominance (PAD) scale, a scale initially designed for physical surroundings (Mehrabian & Russell, 1974); now, however, this scale is used for measuring the entire domain of customer emotional experiences. Each domain helps explain how people approach or avoid environments (Mehrabian & Russell, 1974). Pleasure refers to feelings like joy, affection, gratitude, and pride (Bearden & Netemeyer, 1999). The degree of pleasure is the extent to which one feels pleased or annoyed. Arousal is a state of interest, action, surprise, or involvement. Dominance refers to a feeling of freedom to act, being unrestricted; the inverse is a sense of helplessness, sadness, fear, or distrust (Holbrook & Batra, 1987). These three affective states are dependent on one another (cf. Oh, 2005).

The original tridimensional scale consisted of 18 semantic differential descriptors (pleasure-displeasure, arousal-nonarousal, and dominance-submissiveness), with six items for each dimension. However, the number of underlying dimensions pertinent to emotion differs depending upon the purpose of a study (e.g., Oh, 2005). Havlena and Holbrook (1986) used a reduced set of PAD items with 12 bipolar continuum adjective pairs. Some researchers have

proposed a two-dimensional approach with a bipolar continuum of arousal and pleasure (e.g., Larsen & Diener, 1985). Dominance may account for a very small proportion of variation, whereas, arousal or pleasure each is large enough to represent emotion (Russell, Ward, & Pratt, 1981). Therefore, generally, arousal and pleasure have broader application to various situations calling for affective responses (Russell & Pratt, 1980; cf. Mishra, Sinha, Koul, & Singh, 2014).

Marketing research has generally focused more on this two-dimensional approach to emotion (Bigné, Andreu, & Gnoth, 2005). Donovan and Rossiter (1982) used a condensed version of the PAD scale, finding that pleasure and arousal adequately represented emotional states or responses. In the dining context, Ryu and Jang (2007, 2008) tested a conceptual framework integrated with emotional states for upscale restaurants, using pleasure and arousal as a function of environmental perception and verifying that the two dimensions contributed to higher behavioral intentions.

### ***Perceived Risk***

Risk in decision-making refers to a situation in which something unpleasant may happen to a decision maker (Dowling, 1986). A consumer must cope with different buying situations and options as a decision maker, and choices often depend heavily on the degree of perceived risk related to uncertainty or potential hazards (Campbell & Goodstein, 2001). Therefore, perceived risk has been extensively discussed in both conceptual and empirical research to explain the linkage between consumer behavior and perceived risk (Dowling, 1986). Therefore, to predict consumer behavior, an analysis of perceived risk is useful, especially when developing marketing strategies involving segmentation, targeting, and positioning of products and services (Mitchell, 1999).

Uncertainty or possible risk comes from a variety of sources. First, inadequate or missing knowledge about needs, goals or importance causes consumers uncertainty in a purchase (Cox & Rich, 1964). Second, consumers might not feel confident about the range of alternatives if the desired choice is not available, which is termed choice uncertainty (Urbany, Dickson, & Wilkie, 1989). Finally, consumers are often uncertain about the functionality of the product/service they purchase (Cox, 1967) or their own ability to evaluate purchase outcomes (Deering & Jacoby, 1972). According to Kahn and Sarin (1988), an individual may be ambiguity averse, ambiguity seeking, or ambiguity indifferent, all of which affect decisions involving risk.

Research has considered the effects of risk perception in a wide variety of settings, including public policy (Johansson-Stenman, 2008), amusement park rides (Song & Schwarz, 2009), apparel shopping (Jasper & Ouellette, 1994), international travel (Reisinger & Mavondo, 2005), cancer (Vernon, Myers, Tilley, & Li, 2001), banking (Ho & Ng, 1994; Lee, 2009), nanotechnology (Cobb & Macoubrie, 2004), online business-to-commerce (Lim, 2003), and online application service (Lu, Hsu, & Hsu, 2005).

The conceptualization and the operationalization of perceived risk have varied. Bauer (1960) first discussed the concept of perceived risk with a two-dimensional structure in analyzing consumer behavior. This binary approach tapped into uncertainty as an individual's probabilistic beliefs (Peter & Tarpey, 1975) and adverse consequences interpreted as "the amount at stake in a buying situation ... in attempting to achieve a particular set of buying goals" (Cox & Rich, 1964, p. 33) or simply the "importance of loss" (Taylor, 1974, p. 57). Risk can also be elaborated as a subjectively determined expectation of loss, indicating that the higher the probability of loss, the more risk an individual perceives (Stone & Winter, 1987). One argument suggests that risk is conceptually different from uncertainty. The major distinction is that "risk

has a known probability where uncertainty exists when knowledge of a precise probability is lacking” (Mitchell, 1999, p. 166). Despite this divergence of opinion, risk perception is generally conceptualized as a joint effect of the probability and importance of uncertainty or loss (Dowling, 1986; Peter & Ryan, 1976).

Some researchers have diversified the two dimensional concept of perceived risk with multifaceted constructs. Jacoby and Kaplan’s (1972) conceptualization, for example, involves physical, psychological, social, financial, and performance loss. Physical risk is anxiety about health hazards or sickness related to buying situations (Roehl & Fesenmaier, 1992; Schiffman & Kanuk, 2010). The psychological dimension implies loss of self-image (Murray & Schlacter, 1990). Social risk is the loss of esteem or respect, especially in social groups (Murray & Schlacter, 1990). Monetary loss occurs when benefits from the purchase do not outweigh the cost (Roehl & Fesenmaier, 1992; Snoj, Korda, & Mumel, 2004). A product/service does not function properly represents performance risk (Forsythe & Shi, 2003). Additional risk factors may include time/convenience (Forsythe & Shi, 2003), terrorism risk (Reisinger & Mavondo, 2005), privacy/security risk (Laroche, McDougall, Bergeron, & Yang, 2004; Lee, 2009), and technical, delivery, and service risks (Valla, 1982).

Perceived risk can change emotion, which in turn affects behavior (Choi et al., 2013). Therefore, how consumers perceive risk or possible harm or loss from a purchase choice is important to understanding consumer behavior (Brunsø et al., 2002; Stefani, Cavicchi, Romano, & Lobb, 2008). The higher risk perceptions have a negative correlation with attitudes and behavioral intentions (Mitchell, 1999). In other words, the more risk consumers perceive, the less likely they are to purchase (Lim, 2003). Mitchell (1999) stated that perceived risk is closely, but negatively, related to involvement and trust.

Food choice is no exception. Food consumption also involves both positive and negative aspects (Ashwell, 1991). Food is a necessity for physical well-being, but food is also a pleasure as well as a source of worry and stress (Rozin, Fischler, Imada, Sarubin, & Wrzesniewski, 1999). Various research projects have investigated perceived risk in several different food contexts including beef purchase (Angulo & Gil, 2007; Hornibrook & Fearn, 2003), fish consumption (Pieniak, Verbeke, Schoderer, Brunsø, & Olsen, 2008), pesticide residues in food (Buzby, Fox, Ready, & Crutchfield, 1998; Eiser, Miles, & Frewer, 2002; Huang, 1993; Saba & Messina, 2003), use of food additives (Eiser et al., 2002; Dickson-Spillmann, Siegrist, Keller, & Wormuth, 2009; Song & Schwarz, 2009), genetic engineering (Eiser et al., 2002; Noussair, Robin, & Ruffieux, 2004), and food irradiation (Eiser et al., 2002).

In this study, perceived risk, therefore, was conceptualized as the likelihood of negative, unfavorable, or harmful consequence to consumers themselves caused by purchase and consumption of street food.

### **Sensory Cues and the Urge to Buy Impulsively**

Impulses from a variety of stimulants drive many human activities (Wolman, 1973). In the biochemical pathway, the wave of chemical activity along nerve fibers causes a certain mental response. Psychological stimulation also functions for people to have a sudden desire to do a particular activity (Wolman, 1973). Such an activity or a response resulting from a psychological impulse is not consciously planned and occurs suddenly (Wolman, 1973).

In the research on physiology, the human senses are structured to transport an impulse. This impulse shifts the information delivered by physical stimuli into a form that can be further processed by the brain (Aron & Aron, 1997). Such neural messages elicit sensation, a physical feeling that causes excitement or interest. Buying inspired by sensory stimulation then is

somewhat likely to be impulsive. Such stimuli evoking impulses may be sensory specific signals. Specific sensory factors have been researched to find associations with impulse buying. Most unplanned buying results from cues from seeing, touching, smelling, tasting, and hearing (Underhill, 1999).

In general, apparel products are feel and touch products. Impulse buying is indeed accelerated by the sensory attributes of products (e.g., colors, sizes, styles, or designs) along with a wide selection on shopping websites (Park, Kim, Funches, & Foxx, 2012). Specifically, selection variety was positively related to utilitarian browsing, which in turn was negatively linked to e-impulse buying, so utilitarian browsing has a direct and negative relationship with online impulse buying, whereas, sensory attributes have direct and positive effects on online impulse buying (Park et al., 2012).

Peck and Childers (2006) emphasized the role of touch in leading consumers to buying on impulse. In particular, consumers with a higher need for touch (autotelic) feel stronger affection than those who need touch less, and thus are more likely to engage in impulsive acts (Shiv & Fedorikhin, 1999). Smell is also important to consumers, and pleasant odors do affect buying (Bone & Ellen, 1999; Spangenberg, Crowley, & Henderson, 1996). Music and light as environmental cues in stores have affected consumers and their sudden urges to buy unplanned items (Mohan, Sivakumaran, & Sharma, 2013). This applies to decisions we make about food for immediate consumption as well. Sensory cues in the foodservice industry may lead to impulse buying, or that impulsive buying may be better explained by the concept of consumption impatience. The effects of appetitive stimuli on impulse buying were examined in Li's (2008) study. The author asserted that an appetitive stimulus changes the temporal orientation of consumers with immediate consequences (Hoch & Loewenstein, 1991). Consequently,

individuals are likely to react actively to appetitive stimuli (e.g., chocolate cookies) and thus become impatient to consume (Li, 2008). Such cues increase food temptation and immediate consumption (Geyskens, Dewitte, Pandelaere, & Warlop, 2008). Thus, the following hypothesis was proposed:

**H1:** Sensory cues are positively related to the urge to buy impulsively.

### **Sensory Cues, Arousal and Pleasure, and Perceived Risk**

Many times, we depend on instinct and emotions; however, at the same time, we strive to think rationally. Emotional desires and cognitive willpower are both prompted by both internal and external stimuli. Sensory experience brings out emotion and values over goods or services and is illustrated as experience for the mind and the heart (Hultén et al., 2009). The sense organs on our head (i.e., mouth, nose, eyes, and ears) send impulses to the brain to understand, feel, learn, or think (Ayres & Robbins, 2005). Sensory experience uses both rational and emotional stimuli (Hultén et al., 2009). Sensory marketing does matter whenever emotion, delight, and values as well as logic and rationality are part of making purchase decisions (Hultén et al., 2009). Generally, emotions and feelings seem to dominate logic and rationality in sensory marketing (Fox, 1991). Clearly, sensory cues influence emotional responses (e.g., Eroglu, Machleit, & Chebat, 2005; Morrin & Chebat, 2005; Poon & Grohmann, 2014).

Of the five senses, scent provides consumers with overall impressions in their everyday encounters (Hultén et al., 2009). Because the sense of smell centers in the right cerebral hemisphere, which controls emotions, smell delivers an emotional and personal punch (Hultén et al., 2009). People consciously or unconsciously smell a scent first, and then reach for the object, indicating that the effects of scent are instant (Zemke & Shoemaker, 2008). Scents can influence our mood and feelings positively by reducing stress and anxiety or giving pleasure (Burnett,

Solterbeck, & Strapp, 2004). Product congruency and intensity affect the experience of smell (Spangenberg et al., 1996). The congruency of a scent refers to how naturally a scent is connected to a product or service. For example, the scent of cinnamon rolls comes from cinnamon powder and sugar, not chocolate or vanilla. The product/service congruent scent enables consumers to better evaluate a product or service. Intensity is the extent to which a scent is distinctive; if a scent is more distinct, individual experience is more positive (Hultén et al., 2009). The chance that consumers will buy goes up when the scent has both congruence and intensity, and consumers are likely to stay longer in the store as well, making them more likely to buy. Applying the right scent is therefore important for business success. The smell of freshly baked bread or newly picked flowers is the classic example of how to affect emotion through scent (Hultén et al., 2009). If a store is infused with the good smell of food, people associate the food with the store, improving the chances that they will buy food.

Visual representations are also part of a firm's products/services, and a firm can distinguish the product/service from its competitors through sight. A firm's visualized products/services also contributes to generating emotions and feelings. For example, colors and pictures of a product/service activate and stimulate our memories, thoughts, and experiences (Bellizzi & Hite, 1992; Daily Mail, 2014, January), making it more likely that we will buy what is offered.

Morrin and Chebat (2005) have explored the effects of background music and ambient scent in shopping malls, finding that only ambient scent was significant in driving consumer arousal and pleasure. The effect of ambient scent on cognition, namely, the information search in their study, was also confirmed. Similarly, Nasermodeli, Ling, and Maghnati (2013) found that moviegoers who have positive sensory experiences with movies also have positive emotional

reactions. As in many other retailing studies, Chang, Eckman, and Yan (2011) applied the stimulus-organism-response (SOR) paradigm to investigate the effect of three environmental characteristics (i.e., ambient, design, and social) on positive emotional responses, showing that ambience and designs, including the senses of hearing and sight in a retail store (viewed as sensory cues) increase levels of positive emotions (e.g., excited or enthusiastic). Taking into consideration of the sensory effects of smells, sights, and sounds, the following hypotheses were proposed:

**H2a:** Sensory cues are positively related to arousal.

**H2b:** Sensory cues are positively related to pleasure.

Sensory cues not only influence emotion but cognitive responses (e.g., Eroglu et al., 2005; Mattila & Wirtz, 2001; Morrin & Chebat, 2005; Spangenberg et al., 1996). Those cognitive responses include hedonic and utilitarian shopping evaluations (Eroglu et al., 2005), evaluations of the store, store environment, and specific products (Spangenberg et al., 1996), overall satisfaction (Mattila & Wirtz, 2001), hedonic and utilitarian shopping values (Morrin & Chebat, 2005), attention and memory (Morrin & Ratneshwar, 2000), information-seeking and variety-seeking behavior (Mitchell, Kahn, & Knasko 1995), and cognitive elaboration (Bone & Ellen, 1999). Some consumers perceive risk and have doubts about product quality if little product information is given (Lim, 2003). Even if sensory information reduces risk (Yeung & Morris, 2001), only a few studies have examined the relationship between sensory cues and perceived risk.

Consumers want more information if they are uncertain about purchase outcomes (Taylor, 1974). Sjöberg (1998) asserted that consumers perceive risks or abstract threats when sensory information or memory is absent. Consumer risk management strategies involve intrinsic

product cues such as sensory information or free samples handed out before purchase (Yeung & Morris, 2001). These methods can reduce the level of perceived risk (Shimp & Bearden, 1982). Although consumers depend more on product cues in risky buying decisions, few studies have shown the effect of product cues on perceived risk (e.g., Aqueveque, 2006; Chang & Chen, 2008; Shimp & Bearden, 1982). Kim and Lennon (2000) confirmed that for shopping channels on television, consumers perceive less risk in apparel shopping if more cues related to the products are provided. When the sensory cue (i.e., sight, as in a picture on the label) of ambiguous foods is removed, the level of uncertainty that consumers feel increases, and, in turn, their acceptance of the food decreases (Wansink, Shimizu, Cardello, & Wright, 2012). For unfamiliar foods, encouraging food associations based on sensory cues (i.e., appearance, smell, and taste) helps decrease uncertainty (Tuorila, Meiselman, Bell, Cardello, & Johnson, 1994). Thus, the following hypothesis was proposed:

**H3:** Sensory cues are negatively related to perceived risk.

### **Arousal, Pleasure, and the Urge to Buy Impulsively**

Emotion is a central motivator of consumer behavior (Holbrook & Hirschman, 1982) and influential factor in impulse buying (Rook & Gardner, 1993). The emotional aspect of the consumption experience was once neglected in traditional consumer research (Holbrook & Hirschman, 1982), but the growing interest among researchers is shown in the literature (e.g., Westbrook, 1987; Westbrook & Oliver, 1991), particularly in retail (e.g., Andreu, Bigné, Chumpitaz, & Swaen, 2006; Arnold & Reynolds, 2012), tourism (e.g., Poria, Butler, & Airey, 2003; Sharpley & Jepson, 2011; Wang, 1999), and advertisement (e.g., Gardner, 1985; Olney, Holbrook, & Batra, 1991). However, little research has been done on impulse buying in foodservice.

In general, impulse buying is seen as positive rather than negative (Rook & Gardner, 1993; cf. Rook, 1987; Verplanken et al., 2005). When participants in a study were told to identify the one emotional state that drives buying goods on impulse, and most of them illustrated with positive emotions (e.g., pleasurable, carefree, and excited). Interpretation of these results predicted positive moods could be further elevated. Impulse buying is also prevalent during negative emotional states (e.g., Rook & Gardner, 1993; Verplanken et al., 2005; Youn & Faber, 2000), pacifying people who are anxious, for instance, or in a bad mood (Elliott, 1994). Donovan and Rossiter (1982), in addition to other studies (e.g., Bellizzi & Hite, 1992; Sherman, Mathur, & Smith, 1997), used time and money spent to indicate unplanned buying behavior. Donovan and Rossiter (1982) found both arousal and pleasure mediate the effect of store atmosphere on unplanned buying behaviors. Impulse buying is determined by a high level of emotional arousal (Weinberg & Gottwald, 1982).

Lee and Yi (2008) used a two-dimensional approach to buying intention and actual buying behavior to investigate impulse buying as affected by emotion and perceived risk using impulsiveness as a trait that moderates impulse buying and emotion and perceived risk. They found that people who intended to shop on impulse actually shopped even more impulsively when aroused. Pleasure and impulse buying behavior, however, showed no relationship although arousal and pleasure could predict shopper intention to buy impulsively. They concluded that only arousal is a significant predictor of impulse buying, and consequently, generating a state of intense feeling is important (Lee & Yi, 2008). Similarly, Mishra et al. (2014) hypothesized a link between emotions and impulse buying behavior and found that arousal and pleasure preceded impulse buying intention and behavior.

Most traditional approaches have affirmed that buying is an indirect result of arousal, with the relationship between buying and arousal mediated by information or long-term memory (Howard, 1977). However, traditional approaches typically fail to elaborate on unanticipated circumstances (Engel, Kollat, & Blackwell, 1968) where impulse buying can be driven directly by arousal. Because impulse buying occurs quickly and reactively, arousal must be fully considered in its relationship to impulse buying behavior.

The relevant literature generally supports the effects of emotion (either positive or negative) on impulse buying, although empirical research shows some mixed results. Aouinti, Mansali, and Zghal (2013), for instance, could find no significant relationship between arousal and impulse buying. However, they did find that pleasure related to impulse buying. Li (2004) also revealed results that demonstrated pleasure and dominance had no significant effect on impulse buying whereas arousal did show a positive effect. It is more likely that consumers who experience positive arousal and/or pleasure feel an immediate urge to buy when they are emotionally stimulated (Jeon, 1990). Thus, the following hypotheses were proposed:

**H4a:** Arousal is positively related to the urge to buy impulsively.

**H4b:** Pleasure is positively related to the urge to buy impulsively.

### **Perceived Risk and the Urge to Buy Impulsively**

According to Lee and Yi (2008), cognitive factors have not been demonstrated to have a role in impulse buying in early studies even though impulse buying is characterized by a certain degree of cognitive control. Thus, capturing a cognitive determinant may help clearly explicate the holistic view of impulse buying behavior. Cognition may be a counterpart of emotion because cognitive willpower decreases impulsivity as emotion increases (Coley, 2002). Among possible variables, perceived risk may be an important determinant of impulse buying (Lee & Yi,

2008). Every consumer sees a certain level of risk when making a buying decision (Hoover, Green, & Saegert, 1978). Hence, consumers become more wary if a product is new or they have never used it. When proper information is provided, potential consumer uncertainty or anxiety is reduced.

Lee and Yi (2008) indicated that perceived risk had an adverse effect on impulse buying intention and behavior. Their survey participants reported that when a sample or trial was provided, they hesitated less and either felt a stronger urge to buy or simply bought the product on impulse (Lee & Yi, 2008). In other words, perceived risk may prevent consumers from acting impulsively. In fact, consumers who see risk in buying a product are likely to use risk-handling strategies to avoid impulse buying (Lee & Yi, 2008). As predicted, perceived risk was an important predictor of impulse buying (Lee & Yi, 2008). Mishra et al. (2014) also provided evidence that impulse buying intention changes with perceived risk. However, none of these studies explained why consumers get the urge to buy even after risk is perceived. Therefore, this study proposed the following hypothesis in order to test the association:

**H5:** Perceived risk is negatively related to the urge to buy impulsively.

### **The Urge to Buy Impulsively and Impulse Buying Behavior**

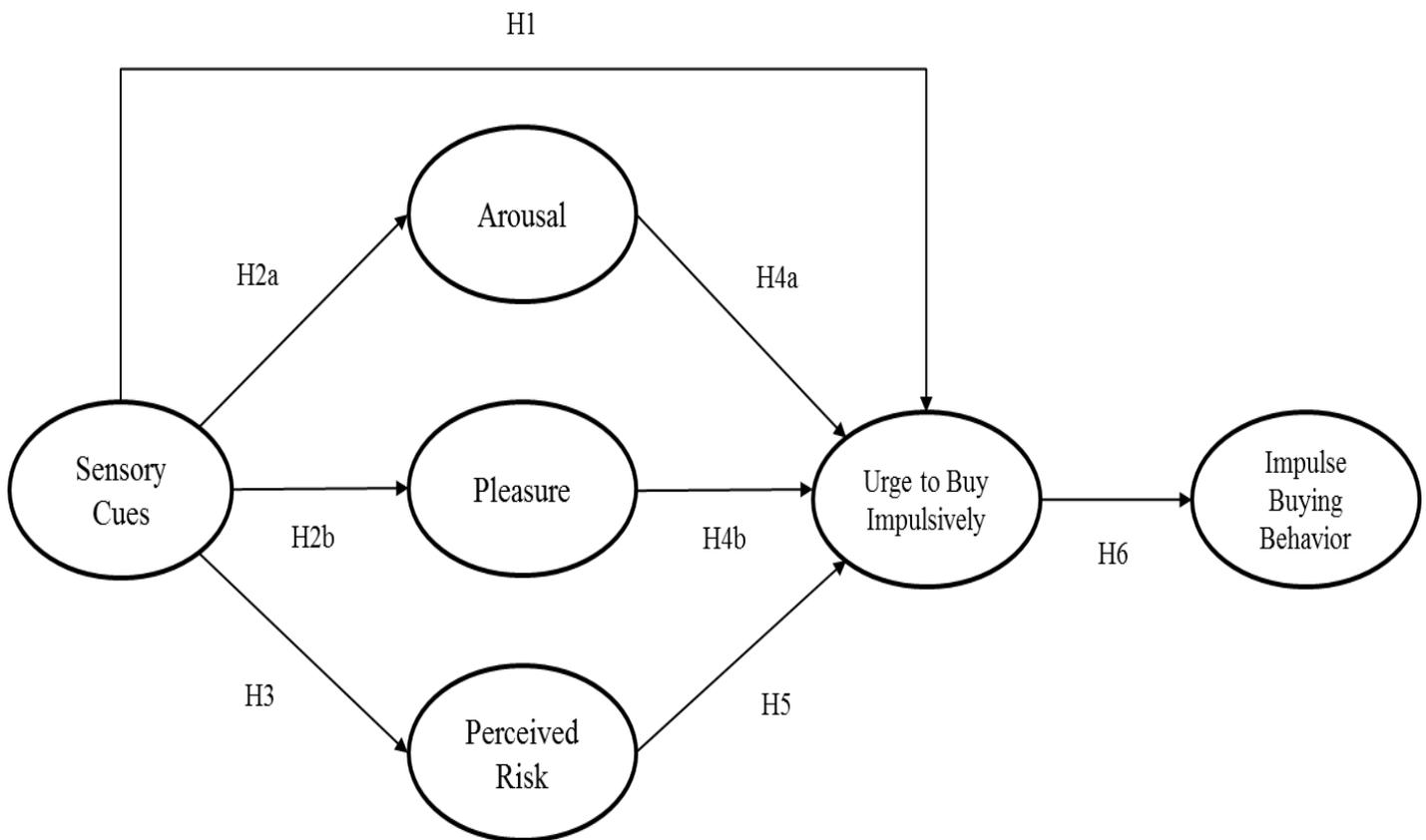
The immediate urge to buy is a state of desire reached through an encounter with a product (Beatty & Ferrell, 1998). The impulsive urge to buy differs from impulse buying behavior in terms of physical proximity derived from in-store browsing (Beatty & Ferrell, 1998). As consumers feel stronger urges, their likelihood of buying impulsively goes up (Beatty & Ferrell, 1998). In sum, the urge to buy impulsively precedes the ultimate act of impulse buying behavior (Badgaiyan & Verma, 2015) and further should have a positive relationship with

impulse buying behavior. Therefore, buying on impulse is unexpected, arising from spontaneous selections and urging the consumer to “Buy now!” Thus, the following hypothesis was proposed:

**H6:** The urge to buy impulsively is positively related to impulse buying behavior.

### Conceptual Model (Study 1)

Figure 2.1 illustrates the conceptual framework for the first study. Sensory cues include pleasant smells, attractive appearance, and favorable sound in this study, following the recommendations by several researchers (e.g., Sifferlin, 2015, March; Steptoe et al., 1995; Tuorila et al., 1994). Arousal and pleasure represent emotional responses and perceived risk is a cognitive response. The urge to buy impulsively measures impulse buying intention. Impulse buying behavior is described as making a consumption decision on impulse.



**Figure 2.1 Conceptual Model of Study 1**

## **Emotion and Impulse Buying: The Moderating Effects of Food Neophobia and Perceived Human Crowding (Study 2)**

The second study aims to provide a clear understanding of any moderating effects on the relationship between emotion and impulse buying. As mentioned earlier, the literature provided conflicting results on the causal relationship between emotion and impulse buying. According to Baron and Kenny (1986), a moderator helps to explain a relationship that is unpredictably weak or inconsistent between a predictor and a criterion variable. To clarify the contradictions in the literature, two separate moderators are introduced: food neophobia as a food-related personality trait and perceived human crowding as an atmospheric cue.

### **Food Neophobia**

One's food-related personality reflects individual differences in food dispositions (i.e., food neophilia and food neophobia; Fischler, 1988). The omnivore's paradox/dilemma (Rozin, 1976) notes how conflicted a human being feels about new foods. Nutrient intake from a variety of foods is a basic human requirement for survival. Omnivores look for different kinds of new foods and food sources. At the same time, fears of consuming new foods that may taste differently or be unsafe have grown. To protect themselves from and adapt quickly to the changing environment, human omnivores choose foods (Fischler, 1988) with either acceptance or resistance, and this dependence occurs as an individual's "strategies of confidence" (Sellerberg, 1991, p. 196) or "coping strategies" (Beardsworth & Keil, 1997, p. 152-153). Fischler (1988) pointed out that the anxiety of the paradox has increased rather than has regulated in the modern society.

Defined as the extent to which individuals are unwilling to try novel foods (Pliner & Hobden, 1992), food neophobia has long been a subject of research in dealing with appetite and

eating habits of children. Recently, food neophobia has been studied in dining behavior studies (e.g., Asperin, Phillips, & Wolfe, 2011; Kim, Suh, & Eves, 2010), mostly with extreme (Veeck, 2010), functional (Tuorila et al., 2008), genetically-modified (Grunert, Bredahl, & Scholderer, 2003), and ethnic foods (de Barcellos, Aguiar, Ferreira, & Vieira, 2009; Kim et al., 2010). Researchers argue that food neophobia is affected by hereditary factors (Knaapila et al., 2007), but can be changed over time (Schiffman & Kanuk, 2010). Food neophobia is considered a demotivating factor influencing consumers' food choices (Chen, 2007). It differs from finickiness (picky-eating) toward familiar foods. A food neophobe conceives an aversion to novelty and dislikes any change of foods (Pliner & Hobden, 1992).

### **Food Neophobia as a Moderator between Emotion and the Urge to Buy Impulsively**

The literature reveals that food neophobia generally leads to low food preferences or choices (Eertmans, Victoir, Vansant, & Van den Bergh, 2005; Veeck, 2010), decreased consumer attitudes/purchase intentions (Asperin et al., 2011; McFarlane & Pliner, 1997), and reduced customer satisfaction (Kim et al., 2010), possibly because food neophobia may create doubt about changes in foods or unfamiliar foods (Chen, 2007). According to Eertmans et al. (2005), the relationship between both food choice motives and dietary healthfulness varied with level of food neophobia. Those who are highly food neophobic are usually concerned about health or weight. Mak, Lumbers, Eves, and Chang (2012) suggested several factors that affect food neophobia, among them, socio-demographic factors, past experience or exposure, and motivational factors (e.g., pleasure, symbol, or obligation).

Given that foods sold on the streets are perceived as convenient and easily accessible to consumers, personality traits as they relate to food may act as internal stimuli triggering impulse

buying (Sharma et al., 2010). An individual may encounter street food, be then captivated, but those with neophobic tendencies will be less likely to buy impulsively. Based on the literature, the effects of emotion on impulse buying suggests the possibility of a non-monotonic effect. Therefore, introducing neophobia as a moderator in the relationship between emotion and impulse buying could explain some contradictions in previous research and thus provide a deeper understanding of these mixed results. Therefore, the following hypotheses were proposed:

**H7:** Food neophobia moderates the relationship between arousal and the urge to buy impulsively.

**H8:** Food neophobia moderates the relationship between pleasure and the urge to buy impulsively.

### **Perceived Human Crowding**

Crowding proves to be an important factor in environmental psychology (Turley & Milliman, 2000). An individual's perception about and response to crowding are influenced by personal traits, expectations, tolerance for crowding, and shopping motivation (Eroglu, Machleit, & Barr, 2005). Individuals may have different expectations about crowding prior to store visits (Byun & Mann, 2011).

Stokols (1972) identified two major elements of crowding: a physical condition and an experiential state. A physical condition reflects density, referring to the extent to which a space is filled with people or things. An experiential state involves the individual's perception of the constraint of movement imposed by a limited space. Space management may be successful when density is maximized while the experiential state of crowding is maintained (Harrell & Hunt, 1976).

Perceived crowding is explained by two concepts: spatial crowding and human crowding (Machleit, Kellaris, & Eroglu, 1994). Spatial crowding perceptions are based on the amount of merchandise as well as product arrangement within a space (Eroglu et al., 2005). On the other hand, human crowding is perceived based on the number of people and the number of social interactions in a space. Conventionally, crowding is a state of psychological stress resulting from an individual's need for more space than the supply allows (Stokols, 1972). Close interpersonal distances may cause people to feel insecure or uncomfortable (Ozdemir, 2008). In addition, they may become stressed and irritated (Byun & Mann, 2011). On the other hand, some may regard crowding as the result of the reputation of a store (Tse, Sin, & Yim, 2002). For example, someone attending a festival or music concert is likely to be disappointed if the place is not crowded. Consumers tend not to mind a queue to experience a product/service they want. It is thus necessary to manage crowding and is impossible to overstate its importance.

### **Perceived Human Crowding as a Moderator between Emotion and the Urge to Buy Impulsively and the Urge to Buy Impulsively and Impulse Buying Behavior**

Research suggested that human crowding can be relevant to predicting a food or restaurant choice and customer evaluations of service quality (Mattila & Wirtz, 2008; Noone & Mattila, 2009). Kotler (1974) has noted that a component of atmospherics, like crowding, might preclude buying the product or service itself. Failure to manage crowding or density may cause people to rush and feel discomfort (Dion, 2004). They are likely to spend less money than they had planned (Harrell, Hutt, & Anderson, 1980). Moreover, people often merely migrate to alternatives, giving up an original goal for a product/service (Dion, 2004; Jakus & Shaw, 1997).

In the different contexts (i.e., park and recreation events, public places), studies have also shown that large crowds draw even more people (e.g., Mowen, Vogelsong, & Graefe, 2003; McClelland & Auslander, 1978). According to the attribution theory, customers attribute high reputation and food quality to crowded restaurants (Kim, Wen, & Doh, 2010; Tse et al., 2002). For mobile foodservice, the function of the operation is simple, and space is not particularly important. Social density, or human crowding, relates more strongly to crowding of public places like restaurants, stores, airports, and libraries than spatial density (McClelland & Auslander, 1978). Therefore, this study only focuses on perceived crowding as a human situational variable of store atmospherics (Turley & Milliman, 2000). Despite its importance, perceived crowding has been under-researched (Mehta, 2013).

Previous studies have noted various effects of perceived crowding on outcome variables (e.g., Eroglu et al., 2005; Machleit, Eroglu, & Mantel, 2000; Stokols, 1972; Whiting & Nakos, 2008). For example, Stokols (1972) has underlined that crowding is an unpleasant experience. Ample evidence shows that crowding has negative effects on service evaluation, shopping satisfaction, shopping value, emotion, and service quality, to name a few (Eroglu et al., 2005; Machleit et al., 2000). These negative effects occur because crowding interferes with individual activities and goal achievement (Machleit et al., 2000).

However, crowding is not always negative (Whiting & Nakos, 2008). Eroglu and Harrell (1986) probably were the first marketing researchers to argue that crowding can be a positive signal for a business. They have introduced the concept of functional density to show the positive side of crowding as goal activation. Pons, Laroche, and Mourali (2006) made another attempt to look at the positive side of crowding. More recently, Whiting and Nakos (2008) have confirmed

both the positive (functional) and negative (dysfunctional) types of crowding within a multicultural context.

Based on the literature then, perceived crowding appears crucial in understanding the foodservice industry (Kim et al., 2010). In particular, perceived human crowding is important to impulse buying (Mattila & Wirtz, 2008). Therefore, to clarify the mixed results on the relationship between emotions and impulse buying reported in the literature, perceived human crowding is introduced as a moderator between emotions and impulse buying. Overall, human crowds are likely to function for arousal and/or pleasure and impulsive buying. Therefore, the following hypotheses were proposed:

**H9:** Perceived human crowding moderates the relationship between arousal and the urge to buy impulsively.

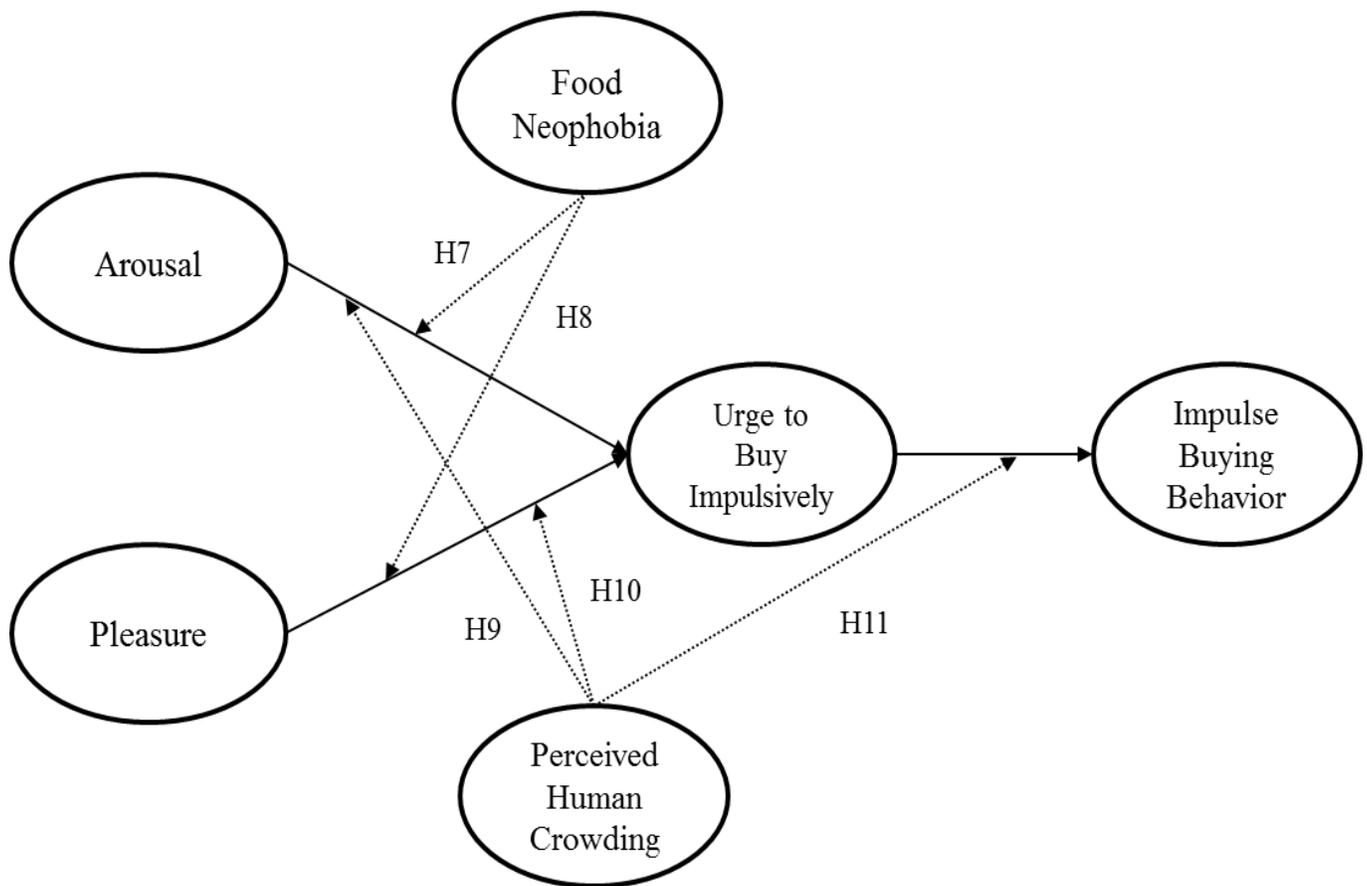
**H10:** Perceived human crowding moderates the relationship between pleasure and the urge to buy impulsively.

**H11:** Perceived human crowding moderates the relationship between the urge to buy impulsively and impulse buying behavior.

### **Conceptual Model (Study 2)**

Figure 2.2 illustrates the conceptual framework for the second study. In order to test moderating effects on the relationship between emotion and impulse buying, two separate moderating variables were chosen: food neophobia as a food-related personality trait and perceived human crowding as an atmospheric cue. In addition, whether perceived human crowding moderates the relationship between the urge to buy impulsively and impulse buying behavior was tested.

Food neophobia refers to how an individual thinks of new and/or unfamiliar food. Perceived human crowding measures how crowded it was with customers around the food vendor. Emotions are represented by arousal and pleasure. The urge to buy impulsively measures impulse buying intention. Impulse buying behavior assesses an individual's actual purchase on a whim.



**Figure 2.2 Conceptual Model of Study 2**

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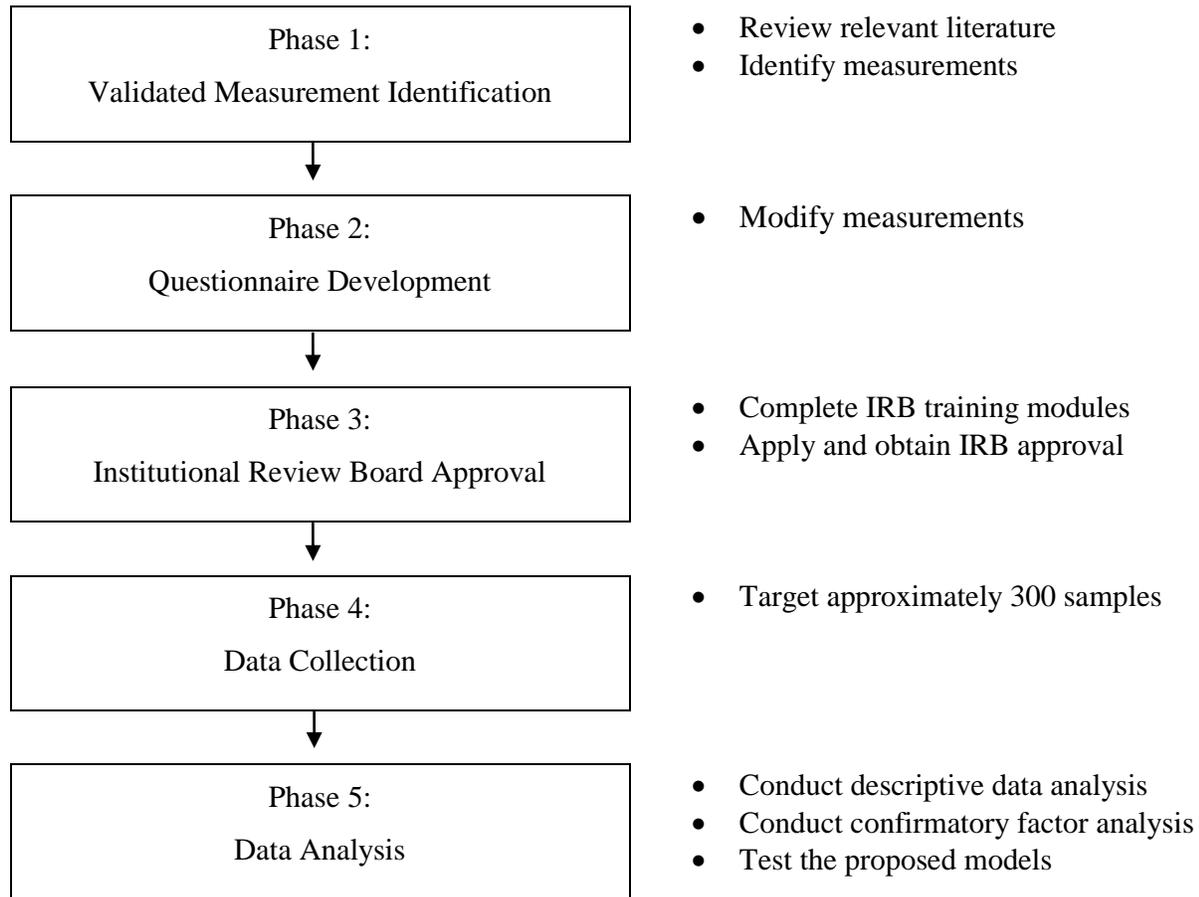
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## **Chapter 3 - Methodology**

### **Introduction**

This chapter provides a discussion of the research methodology to be used in this study. The methodology was developed to empirically achieve the purpose and objectives of the study. This chapter first discusses the sample selection procedure, and then the procedures are shown in Figure 3.1. In the first phase, validated measurement items were identified through a review of related literature. Phase 2 consists of obtaining measurement items to develop an initial questionnaire and modifying the questionnaire after review by hospitality faculty members and graduate students. In Phase 3, an application with the research protocol and draft questionnaire were submitted to the Institutional Review Board (IRB) for Human Subjects for approval. In Phase 4, upon approval from the IRB, the final version of the questionnaire was distributed to consumers purchasing food from street vendors using an intercept method. The researcher expected approximately 300 responses. In Phase 5, after data collection, descriptive data analysis using Statistical Package for the Social Sciences (SPSS) was conducted, and confirmatory factor analysis (CFA) using Analysis of Moment Structures (AMOS) was used to check the validity and reliability of construct measures and model fit of the proposed models.



**Figure 3.1 Data Collection and Analysis Procedures**

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### **Population and Sample**

The population for this study included consumers from selected states in the United States who purchase food from street vendors like trucks, carts, booths, or stands, and are 18 years old or older. However, given a limited accessibility to the population and the resources like street food vending (Trochim & Donnelly, 2008), this study used a convenient sample of consumers who purchase street food who are at least 18 years old and who reside in southern cities in the United States. According to Kacen and Lee (2002), U.S. consumers are more

impulsive buyers than consumers in other countries. Further, U.S. consumers are exploring ethnic cuisines and new flavor experiences more than ever before. These interests have driven innovations in diverse snacking categories (Datamonitor, 2006, October) like street foods. In terms of a statistical rule of thumb guiding sample size selections, the ratio of observed variables to samples between 1 to 10 and 1 to 15 was used for Study 1 to use structural equation modeling (SEM) and 1 to 50 was used for Study 2 to conduct hierarchical regression analysis.

### **Survey Instrument Development**

To collect consumer responses, a questionnaire was developed. Sensory cues including smell, appearance, and sound were measured to determine if those cues positively affect impulse buying. Three items were measured on a 7-point agree-disagree scale based on Steptoe, Pollard, and Wardle (1995) for the underlying motives in selecting food: 1) smelled good; 2) looked nice; and 3) generated attractive sounds as it cooked.

Emotional responses were assessed to determine how consumers react emotionally because emotions affect impulse buying. Emotions, representing the arousal and pleasure dimensions, were measured by eight items used in Ryu and Jang's (2007, 2008) study to fit the restaurant context. Arousal was measured with a 7-point Likert-type scale, with the following four items: "I felt cheerful"; "I felt excited"; "I felt surprised"; and "I felt awake." Similarly, four items measured pleasure: "I felt happy"; "I felt pleased"; "I felt entertained"; and "I felt delighted."

Information on risk assessment is necessary because this variable may inhibit impulse buying. Risk perception was measured by a modified scale of Tan (1999) with several traditional dimensions, including performance risk, social risk, psychological risk, physical risk, and financial risk. Five multi-items used a 7-point Likert type scale ranging from "strongly disagree"

(1) to “strongly agree” (7). The items were “I worried that the food would not taste as good as I thought it would”; “I worried that my friends and relatives will think more highly of me if I buy the food”; “I worried that the food fits well with my image”; “I worried that using the food would cause danger to my health or safety”; and “I worried that I would pay a competitive price for the food.”

A seven-point agree-disagree scale measured the urge to buy impulsively and included and modified four items used in Beatty and Ferrell’s (1998) study. These items were “I experienced sudden urges to buy the food I had not planned to purchase”; “I wanted to buy the food even though it was not on my list”; “I experienced no strong urge to make an unplanned purchase of the food (reverse-coded)”; and “I felt a sudden urge to buy the food.”

Impulse buying behavior was evaluated using a 7-point Likert response format anchoring from “strongly disagree” (1) to “strongly agree” (7). Three items of impulse buying behavior was adopted from Badgaiyan and Verma’s (2015) study. The scale included “I ended up buying the food without the original plan”; “I bought the food on impulse”; and “I indulged in impulsively buying the food.”

Food neophobia was measured using a 7-point Likert-type scale with endpoints of “strongly disagree” to “strongly agree”. A ten item scale developed by Pliner and Hobden (1992) was adopted. The items were: “I am constantly sampling new and different foods”; “I do not trust new foods”; “If I do not know what is in food, I won’t try it”; “I like foods from different countries”; “Ethnic food looks too weird to eat”; “At dinner parties, I will try new foods”; “I am afraid to eat things I have never had before”; “I am very particular about the foods I eat”; “I will eat almost anything”; and “I like to try new ethnic restaurants.” Five items of food neophobia (items 1, 4, 6, 9, and 10) were reversely coded.

Machleit, Kellaris, and Eroglu (1994) developed an original eight-item scale measuring perceived crowding (human and spatial crowding). After minor modification, this study used three of these items to measure perceived human crowding. The items included “This vendor was crowded with customers”; “This vendor was busy serving customers”; and “This vendor had several customers.” Items were scored using 7-point Likert scale ranges from “strongly disagree” (1) to “strongly agree” (7).

### **Data Collection**

A consumer intercept survey was undertaken. It is the most effective survey method to capture the instant decision of consumers to buy food with a range of sensory appeals. Research assistants were hired and trained on how to conduct an intercept interview and collect data. Festivals and events were considered as ideal venues to easily find street food vendors (Restaurant Engine, 2014, September). Using FestivalNet® and the Chamber of Commerce website of Mississippi and Alabama, a list of festivals and events was created. An organizer or a promoter of each festival or event was contacted via email to obtain permission before proceeding with data collection. The content included a survey questionnaire together with a research protocol to describe the purpose and function of this study. On-site data collection was approved by four festivals or events (two in Alabama and two in Mississippi).

Convenience sampling was used. Trained assistants approached those who were passing food trucks/booths at local festivals or events. In order to screen for disqualified respondents before they begin the survey, two questions were asked to subjects. The first question was to answer if they bought any foods from street vendors at the festival/event. Only subjects who answered “yes” were asked the second question if they were at least 18 years old. Qualified individuals at the age of 18 years old or older were then asked if they were willing to participate

in the study. Upon agreement, the assistants distributed a paper-based questionnaire to consumers.

Survey instructions were provided to participants along with the definition of street food and distribution types. Participants were asked to respond to each question based on one most appealing food during the festival/event. In addition, participants were told to answer a question of “Was this food that you had intended to buy before you came to the festival/event?” Only those who answered “no” were invited to participate in the survey to assure that responses were based on impulse purchases of street food. Data were collected from four festivals or events with different themes (i.e., food, music, arts and crafts) in October and November after IRB approval was obtained. Individuals who completed the survey were given a \$5 gift card from a retailer.

## **Data Analysis**

The preliminary questionnaire was reviewed by a panel of experts for face and content validity and for clarity of direction. Any necessary revisions of wording, instructions, or formats were made based on expert feedback.

### ***Validity and Reliability Tests***

CFA using AMOS 21 was performed to check the validity and reliability of the measures. Validity is the accuracy of our measurement or the strength of our conclusions, inferences, or propositions (Trochim & Donnelly, 2008). Validity determines the degree to which the research truly measures what we intend to measure or how truthful the research results are (Trochim & Donnelly, 2008). Convergent validity was assured by checking the significance of standardized factor loadings of measurement items to their constructs (Fornell & Larcker, 1981). The average variance extracted (AVE) values of all constructs exceeding .50 demonstrates convergent validity (Fornell & Larcker, 1981), indicating that more than half the variance in each construct

is explained by the corresponding measures (Bagozzi & Yi, 1988). Discriminant validity is satisfactory if all AVEs in each pair of constructs are greater than the value of squared correlations between constructs (Fornell & Larcker, 1981).

Reliability is the quality of measurement, demonstrating how precisely the same results are reproduced with the repeatability of a measurement (Trochim & Donnelly, 2008). The reliability of the construct items was evaluated using composite reliability. Composite reliability is the amount of scale score variance that is accounted for by all underlying factors (Hair, Black, Babin, & Anderson, 2010), and assesses the internal consistency of measures (Fornell & Larcker, 1981). Composite reliability is computed by dividing the sum of standardized loadings squared by the sum of standardized loadings squared plus the sum of measurement errors (Hair et al., 2010). Values greater than the .70 threshold demonstrate composite reliability recommended by Hair et al. (2010).

### ***Hypothesis Tests***

For the first model, a two-step approach (Anderson & Gerbing, 1988) was used. CFA using AMOS 21 was performed to check the overall measurement quality. SEM was then used to test the proposed model. Multiple fit indices were used to evaluate the fit of the measurement model. The chi-square ( $\chi^2$ ) was initially used to evaluate the goodness of fit of the measurement model. Other indices included normed fit index (NFI), Tucker-Lewis index (TLI), comparative fit index (CFI), and root mean squared error of approximation (RMSEA). In addition to evaluating goodness-of-fit statistics, proposed relationships among the constructs (Hypotheses 1 to 6) were examined by path coefficients.

For the second model, five separate moderated hierarchical regression analyses were conducted to test Hypotheses 7 to 11. Each analysis included respondents' gender, age, and

buying frequency as control variables in the first step. In the second step, arousal, pleasure, food neophobia, and perceived human crowding were entered to examine the main effects on outcomes (i.e., the urge to buy impulsively and impulse buying behavior). Finally, the interaction terms (i.e., arousal  $\times$  food neophobia, pleasure  $\times$  food neophobia, arousal  $\times$  perceived human crowding, pleasure  $\times$  perceived human crowding, and urge to buy impulsively  $\times$  perceived human crowding) were entered in the final step to examine the moderating effects. The moderating effects of food neophobia and perceived human crowding were confirmed if a significant change in the squared multiple correlation ( $\Delta F$ ) exists between the second step and the third step (Frazier, Tix, & Barron, 2004). For the individual direct effects of arousal and pleasure on the urge to buy impulsively and of the urge to buy impulsively on impulse buying behavior, the standardized regression coefficients ( $\beta$ ) were checked.

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# **Chapter 4 - The Effects of Sensory Cues, Emotion, and Cognition on Impulse Buying**

## **Abstract**

Because of its potential for increasing sales and profits, impulse buying has become a focus of both research in academia and in business practices. Mobile food vending is among the fast emerging trends and selling in the open air may allow vendors to entice consumers who do not even plan to buy. Food sold on streets involves sensory cues that strongly induce impulse buying. Different from normal buying behavior, impulse buying is greatly affected by emotion, but might also be explained by cognition. This study, therefore, explored the empirical relationships among sensory cues, arousal and pleasure as emotional responses, perceived risk as a cognitive response, the urge to buy impulsively, and impulse buying behavior. To theoretically test the proposed relationships, the dual-system model, the heuristic and systematic processing theory, and the ego depletion theory were used. For empirical support, data were collected from 361 consumers who attended local/regional festivals in the United States and purchased street food during the festivals. Results of structural equation modeling (SEM) suggest that sensory cues had positive relationships with arousal and pleasure and a negative relationship with perceived risk. Arousal and pleasure, in turn, were positively linked with the urge to buy impulsively. Perceived risk was negatively associated with the urge to buy impulsively. The urge to buy impulsively was positively associated with impulse buying behavior. This study also demonstrated the mediating effects of study variables. Theoretical and practical implications of the findings, limitations of the study, and recommendations for future studies are provided.

Keywords: street food, sensory cues, arousal, pleasure, perceived risk, urge to buy impulsively, impulse buying behavior

## **Introduction**

People often experience an immediate, unplanned decision to buy a product (Rook, 1987). So-called impulse buying may be a daily occurrence (BetaBait, 2013, December). Food and clothing sales are among the more common impulse buys (BetaBait, 2013, December). Up to 62% of supermarket profits and 80% of all sales volume in certain product lines depend on impulse buying (Luo, 2005). Therefore, foodservice firms have sought ways to encourage consumers to buy on impulse. Despite the importance of impulse buying, academic research on the topic is relatively sparse (Youn & Faber, 2000). In particular, what leads consumers to impulsively buy food has not been clearly answered.

When it comes to impulse buying, the general process of making decisions has no simple explanation. Based on bounded rationality, consumers seem to make their best buying decisions with full consideration of price, time, money, and quality. Consumers are likely to buy the product when they think that a potential purchase carries no risk or is not a bad product. However, the best buying decisions can also be a result of emotion. Consumers may act unthinkingly to make themselves feel pleased or soothed. These mixed points of view have attracted keen interest among researchers. Impulse buying, while frequent, is not normal buying behavior. It is, therefore, important to understand the psychology of consumers buying on impulse.

In the United States, street food business is gaining greater attention than ever before (Business Insider, 2014, May; Food Carts Portland, 2015). Food vendors on the streets meet the needs of a wide variety of consumers including local residents who have a daily necessity, and tourists who crave for exotic food. High visible locations for mobile vending are more advantageous for impulse sales than typical stores (Lichtenstein, Burton, & Netemeyer, 1997). Consumer exposure to the product triggers problem/need recognition, which is the important first step toward impulse buying.

For food sold on streets, exposure to salient sensory cues may create for people an overwhelming desire for food, leading them to buy it on impulse.

This study, therefore, explored the effects of sensory cues, arousal and pleasure as emotion, and perceived risk as cognition on impulse buying behavior in the context of street food. This study provides theoretical knowledge from the existing literature that explains impulse buying behavior, comprehensive empirical evidence of consumers who make impulse purchases of street food, and, finally, a foundation for designing better marketing strategies to food vendors.

## **Review of Literature**

This section provides a review of related literature including the conceptualization of the key constructs and theories that support relationships among the constructs. Hypotheses were developed based on the literature.

### ***Dual-system Model of Consumer Behavior: Reflective and Impulsive***

Strack, Werth, and Deutsch (2006) compared both impulsive and reflective processes to reveal comparative inputs for consumer choices. Consumers use either process to make their best buying decisions through impulsive behavior for immediate gratification or through reflection or thoughtfulness to maximize value (Strack et al., 2006). Consumers frequently purchase commodities on sale even if they rarely use those commodities (BetaBait, 2013, December). This illustration exemplifies impulse buying. This type of buying involves impetuous action that supersedes reflective utility evaluations (Strack et al., 2006). The two techniques can operate mutually and concurrently but can equally act in opposition, where both impinge on buying behavior (Strack et al., 2006).

### ***Heuristic and Systematic Processing Theory***

The heuristic-systematic concept of action states that a person engages in either and/or both systematic or heuristic processing in making judgments. From a systematic point of view, the subject

centers on informational content. According to Trumbo (1999), systematic approaches are used in judgments based on informational searches and evaluations. On the other hand, in the heuristic approach, the subject uses plain rules to make judgments or decisions about the validity of information (Trumbo, 1999). According to Chaiken (1980), information is often evaluated by non-content cues or environmental/sensory cues which are heavily associated with instinct, so heuristic approaches appear less useful in making decisions. However, heuristic processing has economic advantages because it requires less effort and fewer resources to reach decisions than the systematic processing (Chaiken, 1980).

### ***Ego Depletion Theory***

To find the best options, consumers should examine and contrast different types of information, such as durability, size, cost, and consumer appraisal, for every commodity they purchase. Such intricate preparation for making decisions ends up confusing consumers with ideal values, and they become unreceptive and eventually suffer ego depletion (Baumeister et al., 2008). The potency of will diminishes because impulses can be superseded (Muraven & Baumeister, 2000). Explicitly, self-regulation leads to a temporary shortage of resources for making decisions; this deficit reduces accessible willpower and thus decreases the capacity to control behavior (Baumeister et al., 1998). Individuals overwhelmed by complexity while restraining abnormal characteristics in a state of ego depletion are subject to temptation and impulsive buying (Baumeister, 2002).

### ***Impulse Buying***

Rook (1987) defined impulse buying as “experiencing a sudden, often powerful and persistent urge to buy something immediately” (p. 191). As a decision, impulse buying is the choice to buy that occurs after entering a store (Bellenger, Robertson, & Hirschman, 1978). According to Li (2008), this buying behavior frequently offers instantaneous gratification; however, Dodd (1997) suggested that

end users do not seriously care about the buying outcome. In other words, impulsive buyers do not anticipate long-lasting pleasure because they are trapped by temporal stimuli, causing extreme desire (Zhang, Berridge, Tindell, Smith, & Aldridge, 2009).

Since people frequently arrive at speedy judgments with little thought, impulse buying does not fit into prevailing customer behavior frameworks (Verplanken, Herabadi, Perry, & Silvera, 2005). According to Kacen and Lee (2002), consumers who buy impetuously are highly enthusiastic by the enticement but use less consideration than consumers who go into a store for an intentional purchase. The intentional consumer shows self-esteem, having less addictive and extreme buying behavior than compulsive consumers (Vohs & Faber, 2007). Overall, impulsive buying behavior, within certain limits, seems to spring from abnormal attitudes (Psychiatric Times, 2008, July).

### ***Food Impulse Buying***

As Bellenger et al. (1978) addressed, impulse buying depends heavily on product lines; some commodities are highly appealing to capable impulsive consumers. Food is a commodity class that depends on immediate consumption. Duarte, Raposo, and Ferraz (2013) argued that in impulse buying, food may be a convenience commodity; such commodities are usually quite simple and cost effective (Kacen, Hess, & Walker, 2012). Impulse buying thus requires low levels of cognitive effort on the part of a consumer. A diner's impulse buying usually occurs at the point of food sales in restaurants (Miao & Mattila, 2013). Dodd (1997) suggested wine sales are frequently impulsive purchases, consummated as the diner enters a restaurant and regardless of the diner's intention to drink. In scrutinizing how to elevate wine impulse sales at restaurants, Dodd (1997) noted the impact of the menu design on wine consumption and realized that consumers were inclined to purchase wine impulsively if wine was listed on the food menu. Miao and Mattila (2013) evaluated consumers' level of impulse buying intention of cake, cheese, or salad to examine the two fundamental motives for

eating: health and indulgence. Their research confirmed that customers consider buying restaurant foods for dietary and health reasons and for comfort and taste. Consuming comfort food may appease individuals as well as regulate their emotional state.

### *Sensory Cues*

Sensory discernment in consumer behavior has become an escalating study area. Actually, more than a third of all published sensory perception studies have been published in the past five years (Peck & Childers, 2008). A number of scholars have identified a rigid correlation between sensory cues and food (Ko, 2009; Schiffman, 1993). Brunsø, Fjord, and Grunert (2002) argued that, among quality cues that end users experience, “only the sensory properties of food are really accessible to consumers” (p. 52). Besides scholarly efforts, firms have centered on sensory marketing to establish and offer holistic sensory situations for consumers, and thus work to comprehend the sensory criteria for purchase and consumption (Hultén, Broweus, & van Dijk, 2009). Both short-term and long-term benefits, including brand awareness, are associated with sensory marketing (Hultén et al., 2009). Using sensory cues allows a firm to augment consumer experience, facilitate individual satisfaction, and promote core values (Ko, 2009).

According to Morrin and Ratneshwar (2000, 2003), scents are very significant in helping consumers remember and identify goods, brands, or services. The human nose is extremely sensitive, capable of distinguishing even the smallest change in a person’s normal environment. Moreover, people can recall more than ten thousand scents within a given period (Benderly, 1988). Because of the importance of scent, a number of firms have enhanced their marketing by actually using scent (Hultén et al., 2009). By using both artificial and natural scents, firms seek to enhance consumer loyalty or their intention to revisit (Bone & Ellen, 1999; Goldkuhl & Styvén, 2007; Heung & Gu, 2012). Food is solidly related to both memory and well-being, so food scents may have the most

significant effects on the senses. Because food and smell are so intimately bound together, smell is being assessed in this study as it is an important criterion for success in street vending.

According to Mindjet (2013), the human eye is a vital sensory organ, with the eyes accounting for two thirds of human body's sensory receptors. Eyes enable human beings to identify locations, color, shape, texture, material, motion, as well as distance to be covered. Individuals tend to believe what they can see; hence their daily decisions depend on sight impressions (Clement, 2007). Because the sense of the sight enhances brand awareness or perception, sight is frequently used in marketing to efficiently picture brands and commodities to draw as many consumers as possible (Daily Mail, 2014, January). This applies to purchasing food, where vendors must practice food presentation to appeal to the visual sense.

Hearing, while not as important to marketing as smell and sight, can be valuable in attracting the interest of potential customers. In a service setting, hearing enhances people's awareness of changes in pitch and beat and thus identify products and brands, brand character, and services or products (Lindström, 2005). Sounds emanating from food products and cooking are a significant texture clue (Sifferlin, 2015, March). While being cooked, food produces gorgeous sounds, the simmering of sauce inside a pot or the sizzling of chicken on the grill. Funnel cakes being deep-fried produce equally attractive sounds and can captivate the passersby.

This study included three sensory cues: smell, sight, and hearing because these three senses are heavily related to impulse buying of street foods.

### ***Emotion and Cognition***

According to Baron, Byrne, and Kantowitz (1980), emotion is a subjective feeling that produces psychophysiological changes that influence behavior. Emotion is multifaceted, compelled by intuition or instinct, separate from reasoning or knowledge (Rubinstein, 2007). According to

Kleinginna and Kleinginna (1981), emotion frequently results in a goal-focused and adaptive behavior. Oliver (1997) notes that emotion is an essential component of consumption and thus of purchasing products and services. Industries thus face the challenge of developing products/services, brands, and diverse marketing incentives that evoke emotion. Emotions do have an impact on service outcome evaluations and so have been comprehensively covered in existing foodservice literature, including dining satisfaction (Ladhari, Brun, & Morales, 2008) and behavioral intention (Jang, Ha, & Park, 2012; Ryu & Jang, 2007).

Cognition also involves several mental activities associated with acquiring knowledge, with memory and attention being among the most prominent (Fiore & Kim, 2007). Using consumer loyalty to services or products and sources of information like advertisements and referrals, cognition can be easily shaped (Blackwell, Miniard, & Engel, 2001). According to Berkowitz (1993), cognition requires facts and critical thinking that includes interpretation, evaluation, and classification. Therefore, to cite Holbrook and Hirschman (1982), the researcher could argue that cognition triggers coherent choices based on the qualities of how products or services function. Credence, perceptions, or thoughts are also associated with cognition (Blackwell et al., 2001).

Unlike the prevailing picture of savvy consumers, consumers frequently make food choices illogically and reflexively (Dittmar, 2005), not cognitively. When information is limited, consumers are more prone to use emotional reactions than cognitive reactions in making decisions (Shiv & Fedorikhin, 1999). Affective reactions typically happen with minimal cognitive and perceptual encoding, so choices based on emotion can be quickly made (Zajonc, 1980). This is to say, utilitarian and economic values derived from buying of products is less useful under certain conditions than psychological imperatives, with food being a prime example (Dittmar, 2005). Emotional responses

often result in irrational behavior like buying on impulse. Impulse buying can offer customers emotional satisfaction characterized by comfort, elation, pride, or excitement.

### ***Arousal and Pleasure***

Emotion is used interchangeably with negative or positive affect, referring to a general dimension of emotion (Laros & Steenkamp, 2005). Emotional levels can be evaluated on a pleasure-arousal-dominance scale that was devised primarily for physical settings (Mehrabian & Russell, 1974). However, the scale can be used to gauge the whole sphere of consumer emotional experiences (Mehrabian & Russell, 1974). Every domain aids in delineating how individuals approach or steer clear of environments (Mehrabian & Russell, 1974). According to Bearden and Netemeyer (1999), pleasure is defined as a condition characterized by affection, joy, pride, and gratitude. The level of pleasure is the degree to which an individual feels annoyed or pleased. On the other hand, arousal is a condition of actions, interest, involvement, or astonishment. Dominance is, on one hand, a state defined by feeling of free to act, being at liberty, and on the other hand, by a sense of melancholy, vulnerability, distrust, or fear (Holbrook & Batra, 1987). These three affective conditions are interrelated (cf. Oh, 2005). This study used the approach of Donovan and Rossiter (1982) with two dimensions of PAD, arousal and pleasure; dominance was not used because it is a poor explanation of emotion as a whole (Russell, Ward, & Pratt, 1981).

### ***Perceived Risk***

In decision-making, risk is identified as a situation wherein some negative consequences may arise for the individual making the decision (Dowling, 1986). A consumer faces varied buying situations and choices when making decisions. Preferences are highly likely to have some level of perceived risk connected to ambiguity or potential vulnerabilities (Campbell & Goodstein, 2001). Probable risks emanate from many sources. Primarily, insufficient knowledge of goals, needs, or

significance causes consumers to feel ambiguous about purchases (Cox & Rich, 1964). Secondly, if the preferred choice of a commodity or service is absent, consumers may find a variety of the options confusing, a situation called choice ambiguity (Urbany, Dickson, & Wilkie, 1989). Ultimately, customers are often uncertain about the utility of a service/product they buy (Cox, 1967) and of their individual capacity to assess the product or service (Deering & Jacoby, 1972). As a result, in predicting consumer behavior, assessing perceived risk is critical, particularly when implementing marketing techniques using targeting, segmentation, and placement of products and services (Mitchell, 1999).

Conceptualizing and operationalizing risk perception has become more diversified. The initial discussion of perceived risk was by Bauer (1960) who created a bi-dimensional framework to assess the concept. This binary perspective was expanded to include ambiguities like personal probabilistic perceptions (Peter & Tarpey, 1975). Consumers run risks when they purchase a product or service; they risk the undesirable outcome of not having their goals met (Cox & Rich, 1964). Risk is also perceived as the level of importance of loss (Taylor, 1974), indicating that more risk is perceived when the probability of loss becomes high (Stone & Winter, 1987). Mitchell (1999) argued that risk is conceptually dissimilar from ambiguity; risk is based on a known probability. Ambiguity occurs when knowledge is too limited to estimate probability. Regardless of this difference of opinions, risk combines the effect of likelihood and the significance of ambiguity or loss (Dowling, 1986; Peter & Ryan, 1976). In this study, perceived risk is delineated as the probability of experiencing undesirable or harmful events when buying and eating street food.

Several researchers have fleshed out the two-dimensional models of perceived risk with other constructs. Jacoby and Kaplan (1972), for instance, included psychological, physical, financial, social, and performance loss as part of perceived risk. Roehl and Fesenmaier (1992) and Schiffman and

Kanuk (2010) defined physical risk as possible dangers to health or risking illness in buying a product or service. According to Murray and Schlacter (1990), psychological risk means loss of self-image while social risk is derived when esteem or respect among social groups is harmed. Fiscal loss happens when the gains from the buying are not worth the cost (Roehl & Fesenmaier, 1992; Snoj, Korda, & Mumel, 2004). According to Forsythe and Shi (2003), services or products that do not work as expected denote performance risk.

The food from a vendor is more likely a consumer's one-time buying experience because food vending is usually transient and changes locations. Further, street food is often viewed as cheap food, and accordingly consumers may doubt about the value and quality. Consumers might also be concerned if consuming cheap, unfamiliar street food underestimates their social status or self-image. In spite of the benefits of street foods such as accessibility to consumers, quick service, and affordable price (Arambulo, Cuellar, Estupinian, & Ruiz, 1995; Taylor et al., 2000), the issues the food vendor face need special attention of the local authorities. Street food vendors are often undocumented and violate the law (Burt, Volel, & Finkel, 2003). Several concerns with this unique business include unsanitary or unapproved food equipment, food not protected from contamination or not approved, and no potable water to wash a vendor's hands or utensils (Khairuzzaman, Chowdhury, Zaman, Mamun, & Bari, 2014). In other words, the consumer health may be endangered (Rheinländer, Olsen, Bakang, Takyi, Konradsen, & Samuelsen, 2008).

### ***Sensory Cues and the Urge to Buy Impulsively***

Physiologically, human senses are designed to convey neural impulses that alter the data to a form that the brain can further process (Aron & Aron, 1997). This neural information produces sensation, a physical perception that compels interest or excitement. Purchases triggered by sensory signals would be expected to be impulsive. Research intended to explain the connections of the senses

to impulse buying has investigated ideal sensory features. Impulsive buying often arises from sensory cues: touching, seeing, hearing, tasting, and smelling (Underhill, 1999). Peck and Childers (2006) revealed the function of touch in impulse purchases. Shiv and Fedorikhin (1999) found that consumers with an extreme need for touch are more likely to participate in impulsive acts than those who need touch less. Another sense that is significant to consumers is smell. Pleasant odors make impulsive buying behavior more likely among consumers than unpleasant odors (Bone & Ellen, 1999; Spangenberg, Crowley, & Henderson, 1996).

According to Mohan, Sivakumaran, and Sharma (2013), environmental cues like lighting and music in shopping malls also influence the rate of impulsive buying. These sensory cues are also pertinent to buying fast foods (those intended for immediate consumption). Li (2008) studied the impact of appetitive stimuli on impulse buying of food. Other researchers argue that senses associated with appetite changes when consumers are provided instant gratification (Hoch & Loewenstein, 1991). Thus, consumers will respond actively to appetitive spur (like chocolate cookies), becoming impatient to consume the food (Li, 2008). These cues should elevate food temptation and immediate consumption (Geyskens, Dewitte, Pandelaere, & Warlop, 2008). Therefore, the following hypothesis is proposed:

**H1:** Sensory cues are positively related to the urge to buy impulsively.

### ***Sensory Cues, Arousal, Pleasure, and Perceived Risk***

In many consumption situations, people rely on emotion and instinct; however, they endeavor to behave rationally at the same time. Both cognition and emotion are compelled by both external and internal stimuli. Senses affect both heart and mind, and sensory cues elevate sensations and values over services and goods (Hultén et al., 2009). The sense organs on the human head (ears, eyes, nose, and mouth) convey impulses to the brain allowing humans to learn, feel, comprehend, or think (Ayres

& Robbins, 2005). Sensory input contributes to delight, emotion, and values, which, in addition to logic and prudence, are components of the decision to buy (Hultén et al., 2009).

The sense of smell is concentrated in the right cerebral hemisphere, as are emotions, so smell often reminds a person of an emotional encounter (Hultén et al., 2009). Individuals who deliberately or unintentionally become aware of a scent often follow up by acquiring an object, indicating that the effects of scent are immediate (Zemke & Shoemaker, 2008). Scents can alter feelings and mood highly and positively through stress reduction, pleasure, and anxiety (Burnett, Solterbeck, & Strapp, 2004). Pleasant scents often lead to excellent service or product evaluations.

A business can differentiate its service/product from competitors through visualization or sight. A visualized service/product helps create emotions and sentiment. For instance, a product's shape and color often trigger thoughts and memories (Bellizzi & Hite, 1992; Daily Mail, 2014, January), hence maximizing the chance that a customer will buy an offered item. As argued in the literature (e.g., Mattila & Wirtz, 2001; Morrin & Chebat, 2005), sensory cues also affect cognitive responses in addition to emotions. Such cognitive reactions comprise cognitive elaboration (Bone & Ellen, 1999), evaluations of store and store settings (Spangenberg et al., 1996), both utilitarian and hedonic shopping values (Morrin & Chebat, 2005), and customer satisfaction (Mattila & Wirtz, 2001). Those customers who identify risk also exhibit doubts about product quality if insufficient product information is offered (Lim, 2003). Yeung and Morris (2001) argued that risk is mitigated by sensory information, but the literature has little confirmation of any association between perceived risk and sensory cues.

Consumers may need additional information if they are at all doubtful about the outcome of buying a service or product (Taylor, 1974), and such information could be provided by sensory cues. Sjöberg (1998) noted that consumers often see risks or threats when their memories or sensory

information are not sufficient. Thus, risk management may include inherent sensory cues of the product like samples or testers (Yeung & Morris, 2001). Therefore, the following hypotheses are proposed:

**H2a:** Sensory cues are positively related to arousal.

**H2b:** Sensory cues are positively related to pleasure.

**H3:** Sensory cues are negatively related to perceived risk.

### *Arousal, Pleasure, and the Urge to Buy Impulsively*

In consumer behavior, emotion is a key motivator (Holbrook & Hirschman, 1982) as well as a dominant influence in impulse buying (Rook & Gardner, 1993). When asked to identify the key emotional condition that compels individuals to buy commodities on impulse, study participants termed positive emotions such as excitement, carefree, and pleasure. Analysis of these findings suggested that optimistic moods could be further elevated by impulse buying. Impulse buying also has effects on negative emotional states (Rook & Gardner, 1993; Verplanken et al., 2005; Young & Faber, 2000), easing individuals who are suffering anxiety or in a negative mood (Elliott, 1994). In general, impulse buying is perceived as being positive rather than negative (Rook & Gardner, 1993; cf. Rook, 1987; Verplanken et al., 2005). Donovan and Rossiter (1982) claimed that both arousal and pleasure can mediate the impact of the retail environment on unintended buying behaviors.

Lee and Yi (2008) assessed how perceived risk and emotion influence impulse buying using bi-dimensional method of measuring buying intention and actual buying behavior. In their study, impulsiveness moderated the relationships between impulse buying and both emotion and perceived risk. The researchers reported that individuals who decide to buy on impulse often shop more impulsively when under emotional pressure. Pertinent literature, in general, endorses impulse buying as an effect of emotional pressure (both negative and positive); however, experiential studies offer

some differences in results. For instance, Aouinti, Mansali, and Zghal (2013) found arousal had no effect on impulse buying. However, the researchers did find a relationship between impulse buying and pleasure. Additionally, Li (2004) found dominance and pleasure had no impact on impulse buying while arousal had a positive effect. Jeon (1990) argues that consumers with positive arousal are more likely to purchase an item under emotional pressure. Therefore, the following hypotheses are proposed:

**H4a:** Arousal is positively related to the urge to buy impulsively.

**H4b:** Pleasure is positively related to the urge to buy impulsively.

#### ***Perceived Risk and the Urge to Buy Impulsively***

Lee and Yi (2008) confirmed that existing literature showed cognitive aspects have no role in impulse buying although impulse buying is explained by a certain level of cognitive power. Therefore, understanding cognitive motives would help provide a holistic explanation of impulse buying behaviors. Cognition ought to be complementary to emotion because willpower, as a cognitive function, minimizes impulsive buying and emotion escalates it (Coley, 2002). Perceived risk may be one of the most significant variables in impulse buying (Lee & Yi, 2008). Lee and Yi (2008) further noted that perceived risk had an adverse effect on impulse buying behavior and intention, confirming that perceived risk was a significant determinant of impulse buying. Another study by Mishra, Sinha, Koul, and Singh (2014) offered equally convincing evidence that the intention to buy impulsively varies with perceived risk. Therefore, the following hypothesis is proposed:

**H5:** Perceived risk is negatively related to the urge to buy impulsively.

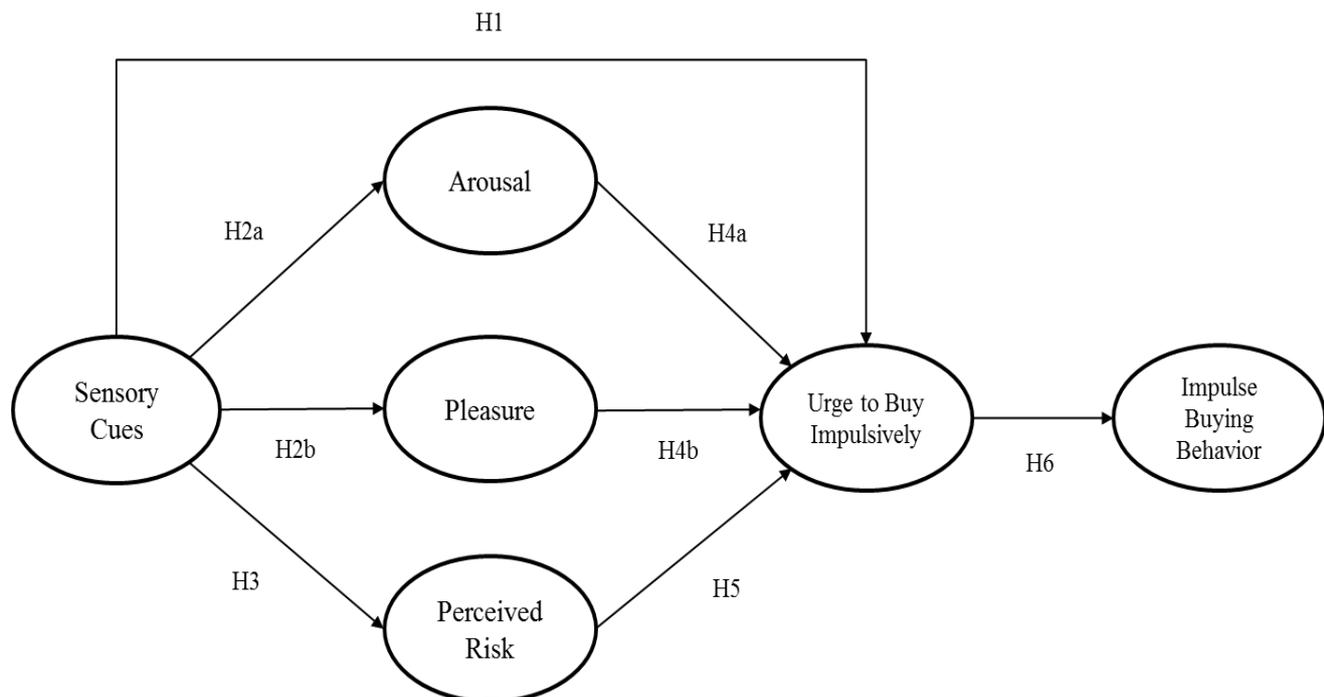
#### ***The Urge to Buy Impulsively and Impulse Buying Behavior***

The impulsive urge to buy is conceptually different from impulse buying behavior (Beatty & Ferrell, 1998). The urgent need to purchase is a desired state acquired through an individual's

encounter with a product (Beatty & Ferrell, 1998). When browsing in stores, people are physically proximate to a product or service (Beatty & Ferrell, 1998). Thus, these individuals would feel connected to the browsed product or service and have spontaneous urges. Buying desires do not necessarily result in actual impulse buying (Badgaiyan & Verma, 2015). As a customer's desire to purchase becomes stronger, however, impulse buying becomes more likely. Put simply, the urge to buy impulsively precedes impulsive buying itself, and the relationship between the two should be positive (Badgaiyan & Verma, 2015). Therefore, the following hypothesis is proposed:

**H6:** The urge to buy impulsively is positively related to impulse buying behavior.

Figure 4.1 shows the conceptual model proposed for the first study. Sensory cues comprised smell, sight, and sound in this study. This study used arousal and pleasure as emotional responses, and perceived risk represented a cognitive response. To assess the state of immediate consumption need, the urge to buy impulsively was introduced. Finally, impulse buying was measured by actual purchases made on impulse.



**Figure 4.1 Conceptual Model of Study 1**

## **Methodology**

The section explains the empirical method and approach to analyzing the data. The sample selection for the study, data collection procedures, and survey instrument development including the measurement of study variables are presented.

### ***Sample***

Using a convenience sample (Trochim & Donnelly, 2008), this study surveyed consumers who were 18 years old or older living in southern cities in the United States. The target population was buyers of street food from trucks, carts, booths, or stands. Alabama and Mississippi were chosen as states for data collection because the researcher had access to the target population and street food vending was relatively common at events in these states. A total of 361 responses was collected. After screening the responses with outliers, 352 responses were used for data analysis.

### ***Measure and Instrument Development***

Validated measurement items used in previous research were adopted. Sensory cues were assessed using three items based on Steptoe, Pollard, and Wardle's (1995) study. The senses of smell, sight, and hearing were rated on a 7-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (7). Arousal and pleasure were used to measure emotions. The same measures in Ryu and Jang's (2007, 2008) restaurant studies were used. Eight items with two underlying dimensions (four items each on arousal and pleasure) were used to assess emotional responses on a 7-point agree-disagree scale. Arousal items included "I felt cheerful", "I felt excited", "I felt surprised", and "I felt awake". The four items measuring pleasure were "I felt happy", "I felt pleased", "I felt entertained", and "I felt delighted."

Using a modified scale based on Tan's (1999) study, perceived risk was measured with dimensions that show consumers may not feel secure in purchasing street food: performance, social,

psychological, physical, and financial risk. These five items were anchored on a 7-point Likert-type scale (1 = strongly disagree; 7 = strongly agree). A four item scale developed by Beatty and Ferrell (1998) evaluated the urge to buy impulsively using a 7-point Likert-type scale, where 1 = strongly disagree and 7 = strongly agree. The following items were measured: “I experienced sudden urges to buy the food I had not planned to purchase”; “I wanted to buy the food even though it was not on my list”; “I experienced no strong urge to make an unplanned purchase of the food”; and “I felt a sudden urge to buy the food.” Impulse buying behavior was measured on a 7-point Likert-type scale with endpoints of strongly disagree (1) and strongly agree (7) using Badgaiyan and Verma’s (2015) 3-item scale: “I ended up buying the food without the original plan”; “I bought the food on impulse”; and “I indulged in impulsively buying the food.” The preliminary questionnaire was reviewed by a panel of experts for face and content validity and for clarity of direction. Revisions of wording, instructions, or formats were made based on expert feedback.

### ***Data Collection***

A street-intercept survey method was selected to capture the instant decision of consumers to buy food with a range of sensory appeals. Because this study focuses on consumer impulse buying, which is dependent on irresistible, sudden sensory appeals, routine or habitual food vendors may not be an appropriate setting. Such settings are familiar and thus their sensory appeal may be weaker. Transient, mobile business in an open air would provide a better test of sensory stimulation among consumers to measure impulse buying of food. Mobile food vending has become a large part of festival and event scenes. Therefore, festivals and events were considered for data collection sites. Several websites were used to identify local/regional festivals and events in Alabama and Mississippi. FestivalNet ® was used as a primary source since this site lists many festivals and fairs in North America. In addition, the Chamber of Commerce website for each state was used to find featured

festivals and events. The sources that provided food vendor information were used to create a list of festivals/events. More than 20 organizers or promoters of each festival/event in Alabama and Mississippi were sent email invitations to participate during fall 2015. After two weeks, a reminder email was sent.

Four festival and event organizations (two in Alabama and two in Mississippi) agreed to allow data collection at their sites. Data collection was conducted over four days, with one day at each site. Research assistants were hired and asked to complete the online institutional review board training. They were also trained in intercepting potential participants and collecting data in person. Booths or tables were set up close to food vendors to attract participants and provide them with a place to complete the survey. During the festivals or events, these assistants approached the attendees and asked them to participate in a survey. Attendees who agreed to participate in the survey were screened by asking two questions: one about their age (at least 18 years old) and their food purchase experiences at the festival or event. Only qualified individuals were allowed to complete the survey.

Respondents were provided a definition of street foods and a description of the type of street vending as defined in this study. The following definitions were shared with the participants: Street foods are ready-to-eat foods and beverages prepared and/or sold from mobile trucks, motorized or non-motorized carts, booths, or stands. Street foods are available at such festivals and events as you are attending today. To maximize the response rate, a retail gift card for five dollars was awarded as an incentive to participants who completed the survey.

## **Data Analysis and Results**

In this section, data analysis procedures and techniques for both preliminary and main analysis are discussed. Sample characteristics are also described.

### ***Data Screening***

Collected data were first coded, and a number of items in the negatively-keyed sentences were reverse scored. Before analyzing data, study variables were examined for accuracy of data entry, outlier identification and normality check, and observations with missing data. First, data were tested for outliers. If any case showed above a  $z$ -score with an absolute value of 4, the threshold of standardized scores recommended by Hair, Black, Babin, and Anderson (2010), it was regarded as a univariate outlier. Four univariate outliers were found and excluded. Next, multivariate outliers were detected using the Mahalanobis  $D^2$  measure, which assesses a distance from each observation to the centroid of all observations on a set of variables. Using SPSS, Mahalanobis  $D^2$  for each case and the probability for Mahalanobis  $D^2$  were computed. There were five values less than .001, each of which had an unusual combination of values for the six variables, resulting in their designation as multivariate outliers (Tabachnick & Fidell, 2007). As a result of univariate and multivariate outliers, nine responses were excluded from data of 361 respondents. The normality test indicated that the skewness and kurtosis of the variables fell within acceptable ranges of  $\pm 1$ . A test of multicollinearity revealed that tolerance values of the variables were greater than .10, which is the suggested threshold (Hair et al., 2010), confirming the variables had no multicollinearity problems. Finally, mean scores of each variable replaced missing observations. SEM generally requires a ratio of observed variables to sample sizes between 1:10 to 1:15 (Hair, Black, Babin, & Anderson, 2010); the remaining responses conformed to this ratio. Therefore, 352 responses remained to test the proposed model.

### ***Profile of the Sample***

Table 4.1 outlines the demographic characteristics of participants in this study and their patterns of buying street food.

**Table 4.1 Profile of Survey Respondents**

Item	Frequency ( <i>N</i> = 352)	Percent (%)
Gender		
Male	97	27.6
Female	251	71.3
Other	2	.6
Age		
18 - 24	70	19.9
25 - 34	78	22.2
35 - 44	61	17.3
45 - 54	68	19.3
55 - 64	48	13.6
65 or older	22	6.3
Race		
White	187	53.1
Black/African American	129	36.6
American Indian/Alaska Native	2	.6
Asian	16	4.5
Native Hawaiian/Pacific Islander	2	.6
Hispanic/Latino	4	1.1
Other	9	2.6
Education		
Less than high school	3	.9
High school	85	24.1
2-year college	87	24.7
4-year college/university	104	29.5
Postgraduate	71	20.2
Income		
Under \$25,000	89	25.3
\$25,000-39,999	88	25.0
\$40,000-54,999	63	17.9
\$55,000-69,999	26	7.4
\$70,000-84,999	25	7.1
\$85,000-99,999	25	7.1
Over \$100,000	23	6.5
Buying Frequency		
Daily	7	2.0
Weekly	36	10.2
Biweekly	24	6.8
Monthly	90	25.6
Annually	191	54.3
Distribution Type		
Truck	36	10.2
Cart	7	2.0
Booth	220	62.5
Stand	78	22.2
Other	9	2.6

Of 352 respondents, 71.3% were female ( $n = 251$ ). The age between 25 and 34 years old was the largest group at 22.2%, followed by 18 to 24 at 19.9% and 45 to 54 at 19.3%. The majority (53.1%) of the participants were Caucasians; 36.6% were black/African Americans. In terms of education levels, approximately 54% of the participants had completed some college. The majority (50.3%) of the respondents had an annual income less than \$40,000. Additionally, frequency of buying street food and type of street food establishments were identified. The majority (54.3%) purchased street foods annually and approximately 26% purchased street foods monthly. A booth was the most common (62.5%) distribution type of street food, followed by a stand (22.2%) and a truck (10.2%).

### ***Measurement Model Testing***

A two-step analytical procedure (Anderson & Gerbing, 1988) was used to examine the conceptual model. The measurement model was assessed first using confirmatory factor analysis (CFA), followed by the SEM using AMOS 21. Overall, fit indices for the measurement model showed adequate fit statistics (NFI = .941; TLI = .962; CFI = .969; RMSEA = .054;  $\chi^2 = 382.262$ ;  $df = 190$ ;  $\chi^2/df = 2.012$ ;  $p < .001$ ), other than a chi-square test statistic. However,  $\chi^2$  is often reported as significant because of strict evaluations of sample size and model complexity (Hair et al., 2000).

Table 4.2 presents measurement items used in this study along with the standardized loadings of the corresponding scale items.

**Table 4.2 Measurement Items and Standardized Loadings**

Constructs and Scale Items	Standardized Loading*
<b>Sensory Cues</b>	
The food looked nice.	.888
The food smelled good.	.867
The food generated appealing sounds as it cooked ( <i>e.g.</i> , ‘sizzling’ meat on the grill, ‘popping’ popcorn, ‘boiling’ soup, ‘pouring’ oil into the pan, a tea kettle ‘whistling’).	.791
<b>Emotion</b>	
<i>Arousal</i>	
I felt excited.	.869
I felt cheerful.	.853
I felt awake.	.741
I felt surprised.	.703
<i>Pleasure</i>	
I felt pleased.	.907
I felt happy.	.898
I felt delighted.	.864
I felt entertained.	.811
<b>Cognition</b>	
<i>Perceived Risk</i>	
The food would not taste as good as I thought it would.	.845
The food fits well with my image.	.736
I would pay a competitive price for the food.	.731
My friends and relatives will think more highly of me if I buy the food.	.730
Eating the food would cause danger to my health or safety.	.672
<b>Urge to Buy Impulsively</b>	
I felt a sudden urge to buy the food.	.845
I experienced sudden urges to buy the food I had not planned to purchase.	.843
I wanted to buy the food even though I had not initially intended to do so.	.814
<b>Impulse Buying Behavior</b>	
I bought the food on impulse.	.909
I ended up buying the food even though I had not initially intended to do so.	.841
I indulged in impulsively buying the food.	.793

\* All factor loadings are significant at  $p < .001$ .

Convergent validity was tested by checking factor loading scores of each measurement item and the average variance extracted (AVE) values of each construct. One item, “I experienced no strong urge to make an unplanned purchase of the food,” measuring the urge to buy impulsively was dropped because of its low factor loading (below .60), leaving three items. Finally, factor loadings of

the measurement items were greater than or equal to .672. All factor loadings were significant at  $p < .001$ .

Table 4.3 reports descriptive statistics (means and standard deviations), AVEs, composite reliabilities, correlations, and squared correlations of the constructs in this study. The AVEs of all constructs exceeded .50, the cutoff value recommended by Fornell and Larcker (1981). This demonstrates well-established convergent validity, showing that more than half the variance in each construct is explained by the corresponding measures (Bagozzi & Yi, 1988). Composite reliabilities of the constructs were higher than the conventional threshold value of .70, ranging from .861 to .926, showing adequate internal consistency (Bagozzi & Yi, 1988). Discriminant validity was evaluated by comparing the AVE values with squared correlations ( $R^2$ ) of the respective pairs (Fornell & Larcker, 1981). Discriminant validity was achieved for all pairs of the constructs except for ‘arousal and pleasure.’

Further, a chi-square difference ( $\Delta\chi^2$ ) test assuring the discriminant validity of the exception was conducted by comparing  $\chi^2$  of the original measurement model with  $\chi^2$  of the model in which two constructs are correlated or constrained to unity (the constrained model), as suggested by Bagozzi and Yi (1988). The resulting  $\chi^2$  differences were 19.495 ( $df = 1$ ) for ‘arousal and pleasure’ at  $p < .001$ . The result of a chi-square difference ( $\Delta\chi^2$ ) test revealed larger changes in  $\chi^2$  than the difference in degrees of freedom, showing each of the constrained models had a worse model fit index than the original measurement model (the unconstrained model). This indicates that two constructs for each pair of the constructs are distinct and, thus, discriminant validity of the constructs was achieved.

**Table 4.3 Descriptive Statistics and Associated Measures**

	No. of Items	Mean (Std. dev.)	AVE*	Sensory Cues	Arousal	Pleasure	Perceived Risk	Urge to Buy Impulsively	Impulse Buying Behavior
Sensory Cues	3	5.767 (1.255)	.722	<b>.886<sup>a</sup></b>	.735 <sup>b</sup>	.738	-.662	.675	.531
Arousal	4	5.363 (1.098)	.632	.540 <sup>c</sup>	<b>.872</b>	.868	-.657	.784	.585
Pleasure	4	5.658 (1.215)	.758	.545	.753 <sup>d</sup>	<b>.926</b>	-.627	.783	.599
Perceived Risk	5	3.247 (1.133)	.555	.438	.432	.393	<b>.861</b>	-.634	-.493
Urge to Buy Impulsively	3	5.112 (1.135)	.696	.456	.615	.613	.402	<b>.873</b>	.742
Impulse Buying Behavior	3	5.007 (1.310)	.721	.282	.342	.359	.243	.551	<b>.885</b>

\* AVE = average variance extracted;

<sup>a</sup> Composite reliabilities are along the diagonal in bold;

<sup>b</sup> Correlations are above the diagonal;

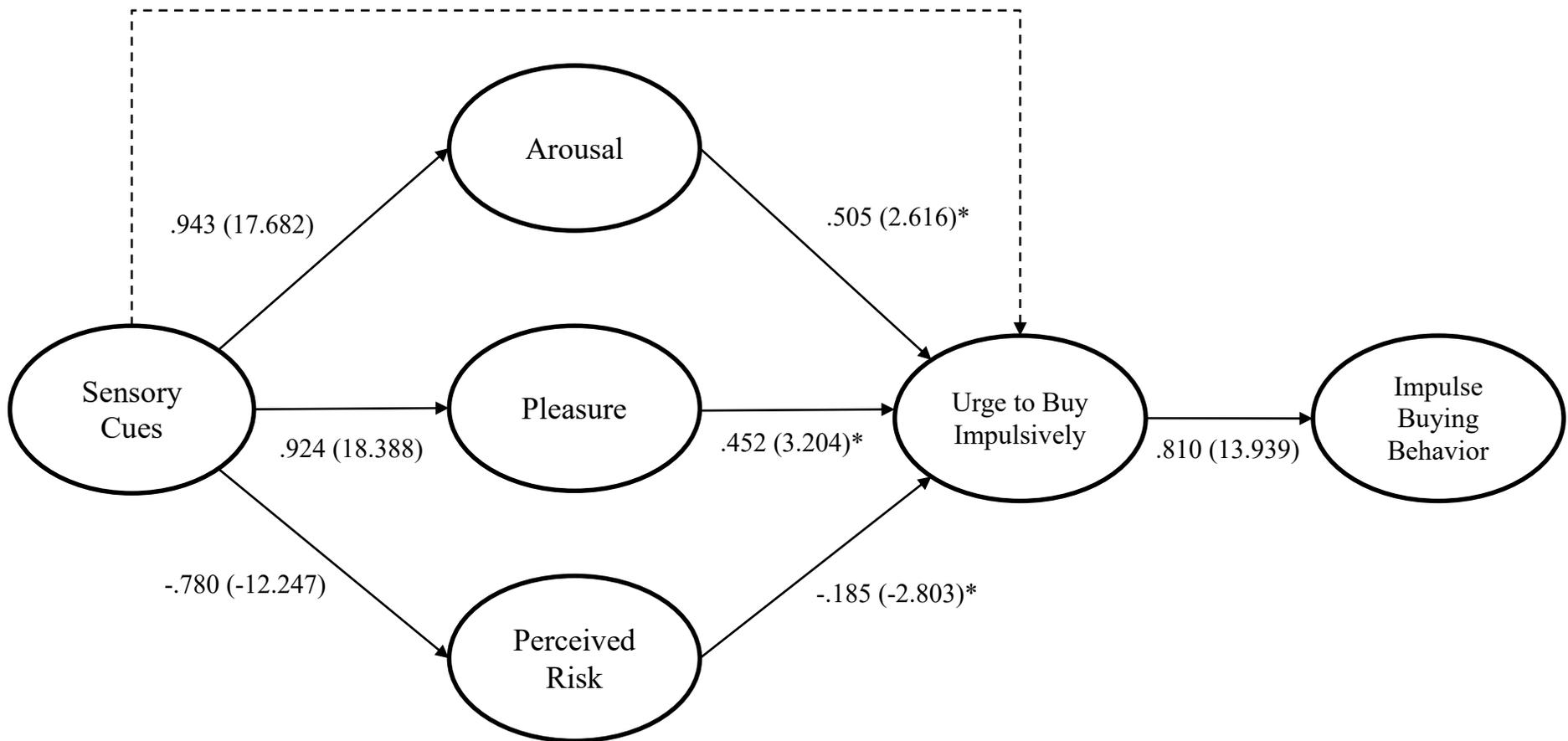
<sup>c</sup> Squared correlations are below the diagonal;

<sup>d</sup> The squared correlation of arousal–pleasure was higher than the AVE of arousal. Discriminant validity was proved after fixing the correlation of a pair of arousal–pleasure on unity.

### *Structural Model and Relationship Test*

The proposed model with six constructs was estimated using SEM analysis in AMOS 21. The test results of the model fit provided satisfactory fit indices of the proposed model (NFI = .919; TLI = .939; CFI = .948; RMSEA = .068), except chi-square statistic ( $\chi^2 = 520.888$ ;  $df = 197$ ;  $\chi^2/df = 2.644$ ;  $p < .001$ ), which is often reported as significant due to strict assumptions (Hair et al., 2000).

Figure 4.2 shows the standardized path coefficients and  $t$ -values for significant paths (at least  $p < .05$ ) in the model. Hypothesis 1 proposed a positive relationship between sensory cues and the urge to buy impulsively; however, the hypothesis was not supported ( $\beta = -.204$ ;  $t = -.699$ ;  $p = .485$ ). Hypothesis 2a, which postulated a positive relationship between sensory cues and arousal was positively significant ( $\beta = .943$ ;  $t = 17.682$ ;  $p < .001$ ), thus supporting Hypothesis 2a. Similarly, the path coefficient between sensory cues and pleasure was positively significant ( $\beta = .924$ ;  $t = 18.388$ ;  $p < .001$ ), thus supporting Hypothesis 2b. Hypothesis 3 postulated a negative relationship between sensory cues and perceived risk; sensory cues are likely to reduce perceived risk. Results confirmed the negative relationship between sensory cues and perceived risk ( $\beta = -.780$ ;  $t = -12.247$ ;  $p < .001$ ), thus supporting Hypothesis 3. In Hypothesis 4a, this study proposed that arousal would influence the urge to buy impulsively. Hypothesis 4a was supported ( $\beta = .505$ ;  $t = 2.616$ ;  $p < .01$ ). A positive relationship between pleasure and the urge to buy impulsively was also found ( $\beta = .452$ ;  $t = 3.204$ ;  $p < .01$ ), thus supporting Hypothesis 4b. Hypothesis 5 postulated that perceived risk would be negatively related to the urge to buy impulsively. Results provided support for this hypothesis ( $\beta = -.185$ ;  $t = -2.803$ ;  $p < .001$ ). Hypothesis 6 postulated the urge to buy impulsively leading to impulse buying behavior; as predicted, the positive, significant link between these two variables was found ( $\beta = .810$ ;  $t = 13.939$ ;  $p < .001$ ).



*Note.* Numbers in parentheses are the *t*-values; Numbers outside of parentheses are the standardized path coefficients; the dotted arrow indicates an insignificant path ( $p > .05$ ).  
 \*  $p < .01$ ; otherwise,  $p < .001$

**Figure 4.2 Test Results of the Proposed Relationships**

The squared multiple correlations indicate that sensory cues accounted for 88.9% of the total variance in arousal and 85.3% in pleasure. Further, sensory cues explained 60.8% of the total variance in perceived risk. A total of 76.7% of the variance in the urge to buy impulsively was explained by arousal, pleasure, and perceived risk. The urge to buy impulsively explained 65.7% of the total variance in impulse buying behavior.

### ***Test of Indirect Relationships***

To further understand the insignificant direct relationship between sensory cues and the urge to buy impulsively, indirect associations were estimated by testing the mediating roles of arousal, pleasure, and perceived risk between sensory cues and the urge to buy impulsively. Three models were thus evaluated using Baron and Kenny's (1986) mediation analysis, the chi-square ( $\chi^2$ ) difference test, the Sobel test, and the bootstrapping test.

***Four-step mediation analysis.*** The following steps were performed for testing mediation. First, a direct path between the predictor and the mediator was regressed significantly. Second, a significant relationship between the mediator and the outcome variable was checked by a path coefficient. The third condition is performed by individually constraining the direct effect from the mediator to the outcome variable. Finally, whether the direct path coefficient from the predictor to the outcome variable becomes weak (a partial mediation) or insignificant (a full mediation) is checked when the path between these two is freely estimated or fixed to zero.

**Table 4.4 Testing Mediating Effects of Arousal, Pleasure, and Perceived Risk on Sensory Cues and the Urge to Buy Impulsively**

Mediating role of	Between	Statistics of P <sup>a</sup> → O <sup>b</sup> , when M <sup>c</sup> → O is set at 0.				Statistics of P → O, when M → O allowed.				Decrease <sup>d</sup> in $\chi^2$	Sobel test (Z)	Bootstrapping test		Amount of mediation	
		<i>B</i>	S.E.	$\beta^e$	<i>t</i>	<i>B</i>	S.E.	$\beta$	<i>t</i>			Indirect effects	95% bootstrap CIs LL CIs UL CIs		
AR	SC & UBI	.913	.058	.877	15.709***	.471	.197	.162	2.386*	3.793 <sup>ns</sup>	2.585**	.649**	.554	.788	.527
PL	SC & UBI	.913	.058	.877	15.709***	.521	.142	.506	3.655***	5.965*	3.147**	.584**	.477	.695	.462
PR	SC & UBI	.913	.058	.877	15.709***	.834	.076	.801	10.920***	2.126 <sup>ns</sup>	2.733**	.255**	.156	.340	.160

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

SC = sensory cues; AR = arousal; PL = pleasure; PR = perceived risk; UBI = urge to buy impulsively

<sup>a</sup> Predictor variable; <sup>b</sup> Outcome variable; <sup>c</sup> Mediator

<sup>d</sup> Decrease in  $\chi^2$  for the decrease of one degree of freedom

<sup>e</sup> Size of a direct effect when the direct effect of the mediator on the outcome variable is controlled.

As shown in Table 4.4, when the direct path from arousal to the urge to buy impulsively was freely estimated, the path from sensory cues to the urge to buy impulsively was significant at  $p < .001$  ( $\beta = .877$ ;  $t = 15.709$ ;  $p < .001$ ). When the direct effect of sensory cues on the urge to buy impulsively was estimated along with arousal, the path from sensory cues to the urge to buy impulsively became weak ( $\beta = .162$ ;  $t = 2.386$ ;  $p < .05$ ). Hence, arousal functions as a partial mediator between sensory cues and the urge to buy impulsively. Similarly, when the direct path from pleasure to the urge to buy impulsively was fixed to zero, the estimated path from sensory cues to the urge to buy impulsively was significant at  $p < .001$  ( $\beta = .877$ ;  $t = 15.709$ ;  $p < .001$ ). When the direct effect of sensory cues on the urge to buy impulsively was estimated along with pleasure, the path from sensory cues to the urge to buy impulsively became weak ( $\beta = .506$ ;  $t = 3.655$ ;  $p < .001$ ). Thus, pleasure functions as a partial mediator between sensory cues and the urge to buy impulsively. The partial mediating effect of perceived risk on the relationship between sensory cues and the urge to buy impulsively was also supported in the mediation analysis ( $\beta = .801$ ;  $t = 10.92$ ;  $p < .001$ ; see Table 4.4). Thus, arousal, pleasure, and perceived risk all operate as partial mediators between sensory cues and the urge to buy impulsively.

**Chi-square difference test.** Along with the mediation analysis, nested model approaches by Anderson and Gerbing (1988) were employed to confirm that the models with mediation showed a better fit than the models without mediation. Each mediation model with its related non-mediation model were compared and evaluated based on the  $\chi^2$  statistic. If a mediation model is better suited to convey data than a non-mediation model, the difference of the  $\chi^2$  statistic should be significant (3.84 of  $\Delta\chi^2$  or more at the  $p < .05$  level; Byrne, 1998). The fit indices and changes in the  $\chi^2$  statistics across the models are shown in Table 4.4. The mediation model with pleasure as a mediator between sensory cues and the urge to buy impulsively showed

5.97 of  $\chi^2$  changes, significant at the  $p < .05$  level. Unexpectedly, the individual mediation models of arousal and perceived risk failed to produce significant changes in  $\chi^2$  when compared with the non-mediation models for one decreasing degree of freedom.

**Sobel test.** The mediating effects of arousal and perceived risk using chi-square difference tests were insignificant. Further, other researchers have argued that providing the size changes (either smaller or insignificant) of the path from the predictor to the outcome variable is not enough to confirm the mediating effect (Frazier, Tix, & Barron, 2004). The Sobel (1982) test was also applied to confirm the statistical significance of the mediating effects of arousal and perceived risk and reconfirm the significance of pleasure as a mediator. In the Sobel test, the mediating effect is described as  $ab$ , which refers to the product of the predictor-mediator path ( $a$ ) and the mediator-outcome variable path ( $b$ ). In addition, the null hypothesis states that the strength of the mediating relationship between the predictor and the outcome variable is equal to zero. Therefore, the significant relationship of mediation is tested by dividing the estimate of the mediator by its standard error. Then, this value is compared to a standard normal distribution (MacKinnon, Lockwood, Hoffman, West, & Sheets 2002; Sobel, 1982). The standard error of the mediating effect ( $s_{ab}$ ) is

$$S_{ab} = \sqrt{b^2 s_a^2 + a^2 s_b^2 + s_a^2 s_b^2}$$

where  $a$  = unstandardized regression coefficient of path  $a$ ;  
 $b$  = unstandardized regression coefficient of path  $b$ ;  
 $s_a$  = standard error of  $a$ ;  
 $s_b$  = standard error of  $b$

Three separate Sobel tests showed the significance of the proposed indirect relationships between sensory cues and the urge to buy impulsively via arousal ( $z = 2.585$ ;  $p < .01$ ), pleasure ( $z = 3.147$ ;  $p < .01$ ), and perceived risk ( $z = 2.733$ ;  $p < .01$ ; see Table 4.4). Using Baron and

Kenny's criteria, the Sobel tests, therefore, confirmed the mediating effects of arousal, pleasure, and perceived risk on the relationship between sensory cues and the urge to buy impulsively.

**Bootstrapping test.** The Sobel test follows the assumption that the distribution of  $ab$ , the mediating effect of the predictors on the outcome variables, is normal; however, in some cases, the distribution of  $ab$  is positively skewed, thus possibly causing biased and underpowered mediation results. MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) suggested that a combined approach to mediation analysis is powerful. Preacher and Hayes (2004) suggested the bias corrected (BC) bootstrapping method as a solution to the possibly biased distribution of  $ab$ . The bootstrapping result confirmed that arousal significantly mediated the effect of sensory cues on the urge to buy impulsively at  $p < .01$  ( $\gamma = .649$ ; 95% bootstrap CI = .554<sub>LL CI</sub>, .788<sub>UL CI</sub>;  $p < .01$ ). Pleasure was a significant mediator between sensory cues and the urge to buy impulsively at  $p < .01$  ( $\gamma = .584$ ; 95% bootstrap CI = .477<sub>LL CI</sub>, .695<sub>UL CI</sub>;  $p < .01$ ). Perceived risk significantly mediated the relationship between sensory cues and the urge to buy impulsively at  $p < .01$  ( $\gamma = .255$ ; 95% bootstrap CI = .156<sub>LL CI</sub>, .340<sub>UL CI</sub>;  $p < .01$ ).

**Summary of indirect relationships.** The results of Baron and Kenny's four-step mediation tests,  $\chi^2$  difference tests, Sobel tests, and bootstrapping tests are summarized in Table 4.4. The first row of the table shows a significant indirect relationship between sensory cues and the urge to buy impulsively through arousal using the Baron and Kenny (1986) and Sobel's (1982) approaches. The bootstrapping test result further supported the mediating effect of arousal on the relationship between sensory cues and the urge to buy impulsively. The second row of Table 4.4 shows pleasure statistically mediated the relationship between sensory cues and the urge to buy impulsively through all the tests: Baron and Kenny's (1986) approach, the chi-square difference test, the Sobel test, and the bootstrapping test. Similarly, perceived risk also mediated

the relationship between sensory cues and the urge to buy impulsively based on Baron and Kenny's (1986) approach and the Sobel (1982) test (see Table 4.4), although the bootstrapping test also showed perceived risk mediated the effect of sensory cues on the urge to buy impulsively. To sum up, after performing several tests for mediation, this study confirms that all mediating effects on the predictor-outcome relationships were significant. In other words, sensory cues have significant indirect effects on the urge to buy impulsively through arousal, pleasure, and perceived risk.

Finally, the proportion of mediated effects was computed by  $ab/c$ , where  $a$  and  $b$  are unstandardized regression coefficients of paths  $a$  and  $b$ , and  $c$  is an unstandardized regression coefficient of the path from a predictor to an outcome variable without a mediator (Shrout & Bolger, 2002) as suggested by MacKinnon, Warsi, and Dwyer (1995). Two assumptions, the presence of mediation effects on the predictor–outcome relationship and a large sample size, were met. The calculation shows that approximately 53% ( $.880 \times .547 / .913 = .527$ ) of the total effect of sensory cues on the urge to buy impulsively was mediated by arousal as illustrated in Table 4.4. Likewise, about 46% ( $.936 \times .451 / .913 = .462$ ) of the total effect of sensory cues on the urge to buy impulsively was mediated by pleasure. Lastly, 16% ( $-.649 \times -.225 / .913 = .160$ ) of the total effect of sensory cues on the urge to buy impulsively was mediated by perceived risk.

## **Discussion and Implications**

Drawing upon the dual-system model of consumer behavior, the heuristic and systematic processing theory, and the ego depletion theory as frameworks, this study focused on questions about street foods: “In what ways do food-related sensory cues influence both consumer emotion and cognition?” and “Do emotion and cognition influence consumers to buy food impulsively?” Therefore, the purpose of this study was first, to determine the role of sensory cues in buying

street foods and, second, to examine how emotions (arousal and pleasure) and cognition (perceived risk) affect the consumer urge to buy impulsively, which in turn leads to actual impulse buying behavior.

First, the results revealed that the senses do affect emotion, such as arousal and pleasure, positively. However, perceived risk as cognition reduced the effect of the senses. This finding parallels previous research showing that the senses elicit both emotional and cognitive responses (Hultén et al., 2009). For example, Morrin and Chebat (2005) confirmed that ambient scent affected both emotion and cognition. Using the SOR framework, Chang, Eckman, and Yan (2011) found sound and sight affected emotions. Thus far, sensory perception studies have emphasized the effect of the senses on brand memory (Morrin & Ratneshwar, 2000, 2003), hedonic and utilitarian value (Morrin & Chebat, 2005), information-seeking and variety-seeking behavior (Mitchell, Kahn, & Knasko, 1995), and brand satisfaction and loyalty (Brakus, Schmitt, & Zarantonello, 2009). This study confirms that sensory cues can reduce the perception of risk among consumers. Further, this study highlights sensory cues as an information source when it comes to impulse buying of street food. Because food sold on streets transfers rich sensory information, potential consumers may have fewer concerns about risk associated with the food and further may want to experience the food. The findings suggest that mobile food vendors must emphasize ear-catching cooking sounds, pleasant smells, and eye-opening presentations to give potential consumers surprise and joy as well as psychological comfort.

Next, the results confirmed that both arousal and pleasure were positively related to the urge to buy impulsively. Further, as expected, perceived risk had the effect of reducing the urge to buy impulsively. Many other studies (e.g., Mitchell, 1999; Ryu & Jang, 2007, 2008) have examined how emotional and cognitive evaluations affect purchase intention and actual purchase

behavior. However, impulse buying, a specific type of buying patterns, has not had the same thorough examination. Only a few studies have confirmed the effects of emotion and cognition on the urge to buy impulsively. A study conducted by Lee and Yi (2008) supports the findings of this study that both arousal and pleasure predict the urge to buy impulsively (intention to buy impulsively). Unlike Lee and Yi's (2008) findings, perceived risk was a significant predictor of the urge to buy impulsively. This study supports the existing literature in that when consumers feel aroused and pleased with a food item, they feel the urge to buy it on impulse. However, when consumers perceive product-related risks, they are less likely to feel the urge to buy food impulsively. This suggests that making consumers feel excited or pleased as well as secure is critical to elevating their urge to buy food on a whim.

This study also found the urge to buy impulsively as a precursor of impulse buying behavior. As discussed earlier, these two concepts are distinct from one another, especially in regard to physical proximity and in-store browsing (Beatty & Ferrell, 1998). Consumers often browse items in a store for entertainment and/or to gather information with no immediate intention to purchase (Bloch, Ridgway, & Sherrell, 1989). The urge to buy impulsively is a state of wanting to buy immediately when consumers encounter a product; consumers do not always act upon the impulse (Rook & Fisher, 1995). However, this desire is powerful and often leads to an actual purchase of a product to fulfill the desire. This study concludes that decision and behavior should be considered separately, as Weinberg and Gottwald (1982) also suggested. Impulse sales strategies might be necessary to elicit potential consumers' strong desire to buy impulsively. Biological or environmental urges may play an important role in impulse buying. People are susceptible to food purchases when their biological urges are intense (Montgomery & Chester, 2009). Sensory-rich food would biologically stimulate people to buy on impulse.

Making consumers more receptive to environmental stimuli would also be helpful (Montgomery & Chester, 2009). Non-food related environmental stimulation, such as the exterior décor of mobile vending using colorful paintings or displaying signage, logo, or contact information, may result in an increase of temptation to buy food impulsively (Muruganantham & Bhakat, 2013).

In addition, the findings of this study show that the direct relationship between sensory cues and the urge to buy impulsively can be better explained by emotion and cognition. This study examined three possible mediators, arousal and pleasure (i.e., emotion) and perceived risk (i.e., cognition), and integrated them into a model to more comprehensively and clearly explain the process of how consumers stimulated by sensory cues react by feeling an urge to buy impulsively. Some food studies have examined the role of emotion and cognition in food liking and intake (e.g., Byrnes & Hayes, 2013), but how emotion and cognition affect impulse buying relating to food sensory cues is not well understood. Emotion, especially its links to sensory cues (e.g., scent, color, sound), has been highlighted more than cognition (e.g., Larson, Redden, & Elder, 2014).

This study notes the relative importance of arousal and pleasure as emotional states and perceived risk as a cognitive state driven by sensory cues in influencing impulse buying. Overall, the findings support food sensory cues as a stronger influence on the emotional states of potential consumers, in turn, on the urge to buy on impulse. This suggests that the senses work by eliciting emotion in consumers, arousing their interest in food and pleasing them, thus leading to action.

Practically, the findings will provide mobile food vendors with a basis for menu development and quality control (Skelton, 1984). The vendors wishing to enhance consumer arousal and pleasure, and thus enhance consumer impulses to buy should use the sensory characteristics of food. Since the human senses of smell, hearing, and sight are primarily

detected via street food, these three should focus to appeal consumers. Boiling herbs or spices (e.g., cinnamon sticks or powder), for example, is likely to spread the pleasant smell filled in the air. Cooking methods that can magnify sounds while being cooked are recommended. Providing better presentation of food and its pictorial image on the menu may capture a consumer's eyes.

The results of this study show that sensory cues are not enough, however. Impulsive buying of food is also affected by cognition, the perceived risk of buying food from street vendors, although cognition has less effect on impulse buying than emotion. In other words, street vendors should both emotionally stimulate and please consumers by using the senses but also demonstrate reduced risk if they want consumers to feel the urge to buy impulsively and then actually buy on impulse. Alleviating consumer concern about buying and consuming street food, for example, taste, value, health dangers, and damaged self-image or respect from others, must also be addressed. For example, menu descriptions of taste or nutritional information (e.g., calories, serving size) may ease consumer anxiety.

### **Limitations and Suggestions for Future Research**

One potential limitation of this study is the use of a cross section of a study population. Although the data were collected on four different days, the number of consumers who bought mobile food at a festival or an event during a particular period was limited. Survey respondents may respond differently over time. In addition, given the ratio of females (71.3%) to males (27.6%) who completed the survey, a gender bias may exist. Previous research has shown that females exhibit more impulse buying behaviors than males (Fisher & Dubé, 2005; Luo, 2005).

The use of a street intercept survey method meant the researcher needed access to each data collection site. Consequently, only four festivals or events in two states, Alabama and Mississippi, were chosen for collecting the data. Further, each event featured different themes:

food, music, exhibitions, and/or art crafts. The findings may not apply to other geographical settings, different types of festivals/events, or settings not associated with a festival/event.

The strength of this study findings may be undermined by the mix of festival and event types. Different themes or features of festivals and events may have resulted in variations in the participants' responses. Therefore, participants' expectation of or involvement in programs or activities should be compared between food-oriented and other types of festivals and events to determine if there are meaningful differences. The findings may be useful for festival and event organizations in shaping appeals to draw different segments of attendees.

Another limitation may include using a single item for sub-dimensions of sensory cues and perceived risk. Overall, each effect of sensory cues and perceived risk was significant, but relying on a single item to capture an underlying construct may threaten construct validity and content validity. Multiple items should ensure validity of constructs (Churchill, 1979).

Distinguishing the relative impact of individual sensory cues (i.e., sound, smell, and sight) was not of interest in this study. It was because food experience always involves multiple senses simultaneously, and thus it might be difficult to point out salient sensory cues. Future investigation of the individual effect of any one sensory cue may answer to the question of what is the primary sense that food vendors should consider for menu development.

Future researchers are advised to design their study to distinguish the four different types of impulse buying. Data from different types of impulse buying situations (i.e., a prior plan, previous memory, suggestion, or pure appeal) would provide researchers with a better theoretical understanding of what truly makes consumers proceed with impulse buying. Such effort may also help practitioners develop and apply specific impulse-buying strategies.

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## **Chapter 5 - Emotion and Impulse Buying: The Moderating Effects of Food Neophobia and Perceived Human Crowding**

### **Abstract**

Buying food on impulse accounts for approximately 14% of sales (BetaBait, 2013, December). Often food choices are affected by emotions (Gibson, 2006). Volume of sales and inflow of consumers have significant implications for the restaurant industry, so promotional efforts must focus on consumer emotional responses (i.e., arousal and pleasure) and impulse buying. Although food impulse buying is a common and overarching theme in the industry, academic research pertaining to the food consumption impulse is relatively sparse. Further, research findings in those few studies on the connection between emotions and impulse buying are inconclusive.

Therefore, to better understand this relationship, we examine two possible moderators of impulse buying: an individual characteristic and a situational factor. Food neophobia may potentially affect negatively the willingness to experience food (Pliner & Hobden, 1992) and thus reduce the urge to buy food on impulse. On the other hand, as suggested by the attribution theory (Kim, Wen, & Doh, 2010; Tse, Sin, & Yim, 2002), individuals may favorably react to the number of customers in or around stores in their consumption decisions (Byun & Mann, 2011). The purpose of this study was, therefore, to empirically test if the relationship between emotions like arousal and pleasure and the urge to buy impulsively are a function of food neophobia and perceived human crowding. The study sampled 338 street food consumers in two southern states in the United States. Results of multiple hierarchical regressions revealed that perceived human crowding moderated the effect of arousal on the urge to buy impulsively, while food neophobia

had no effect. Further discussion and managerial implications of the findings and recommendations for future studies are provided.

Keywords: street food, food neophobia, perceived human crowding, arousal, pleasure, urge to buy impulsively, impulse buying behavior

## Introduction

People are likely to buy impulsively because of stimuli at or near the point-of-purchase (Abratt & Goodey, 1990). Once they are emotionally connected to a product or service after stimulation, consumers feel a sudden, spontaneous urge to buy that they cannot resist. Consumers have become increasingly interested in street food vending as a dining venue. Street food scenes rely on impulse buying to succeed. Because food cues are naturally conveyed to passersby and these cues are often powerful and emotionally appealing, consumers succumb to temptation and act to meet their urgent needs (Geyskens, Dewitte, Pandelaere, & Warlop, 2008). However, few studies have focused on impulsiveness in food consumption.

Interestingly, the results of previous studies of impulse buying are inconsistent on the relationship between emotions and impulse buying even though the relationship appears to be essential. Emotions, both positive and negative, drive impulse purchases. However, in research on impulse buying, positive emotion has received more attention than negative emotion (Amos, Holmes, & Keneson, 2014). The implication is that people would buy on impulse more if under the influence of positive emotions like happiness or pleasure. However, negative emotion also boosts impulse purchases to relieve unpleasant feelings. As a result, due to this offset, research results on the effect of emotions on impulse buying has been inconsistent and unpredictably weak, or the relationship between these two variables may simply be non-significant. According to Amos et al. (2014), more than one-fifth of the studies exploring antecedents of impulse buying reported non-significant effects of emotion on impulse buying: 23% for research on the effect of positive affect and 20% on the negative effect in direction-specific studies. Therefore, our research has sought possible moderators to examine how moderator effects might improve our understanding of these unpredictably weak or inconsistent relationships between a predictor and an outcome variable (Baron & Kenny, 1986).

Most people experience food neophobia to a one degree or another. Food neophobia is the fear of eating new or unfamiliar food and is usually viewed as negative; it may thus buffer the effect of emotions on impulse buying. Perceived crowding may also serve as a moderator for impulse buying because consumers consider crowding as an indicator of popularity. The unique selling format of street foods means consumers can actually observe crowds, and if they see those crowds as positive, they are more likely buy on impulse. Therefore, the researcher considered food neophobia and perceived human crowding as possible moderators to better explain the relationship between emotion and impulse buying.

## **Review of Literature**

A review of related literature helped in conceptualizing study constructs and theorizing the relationships between the constructs. Hypotheses were developed based on the literature.

### ***Food Neophobia***

People may react to food based on personality traits, and their willingness to experience new foods differs accordingly (Pliner & Hobden, 1992). When it comes to food choice, individuals use either a strategy of coping (Beardsworth & Keil, 1997) or they are confident (Sellerberg, 1991); in other words, they are either neophobic or neophilic. Food neophobia is the reluctance to try new and/or novel foods (Pliner & Hobden, 1992). Neophobes are either highly concerned or resistant to foods under uncertain culinary circumstances (Bäckström, Pirttilä-Backman, & Tuorila, 2004). Food neophobia is considered a demotivating factor in consumer food choices (Chen, 2007). It differs from being finicky, or a picky eater, which involves familiar foods, not unfamiliar ones. Food neophobia may be an inborn characteristic, a result of genetic influence, and thus may be difficult to change (Knaapila et al., 2007). On the other hand, food neophobia may be an individual characteristic

affected by culture and society (Veeck, 2010). Such individual traits may change as the situation changes or as the individual experiences different food cultures (Schiffman & Kanuk, 2010).

Food neophobia has been investigated in a variety of food studies, including ethnic/local foods (e.g., Asperin, Phillips, & Wolfe, 2011; de Barcellos, Aguiar, Ferreira, & Vieira, 2009; Kim, Suh, & Eves, 2010), extreme foods (e.g., Veeck, 2010), functional foods (e.g., Tuorila, Huotilainen, Lähteenmäki, Ollila, Tuomi-Nurmi, & Urala, 2008), genetically-modified foods (e.g., Grunert, Bredahl, & Scholderer, 2003), and organic foods (e.g., Chen, 2007). These studies evaluated attitudes, frequency of use, liking, and purchase intentions as linked to food neophobia, but none has focused on impulse buying.

### ***Food Neophobia as a Moderator between Emotion and the Urge to Buy Impulsively***

Referred to as the reluctance to try unfamiliar foods, food neophobia is generally considered a negative, inborn characteristic (Pliner & Hobden, 1992). Some food-related personality traits may act as internal stimuli that trigger buying food impulsively (Sharma, Sivakumaran, & Marshall, 2010). Food neophobia, by definition, would have generally negative effects on food consumption, among them, limited food preferences (Eertmans, Victoir, Vansant, & Van den Bergh, 2005; Veeck, 2010); negative consumer attitudes and the resulting reduced purchase intentions (Asperin et al., 2011; McFarlane & Pliner, 1997); and decreased customer satisfaction (Kim et al., 2010). Food vendors often introduce new cuisines with bold, unique flavors which may not be familiar to many consumers (Gordon Food Service, 2014). Individuals with food neophobia are concerned about the safety of the food they choose (Chen, 2007). Sanitation or health issues regarding street food have often been addressed (Khairuzzaman, Chowdhury, Zaman, Mamun, & Bari, 2014).

The literature suggests that emotion may have a non-monotonic effect on impulse buying. Therefore, introducing neophobia as a moderator for the relationship between emotion and impulse

buying could explain some of the contradictions found in other research and may thus provide a deeper understanding of these mixed results. Food neophobia may thus buffer the effect of emotions on impulse buying. In other words, neophobes can be assumed to have more negative emotional responses to street foods and are less likely to be tempted to immediately buy street foods. To be specific, it is likely that the strength of the relationship between arousal or pleasure and the urge to buy impulsively may not be changed in the low food neophobic group. However, high food neophobia is likely to weaken the effect of emotion on the urge to buy impulsively. Therefore, the following hypotheses are proposed:

**H7:** Food neophobia moderates the relationship between arousal and the urge to buy impulsively.

**H8:** Food neophobia moderates the relationship between pleasure and the urge to buy impulsively.

### ***Perceived Human Crowding***

Perceived crowding involves two concepts: human crowding and spatial crowding (Machleit, Kellaris, & Eroglu, 1994). Human crowding is perceived as the number of people and the number of social interactions in space. Research suggests that human crowding can be a relevant customer choice of food or restaurant choice as well as evaluation of service quality (Mattila & Wirtz, 2008; Noone & Mattila, 2009). Conventionally, crowding is a state of psychological stress caused by the need for more space than the supply is available (Stokols, 1972). Close interpersonal distances may cause insecurity or discomfort (Ozdemir, 2008), creating stress and irritation (Byun & Mann, 2011). On the other hand, crowding can be perceived as a reflection of a business's reputation (Tse et al., 2002). Someone attending a festival or music concert is likely to be disappointed if the place is not crowded. Consumers tend not to mind a queue to experience a product/service they want.

Kotler (1974) has noted that certain components of atmospherics like crowding might preclude buying a product or service. Failure to manage crowding or density may cause people to feel rushed and uncomfortable (Dion, 2004). They are likely to spend less money than they had planned (Harrell, Hutt, & Anderson, 1980). Moreover, people often migrate to alternatives, giving up an original goal for a product/service (Dion, 2004; Jakus & Shaw, 1997). A business must manage crowding; its importance cannot be overstated.

An individual's perception of and response to crowding are influenced by tolerance levels for density, time pressure, prior expectations, and shopping motivation (Eroglu, Machleit, & Barr, 2005), with different expectations about crowding before store visits (Byun & Mann, 2011). However, crowding perceptions are based on more than the number of people in a business, including spatial arrangements of merchandise and the amount of merchandise within the available space (Eroglu et al., 2005).

In other contexts like park and recreation events or public places, studies show that large crowds can draw even more people (e.g., Mowen, Vogelsong, & Graefe, 2003; McClelland & Auslander, 1978). According to the attribution theory, customers believe a crowd in a restaurant indicates a good reputation and high quality food (Kim et al., 2010; Tse et al., 2002). For mobile foodservice, however, the function of the operation is simple, and space is not particularly important because social density, or human crowding, relates more strongly to crowding in public places like restaurants, stores, airports, and libraries than to spatial density (McClelland & Auslander, 1978). Therefore, this study focuses only on perceived crowding as a human situational variable of atmospherics (Turley & Milliman, 2000).

*Perceived Human Crowding as a Moderator among Emotion, the Urge to Buy Impulsively, and Impulse Buying Behavior*

Eroglu and Harrell (1986) probably were the marketing researchers to first argue that crowding can be a positive signal. They introduced the concept of functional density to show the positive side of crowding as goal activation. Pons, Laroche, and Murali (2006) made another attempt to look at the positive side of crowding. More recently, Whiting and Nakos (2008) have confirmed both positive (functional) and negative (dysfunctional) types of crowding in a multicultural context. Based on the literature, perceived crowding appears crucial to understanding the foodservice industry (Kim et al., 2010). In particular, perceived human crowding is important to impulse buying (Mattila & Wirtz, 2008).

Previous studies have reported mixed results on the relationship between emotions and impulse buying (Amos et al., 2014). People are more likely to buy on impulse if they see human crowds as positive. Because of open air selling in busy areas, a number of other customers either in a line to get a vendor's food or around the food vendors to consume the purchased foods are observed by potential consumers. Human crowding may encourage consumers to purchase street foods impulsively due to their perception of high-quality food and good reputation (Kim et al., 2010). Therefore, the researcher considered perceived human crowding as a possible moderator to better explain the relationship between emotion and impulse buying.

The effect of emotion on the urge to buy impulsively appears to vary with the level of perceived human crowding. To be specific, those who are excited or pleased by food sensory stimuli may be more encouraged to buy it on impulse when they see more people around the vendor. On the other hand, when the area around the food vendor appears less crowded to the consumer, the

relationship between potential consumers' excitement or delight and the impulsive desire to buy is likely to lessen. Therefore, the following hypotheses were proposed:

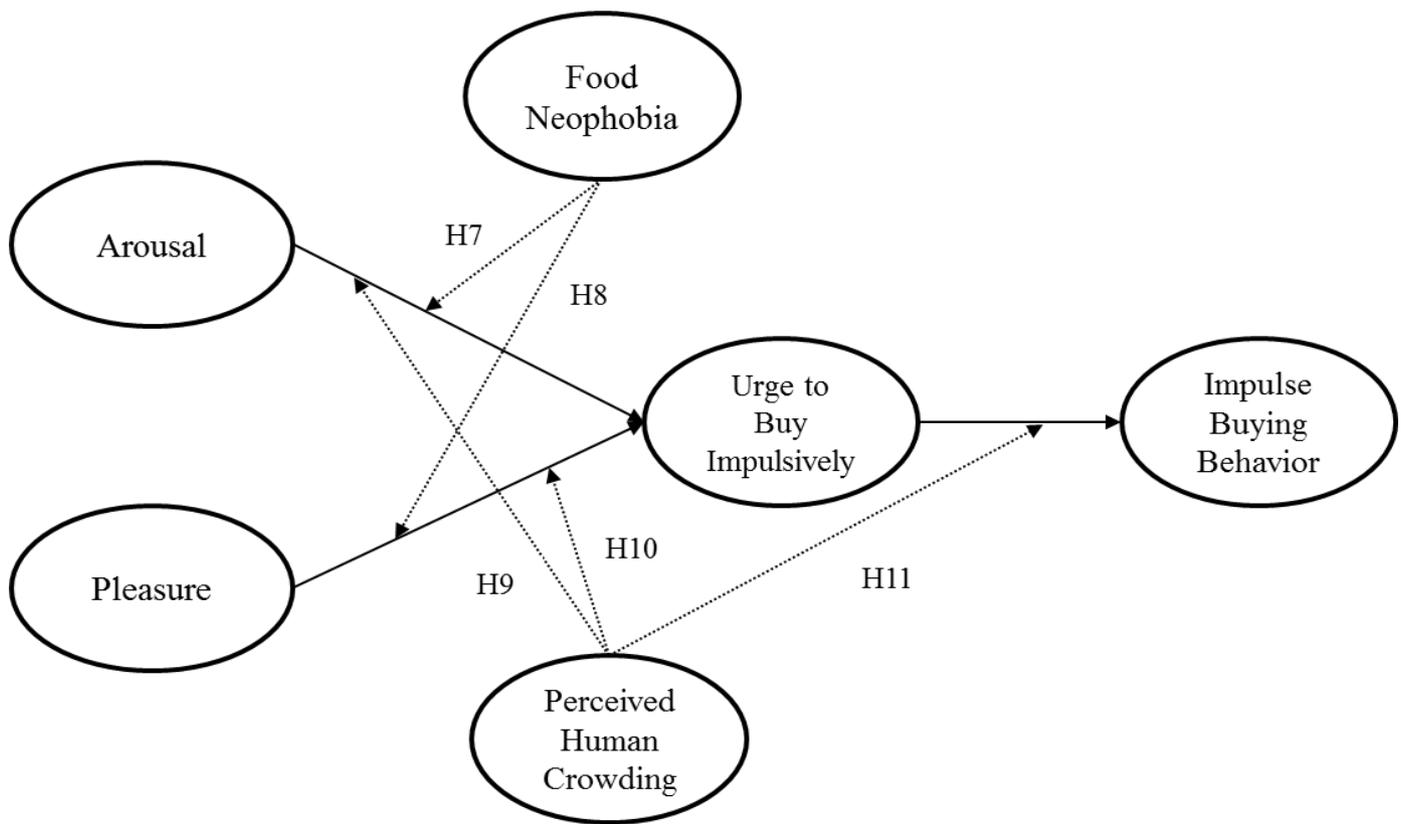
**H9:** Perceived human crowding moderates the relationship between arousal and the urge to buy impulsively.

**H10:** Perceived human crowding moderates the relationship between pleasure and the urge to buy impulsively.

**H11:** Perceived human crowding moderates the relationship between the urge to buy impulsively and impulse buying behavior.

### ***Conceptual Model (Study 2)***

Figure 5.1 displays the conceptual model for Study 2, testing the moderating effects on the relationships proposed in Study 1. Based on the literature, which supports the effect of personal characteristics and atmospheric cues, this study chose two moderating variables: food neophobia and perceived human crowding. Food neophobia measures the likelihood an individual will try new and/or unfamiliar food. Perceived human crowding refers to the degree of congestion of people around a food vendor. Arousal and pleasure dimensions represent emotional responses. Impulse buying intention is measured by the urge to buy impulsively. Actual acts of buying on a whim are measured by impulse buying behavior.



**Figure 5.1 Conceptual Model of Study 2**

## **Methodology**

To empirically achieve the research purpose, the methodology was developed. A selection of the sample for the study, survey instrument development, and data collection procedures are presented.

### ***Sample***

The population of this study was street food consumers in the United States. This study was based on participants' buying experiences of street foods, and thus those who had not purchased food from mobile vendors on the day of data collection were excluded. A convenient sampling method was used to target participants who were 18 years old or older who attended and consumed food at four

selected festivals in Mississippi and Alabama. A total of 361 responses were obtained from consumers attending one of four local/regional festival or events; 338 of these responses were used for analysis after screening data.

### ***Measurement and Instrument Development***

Six constructs were included in this study. Validated multiple-item scales were adopted from previous literature. Arousal and pleasure were measured in relation to how consumers exhibit emotions, driving impulse buying. The items were adopted from four items each used in Ryu and Jang (2007, 2008), and were rated on a 7-point Likert-type scale where 1 is “strongly disagree” and 7 is “strongly agree.” Four items of arousal were “I felt cheerful”, “I felt excited”, “I felt surprised”, and “I felt awake.” Four items to measure pleasure included “I felt happy”, “I felt pleased”, “I felt entertained”, and “I felt delighted.”

The items developed by Beatty and Ferrell (1998) were used to assess the urge to buy impulsively. These items included: “I experienced sudden urges to buy the food I had not planned to purchase”; “I wanted to buy the food even though I had not initially intended to do so”; “I experienced no strong urge to make an unplanned purchase of the food”; and “I felt a sudden urge to buy the food.” Three items developed by Badgaiyan and Verma (2015) measured impulse buying behavior using a 7-point agree-disagree scale. These items were “I ended up buying the food without the original plan”, “I bought the food on impulse”, and “I indulged in impulsively buying the food.”

Two moderators, a personality trait and a situational variable, were used to examine the relationships among emotional responses and the urge to buy impulsively in Study 1. The food neophobia scale (FNS), a 10-item measurement, developed by Pliner and Hobden (1992) evaluated an individual’s food neophobia or propensity/reluctance toward food on a 7-point Likert-type scale (1 = strongly disagree, 7 = strongly agree). The items included “I am constantly sampling new and

different foods”, “I do not trust new foods”, “If I do not know what is in food, I won’t try it”, “I like foods from different countries”, “Ethnic food looks too weird to eat”, “At dinner parties, I will try new foods”, “I am afraid to eat things I have never had before”, “I am very particular about the foods I eat”, “I will eat almost anything”, and “I like to try new ethnic restaurants.”

Another moderator, perceived human crowding, was one dimension of the original scale, perceived crowding, developed by Machleit et al. (1994). Perceived human crowding was measured on a 7-point Likert-type scale. The three items were used to evaluate the extent to which an individual perceive human crowds around mobile vending: “This vendor was crowded with customers”; “This vendor was busy serving customers”; and “This vendor had several customers.” The preliminary questionnaire was reviewed by a panel of experts to check face and content validity and clarity of direction. Any necessary revisions of wording, instructions, or formats were made based on expert feedback.

### ***Data Collection***

Research assistants were employed to undertake a field survey using the consumer intercept method. All key research personnel were required to complete the online IRB training modules. Sites chosen for data collection were festivals and events with several mobile food vendors. Survey invitations including a cover letter and a survey questionnaire were sent via email to organizers or promoters of local or regional festivals and events. Four (two in Alabama and two in Mississippi) expressed an interest in participating in the study. A survey booth or a table was set up on the sidewalk in public areas to provide exposure to the surveys (Gupta & Sharma, 2009). Festival and event attendees walking by the researcher’s booth/table were randomly asked to complete a survey in exchange for a five-dollar gift card to a retailer as a token of appreciation. Survey respondents received a definition of street foods and descriptions of types of street vending (see Appendix B) to

ensure that they understood what comprised street food. Two screening questions were asked to determine eligibility to participate. These items assessed whether a participant was 18 years old or older and if the participant had purchased food from mobile vendors at the festival or event. A total of 361 surveys were returned to the researcher.

## **Data Analysis and Results**

In this section, data analysis procedures and techniques both for preliminary and main data are discussed. Sample characteristics are also described.

### ***Data Screening***

Data entry errors, possible outliers, and missing values were checked before proceeding with data analysis. Five items of food neophobia (items 1, 4, 6, 9, and 10) were reversely coded due to the negatively-keyed sentences. Responses from 361 mobile food consumers were examined for possible outliers and missing responses. *Z*-scores and Mahalanobis  $D^2$  measures detected 23 univariate and multivariate outliers, resulting in their elimination (Hair, Black, Babin, & Anderson, 2010; Tabachnick & Fidell, 2007). The skewness and the kurtosis of the variables were in the ranges between -1 and +1, matching the requirement of a normality test. After mean-centering was conducted to reduce multicollinearity issues, the multicollinearity test also met the requirement of tolerance levels of the variables greater than .10 (Tabachnick & Fidell, 2007). Finally, 27 missing values for main variables measured with multi-items (i.e., food neophobia, perceived human crowding, arousal, pleasure, urge to buy impulsively, impulse buying behavior) were replaced with a mean value of the own measure.

Multiple hierarchical regression analysis using an SPSS software package was employed to test a moderating effect of selected variables. Multiple hierarchical regression generally requires the

ratio of observed variables to sample sizes equal to 1:50 as recommended by Hair and his colleagues (2010), thereby satisfying the criterion. Therefore, 338 surveys were used for further analysis.

### ***Profile of the Sample***

Respondents' demographic characteristics and buying patterns of street food in the study are illustrated in Table 5.1. Most respondents were female ( $n = 247$ ; 73.1%) and White ( $n = 184$ ; 54.4%). The average age was 40.02, with the largest group falling between ages 25 and 34 ( $n = 77$ ; 22.8%), followed by the groups aged both 18 to 24 and 45 to 54 at 20.1% ( $n = 68$ ), respectively. For the highest level of education completed, the largest category was 4-year college/university ( $n = 100$ ; 29.6%), followed by 2-year college ( $n = 86$ ; 25.4%) and high school ( $n = 82$ ; 24.3%). In terms of income levels, respondents earning below \$40,000 on a yearly basis accounted for 51.4% ( $n = 174$ ). More than half of the respondents bought street food once a year ( $n = 186$ ; 55%). Regarding types of street food distribution, a booth was most popular, accounting for 61.8% ( $n = 209$ ), followed by a stand ( $n = 75$ ) and a truck ( $n = 36$ ).

### ***Measurement Model Testing***

Confirmatory factor analysis (CFA) using AMOS 21 was conducted. Overall, fit indices for the measurement model yielded an adequate fit statistic: NFI = .916; TLI = .951; CFI = .957; RMSEA = .053;  $\chi^2 = 500.116$ ;  $df = 258$ ;  $\chi^2/df = 1.938$ ;  $p < .001$ , other than a chi-square test statistic, which is often reported as significant due to strict assumptions of sample sizes and model complexity (Hair et al., 2010). Construct reliability and validity, such as convergent and discriminant validity, were assessed further. Convergent validity was evaluated by checking factor loadings of each measurement item and the average variance extracted (AVE) values of each construct. One item measuring the urge to buy impulsively ("I experienced no strong urge to make an unplanned purchase of the food") was

dropped due to its low factor loading below .60 (Hair et al., 2010), leaving three items for the construct.

**Table 5.1 Profile of Survey Respondents**

Item	Frequency ( <i>N</i> = 338)	Percent (%)
<b>Gender</b>		
Male	87	25.7
Female	247	73.1
Other	2	.6
<b>Age</b>		
18 - 24	68	20.1
25 - 34	77	22.8
35 - 44	53	15.7
45 - 54	68	20.1
55 - 64	46	13.6
65 or older	21	6.2
<b>Race</b>		
White	184	54.4
Black/African American	128	37.9
American Indian/Alaska Native	2	.6
Asian	14	4.1
Native Hawaiian/Pacific Islander	2	.6
Hispanic/Latino	3	.9
Other	2	.6
<b>Education</b>		
Less than high school	3	.9
High school	82	24.3
2-year college	86	25.4
4-year college/university	100	29.6
Postgraduate	65	19.2
<b>Income</b>		
Under \$25,000	87	25.7
\$25,000-39,999	87	25.7
\$40,000-54,999	62	18.3
\$55,000-69,999	24	7.1
\$70,000-84,999	23	6.8
\$85,000-99,999	24	7.1
Over \$100,000	18	5.3
<b>Buying Frequency</b>		
Daily	5	1.5
Weekly	34	10.1
Biweekly	23	6.8
Monthly	86	25.4
Annually	186	55.0
<b>Distribution Type</b>		
Truck	36	10.7
Cart	7	2.1
Booth	209	61.8
Stand	75	22.2
Other	9	2.7

Among the 10-item scale of food neophobia, two items (“I am constantly sampling new and different foods” and “I am very particular about the foods I eat”) were deleted because of the low standardized factor loadings. Finally, factor loadings of the measurement items were equal to or greater than .604 and were significant at  $p < .001$ . Table 5.2 shows measurement items with the standardized loadings of the corresponding scale items.

**Table 5.2 Measurement Items and Standardized Loadings**

Constructs and Scale Items	Standardized Loading <sup>*</sup>
<b>Emotion</b>	
<i>Arousal</i>	
I felt excited.	.845
I felt cheerful.	.837
I felt awake.	.736
I felt surprised.	.711
<i>Pleasure</i>	
I felt happy.	.899
I felt pleased.	.898
I felt delighted.	.843
I felt entertained.	.779
<b>Urge to Buy Impulsively</b>	
I experienced sudden urges to buy the food I had not planned to purchase.	.829
I felt a sudden urge to buy the food.	.815
I wanted to buy the food even though I had not initially intended to do so.	.780
<b>Impulse Buying Behavior</b>	
I bought the food on impulse.	.901
I ended up buying the food even though I had not initially intended to do so.	.833
I indulged in impulsively buying the food.	.774
<b>Food Neophobia</b>	
I do not trust new foods.	.765
I like to try new ethnic restaurants. ( <i>R</i> )	.757
I like foods from different countries. ( <i>R</i> )	.752
Ethnic food looks too weird to eat.	.714
I am afraid to eat things I have never had before.	.708
At dinner parties, I will try new foods. ( <i>R</i> )	.698
If I do not know what is in food, I won't try it.	.652
I will eat almost anything. ( <i>R</i> )	.604
<b>Perceived Human Crowding</b>	
This vendor was crowded with customers.	.916
This vendor was busy serving customers.	.915
This vendor had several customers.	.858

<sup>\*</sup>All factor loadings are significant at  $p < .001$ ; (*R*) denotes a reverse-coded item.

Table 5.3 reports descriptive statistics, composite reliabilities, correlations, and squared correlations of the constructs in this study. The AVEs of all constructs exceeded .50, the cutoff value suggested by Fornell and Larcker (1981). Both factor loadings and AVE values thus confirmed good convergent validity (Bagozzi & Yi, 1988). Composite reliabilities of the constructs ranged from .850 to .925 and were higher than the conventional threshold value of .70, showing adequate internal consistency (Bagozzi & Yi, 1988).

Evidence of discriminant validity exists when no squared correlation exceeds the AVE values of each construct (Fornell & Larcker, 1981), meaning that each construct shares more variance with its own measures than with other constructs (Hair et al., 2010). All constructs except for 'arousal and pleasure' demonstrated discriminant validity. A chi-square difference ( $\Delta\chi^2$ ) test was conducted to further assure the discriminant validity of the exception by comparing  $\chi^2$  of the original measurement model with  $\chi^2$  of the model in which two constructs are correlated or constrained to unity (the constrained model), as suggested by Bagozzi and Yi (1988). Resulting  $\chi^2$  differences were 27.306 ( $df = 1$ ) for 'arousal and pleasure' and were significant at  $p < .001$ . The result of a chi-square difference ( $\Delta\chi^2$ ) test revealed significant larger changes in  $\chi^2$  compared to a difference in degrees of freedom, showing that each of the constrained models has a worse model fit index than the original measurement model (the unconstrained model). This indicates that two constructs (i.e., arousal and pleasure) are distinct and, thus, that discriminant validity of the constructs was achieved.

**Table 5.3 Descriptive Statistics and Associated Measures**

	No. of Items	Mean (Std. dev.)	AVE*	Arousal	Pleasure	Urge to Buy Impulsively	Impulse Buying Behavior	Food Neophobia	Perceived Human Crowding
Arousal	4	5.404 (1.035)	.615	<b>.847<sup>a</sup></b>	.844 <sup>b</sup>	.757	.548	-.402	.061
Pleasure	4	5.717 (1.134)	.733	.712 <sup>c</sup>	<b>.922</b>	.751	.565	-.413	.130
Urge to Buy Impulsively	3	5.173 (1.045)	.653	.573	.564 <sup>d</sup>	<b>.849</b>	.702	-.402	.110
Impulse Buying Behavior	3	5.055 (1.241)	.702	.300	.319	.493	<b>.870</b>	-.334	.179
Food Neophobia	8	2.53 (1.122)	.501	.162	.171	.162	.112	<b>.870</b>	-.078
Perceived Human Crowding	3	4.504 (1.583)	.804	.004	.017	.012	.032	.006	<b>.925</b>

\*AVE = average variance extracted;

<sup>a</sup> Composite reliabilities are along the diagonal in bold;

<sup>b</sup> Correlations are above the diagonal;

<sup>c</sup> Squared correlations are below the diagonal;

<sup>d</sup> The squared correlation of arousal–pleasure was higher than the AVE of arousal. Discriminant validity was proved after fixing the correlation of a pair of arousal–pleasure on unity.

### *Hierarchical Regression Analyses*

Hierarchical multiple regressions were conducted to test five hypotheses in this phase of the study. Before regression analysis was conducted, predictor variables were centered by subtracting the mean score of each variable. According to Tabachnick and Fidell (2007), mean centering allows minimizing multicollinearity among predictor variables when the interaction of predictor variables is entered in the regression equation. For each moderated hierarchical regression analysis, respondents' demographic data (i.e., gender and age) and buying frequency were entered as control variables in the first step. Next, study variables (i.e., arousal, pleasure, food neophobia, and perceived human crowding) were entered in the second step to see the main effect of predictors on outcomes (i.e., the urge to buy impulsively and impulse buying behavior). The interaction terms (i.e., arousal  $\times$  food neophobia, pleasure  $\times$  food neophobia, arousal  $\times$  perceived human crowding, pleasure  $\times$  perceived human crowding, and urge to buy impulsively  $\times$  perceived human crowding) were entered in the final step to capture the moderating effects as stated in Hypotheses 7 to 11.

The standardized regression coefficients ( $\beta$ ) were examined for the individual direct effects of arousal and pleasure on the urge to buy impulsively and of the urge to buy impulsively on impulse buying behavior. Only the moderating effects of food neophobia and perceived human crowding were confirmed if the  $F$ -value (the squared multiple correlation) changes significantly ( $\Delta F$ ) from the second step to the third (Frazier, Tix, & Barron, 2004).

#### *Control Variables*

Demographic factors including gender and age and buying frequency were used as control variables (e.g., Badgaiyan & Verma, 2015; Eysenck, Pearson, Easting, & Allsopp, 1985; Kacen & Lee, 2002; Luo, 2005). One generally held assumption is that women more than men are inclined to buy impulsively (Luo, 2005). Fisher and Dubé (2005) also supported that females are instinctive

shoppers because they are more emotional than males. Younger individuals, especially those under age 35, tend toward impulse buying due to less self-control over emotions than older individuals (Bellenger, Robertson, & Hirschman, 1978; Kacen & Lee, 2002). In the context of foodservice, Han and Ryu (2007) tested gender and age effects in explaining the formation of restaurant patrons' behavioral intentions. Buying frequency is also considered to influence consumer impulse buying behaviors (Han, Morgan, Kotsiopulos, & Kang-Park, 1991).

***The Moderating Effect of Food Neophobia on the Relationship between Arousal and the Urge to Buy Impulsively***

Table 5.4 provides the results of hierarchical regression that tested the moderating effects of food neophobia in the relationship between arousal and the urge to buy impulsively (Hypothesis 7). Gender, age, and buying frequency were entered as control variables in Model 1; however, none was significant. Model 2 indicates that arousal is a significant predictor of the urge to buy impulsively ( $\beta = .729$ ;  $t = 18.502$ ;  $p < .001$ ), as demonstrated in Study 1. Food neophobia also predicted the urge to buy impulsively ( $\beta = -.096$ ;  $t = -2.424$ ;  $p < .05$ ). Including arousal and food neophobia added a significant amount of the variance explained in the urge to buy impulsively ( $\Delta R^2 = .594$ ;  $\Delta F = 242.72$ ;  $p < .001$ ). Finally, the interaction effect of arousal and food neophobia was entered in Model 3; however, it was not statistically significant ( $\Delta R^2 = .004$ ;  $\Delta F = 3.614$ ;  $p = .058$ ). Therefore, Hypothesis 7 was not supported.

**Table 5.4 Moderating Effect of Food Neophobia on the Relationship between Arousal and the Urge to Buy Impulsively**

Variable	Urge to Buy Impulsively								
	Model 1			Model 2			Model 3		
	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>
Constant	.346		1.008	.213		.964	.271		1.219
Gender	.074	.032	.575	-.039	-.017	-.467	-.052	-.022	-.628
Age	-.005	-.008	-.136	.041	.062	1.771	.036	.055	1.552
Frequency	-.097	-.097	-1.752	-.064	-.064	-1.829	-.062	-.062	-1.773
Arousal				.739	.729	18.502***	.723	.713	17.742***
Food Neophobia				-.093	-.096	-2.424*	-.075	-.078	-1.911
Arousal $\times$ Food Neophobia							.052	.073	1.901
<i>R</i> <sup>2</sup> (Adjusted <i>R</i> <sup>2</sup> )	.010(.001)			.604(.598)			.608(.601)		
$\Delta R^2$	.010			.594			.004		
$\Delta F$	1.100			242.720***			3.614		

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

***The Moderating Effect of Food Neophobia on the Relationship between Pleasure and the Urge to Buy Impulsively***

In Model 1, as presented in Table 5.5, three control variables (i.e., gender, age, and buying frequency) were entered, but none of the effects was significant. In Model 2, the urge to buy impulsively was regressed on pleasure and food neophobia. The results showed that pleasure is a significant predictor of the urge to buy impulsively ( $\beta = .707$ ;  $t = 17.717$ ;  $p < .001$ ) as demonstrated in Study 1. Food neophobia was also shown to be a predictor of the urge to buy impulsively ( $\beta = -.110$ ;  $t = -2.736$ ;  $p < .01$ ). By entering these two variables, 57.6% of the additional variance in urge to buy impulsively was explained ( $\Delta R^2 = .576$ ;  $\Delta F = 225.455$ ;  $p < .001$ ). Finally, the interaction effect of pleasure and food neophobia was added in Model 3, but the effect was not significant ( $\Delta R^2 = .001$ ;  $\Delta F = 1.035$ ;  $p = .310$ ). Therefore, Hypothesis 8, which

proposed the moderating effect of food neophobia on the associations between pleasure and the urge to buy impulsively, was not supported.

**Table 5.5 Moderating Effect of Food Neophobia on the Relationship between Pleasure and the Urge to Buy Impulsively**

Variable	Urge to Buy Impulsively								
	Model 1			Model 2			Model 3		
	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>
Constant	.346		1.008	.133		.591	.168		.736
Gender	.074	.032	.575	.019	.008	.228	.010	.004	.117
Age	-.005	-.008	-.136	.009	.014	.393	.006	.009	.250
Frequency	-.097	-.097	-1.752	-.044	-.044	-1.216	-.042	-.042	-1.161
Pleasure				.656	.707	17.717***	.643	.693	16.447***
Food Neophobia				-.107	-.110	-2.736**	-.096	-.100	-2.396*
Pleasure $\times$ Food Neophobia							.026	.042	1.017
<i>R</i> <sup>2</sup> (Adjusted <i>R</i> <sup>2</sup> )	.010(.001)			.586(.580)			.587(.580)		
$\Delta R^2$	.010			.576			.001		
$\Delta F$	1.100			225.455***			1.035		

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

***The Moderating Effect of Perceived Human Crowding on the Relationship between Arousal and the Urge to Buy Impulsively***

Model 2 in Table 5.6 shows that arousal significantly predicted the urge to buy impulsively ( $\beta = .768$ ;  $t = 21.681$ ;  $p < .001$ ), as shown in Study 1. Arousal, together with perceived human crowding, explained an additional 59.1% of the variance in the urge to buy impulsively ( $\Delta R^2 = .591$ ;  $\Delta F = 239.876$ ;  $p < .001$ ). In Model 3, the interaction effect of arousal and perceived human crowding was entered and added a marginal amount of the variance explained ( $\Delta R^2 = .03$ ;  $\Delta F = 26.042$ ;  $p < .001$ ; Frazier et al., 2004) in the urge to buy impulsively.

**Table 5.6 Moderating Effect of Perceived Human Crowding on the Relationship between Arousal and the Urge to Buy Impulsively**

Variable	Urge to Buy Impulsively								
	Model 1			Model 2			Model 3		
	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>
Constant	5.463		15.914***	5.455		24.872***	5.390		25.464***
Gender	.074	.032	.575	-.078	-.033	-.945	-.055	-.024	-.691
Age	-.005	-.008	-.136	.038	.057	1.629	.034	.051	1.504
Frequency	-.097	-.097	-1.752	-.075	-.075	-2.140*	-.063	-.063	-1.853
Arousal				.779	.768	21.681***	.713	.703	19.323***
Perceived Human Crowding				.044	.067	1.887	.103	.155	4.065***
Arousal × Perceived Human Crowding							-.124	-.204	-5.103***
<i>R</i> <sup>2</sup> (Adjusted <i>R</i> <sup>2</sup> )	.010(.001)			.601(.595)			.631(.624)		
$\Delta R^2$	.010			.591			.030		
$\Delta F$	1.100			239.876***			26.042***		

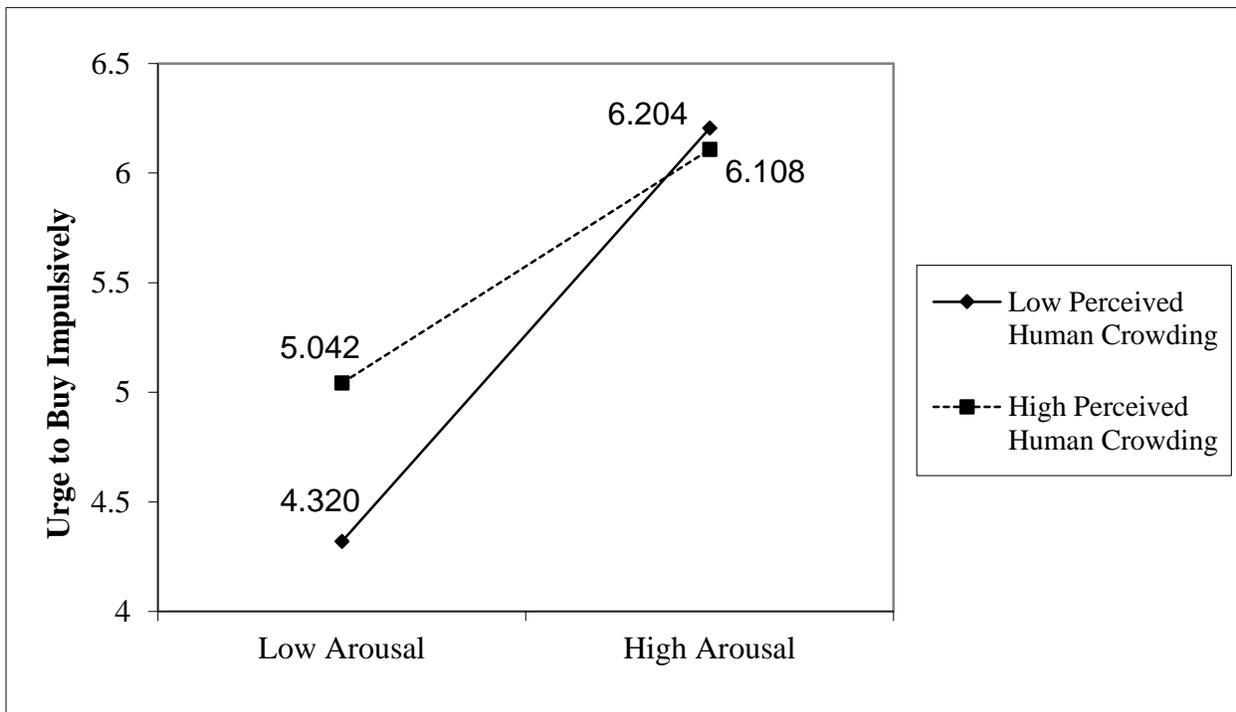
\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

A simple slope test was conducted to further understand the moderating effect of perceived human crowding on the urge to buy impulsively. Following the procedure recommended by Aiken and West (1991), the hierarchical linear model equation was graphically plotted at the conditional value of perceived human crowding. High perceived human crowding was one standard deviation above the mean of perceived human crowding, whereas, low perceived human crowding was one standard deviation below the mean of perceived human crowding.

Figure 5.2 presents the interaction effect of arousal and perceived human crowding. The relationship between arousal and the urge to buy impulsively is strong and clear. Variations in arousal influence the urge to buy impulsively both in low and high perceived human crowding.

The slope is less steep for high perceived human crowding ( $\Delta Y = 1.066$ ) than for low perceived human crowding ( $\Delta Y = 1.884$ ). In high arousal situations, the level of human crowding does not make much difference in the urge to buy impulsively (difference = .096); however, in low arousal situations, the level of human crowding makes a clear difference (difference = .722).

More specifically, when the level of arousal is low, one's urge to buy impulsively decreases more in low perceived human crowding than in high perceived human crowding. The finding implies that individuals who are less aroused feel more urges to buy impulsively when others customers are around a food vendor. Therefore, perceived human crowding reduces the drop of the urge to buy impulsively for low arousal customers, thus supporting Hypothesis 9.



**Figure 5.2 Simple Slope Analysis for the Moderating Role of Perceived Human Crowding in Arousal - Urge to Buy Impulsively**

***The Moderating Effect of Perceived Human Crowding on the Relationship between Pleasure and the Urge to Buy Impulsively***

No significance of control variables was found in Model 1. Model 2 in Table 5.7 shows that the direct effect of pleasure on the urge to buy impulsively was statistically significant ( $\beta = .753$ ;  $t = 20.608$ ;  $p < .001$ ), as demonstrated in Study 1. Pleasure alone explained the additional 56.7% ( $\Delta R^2 = .567$ ;  $\Delta F = 216.91$ ;  $p < .001$ ). As predicted, in Model 3, including the interaction term of pleasure and perceived human crowding added a marginal amount of the variance explained in the urge to buy impulsively ( $\Delta R^2 = .021$ ;  $\Delta F = 17.217$ ;  $p < .001$ ; Frazier et al., 2004). Thus, the hypothesis was tested based on Model 3.

**Table 5.7 Moderating Effect of Perceived Human Crowding on the Relationship between Pleasure and the Urge to Buy Impulsively**

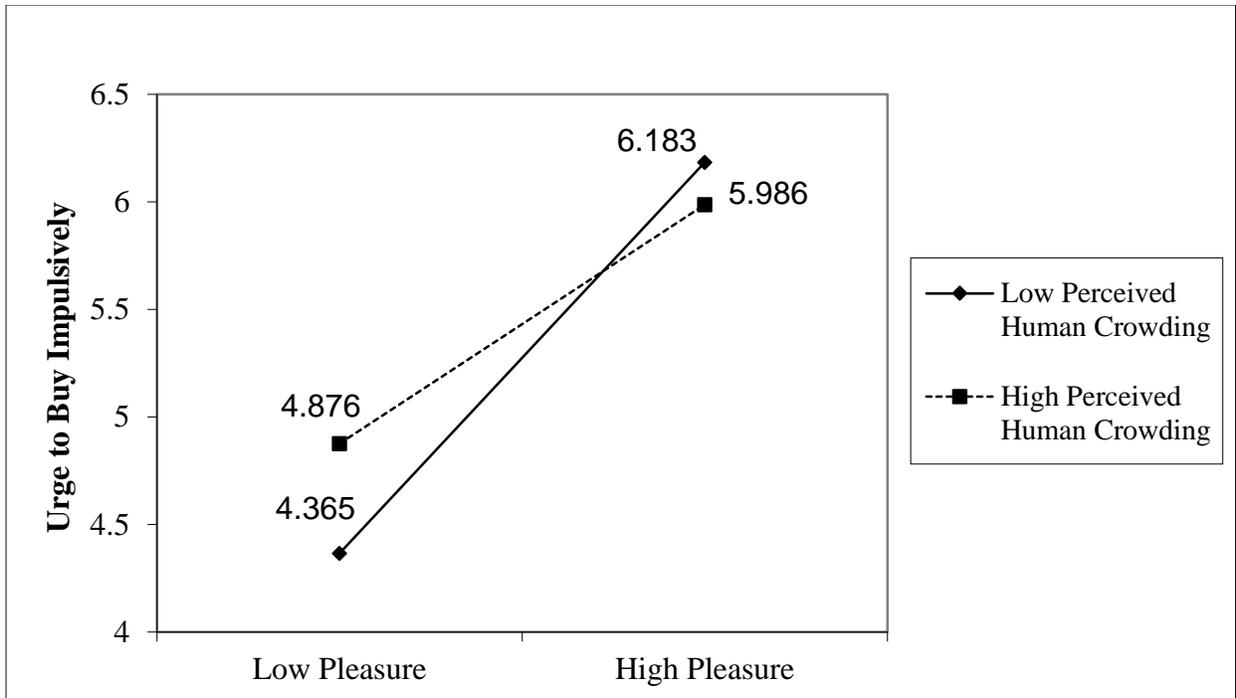
Variable	Urge to Buy Impulsively								
	Model 1			Model 2			Model 3		
	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>
Constant	5.463		15.914***	5.359		23.716***	5.321		24.105***
Gender	.074	.032	.575	-.016	-.007	-.186	.001	.000	.008
Age	-.005	-.008	-.136	.005	.007	.207	.005	.008	.232
Frequency	-.097	-.097	-1.752	-.052	-.052	-1.421	-.044	-.044	-1.242
Pleasure				.699	.753	20.608***	.647	.697	18.284***
Perceived Human Crowding				.010	.015	.420	.054	.082	2.102*
Pleasure × Perceived Human Crowding							-.098	-.168	-4.149***
<i>R</i> <sup>2</sup> (Adjusted <i>R</i> <sup>2</sup> )	.010(.001)			.577(.570)			.598(.591)		
$\Delta R^2$	.010			.567			.021		
$\Delta F$	1.100			216.910***			17.217***		

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

A simple slope analysis was conducted to further understand the moderating effect of perceived human crowding on the urge to buy impulsively. The hierarchical linear model equation was graphically plotted at the conditional value of perceived human crowding (Aiken & West, 1991). High perceived human crowding was one standard deviation above the mean of perceived human crowding, whereas low perceived human crowding was one standard deviation below the mean of perceived human crowding. Figure 5.3 illustrates the interaction effect of pleasure and perceived human crowding on the urge to buy impulsively.

The relationship between pleasure and the urge to buy impulsively is strong. For both low and high perceived human crowding, variations in pleasure have an influence on the urge to buy impulsively. High perceived human crowding has a less sharp slope ( $\Delta Y = 1.110$ ) than that in low perceived human crowding ( $\Delta Y = 1.818$ ). In high pleasure situations, the level of human crowding does not make much difference in the urge to buy impulsively (difference = .197); however, in low pleasure situations, the level of human crowding makes a great difference (difference = .511).

More specifically, when the level of pleasure is low, one's urge to buy impulsively becomes much lower in low perceived human crowding than in high perceived human crowding. The finding can be interpreted that potential consumers who feel less pleasure would have more impulsive urges when food vendors are crowded with other customers. Therefore, perceived human crowding lessens the magnitude of drop of the urge to buy impulsively for the low pleasure group, thus supporting Hypothesis 10.



**Figure 5.3 Simple Slope Analysis for the Moderating Role of Perceived Human Crowding in Pleasure - Urge to Buy Impulsively**

*The Moderating Effect of Perceived Human Crowding on the Relationship between the Urge to Buy Impulsively and Impulse Buying Behavior*

None of the control variables was significant in Model 1. Model 2 in Table 5.8 shows that the urge to buy impulsively was a significant predictor of impulse buying behavior ( $\beta = .696$ ;  $t = 17.713$ ;  $p < .001$ ), as demonstrated in Study 1. Also, perceived human crowding significantly predicted impulse buying behavior ( $\beta = .106$ ;  $t = 2.706$ ;  $p < .01$ ). The urge to buy impulsively and perceived human crowding together explained the additional 50.6% in impulse buying behavior ( $\Delta R^2 = .506$ ;  $\Delta F = 167.805$ ;  $p < .001$ ). Finally, the interaction effect of the urge to buy impulsively and perceived human crowding was added in Model 3 and was statistically significant ( $\Delta R^2 = .014$ ;  $\Delta F = 9.866$ ;  $p < .01$ ). The change in  $R^2$  (.014) was slightly below the suggested effect (Frazier et al., 2004).

**Table 5.8 Moderating Effect of Perceived Human Crowding on the Relationship between the Urge to Buy Impulsively and Impulse Buying Behavior**

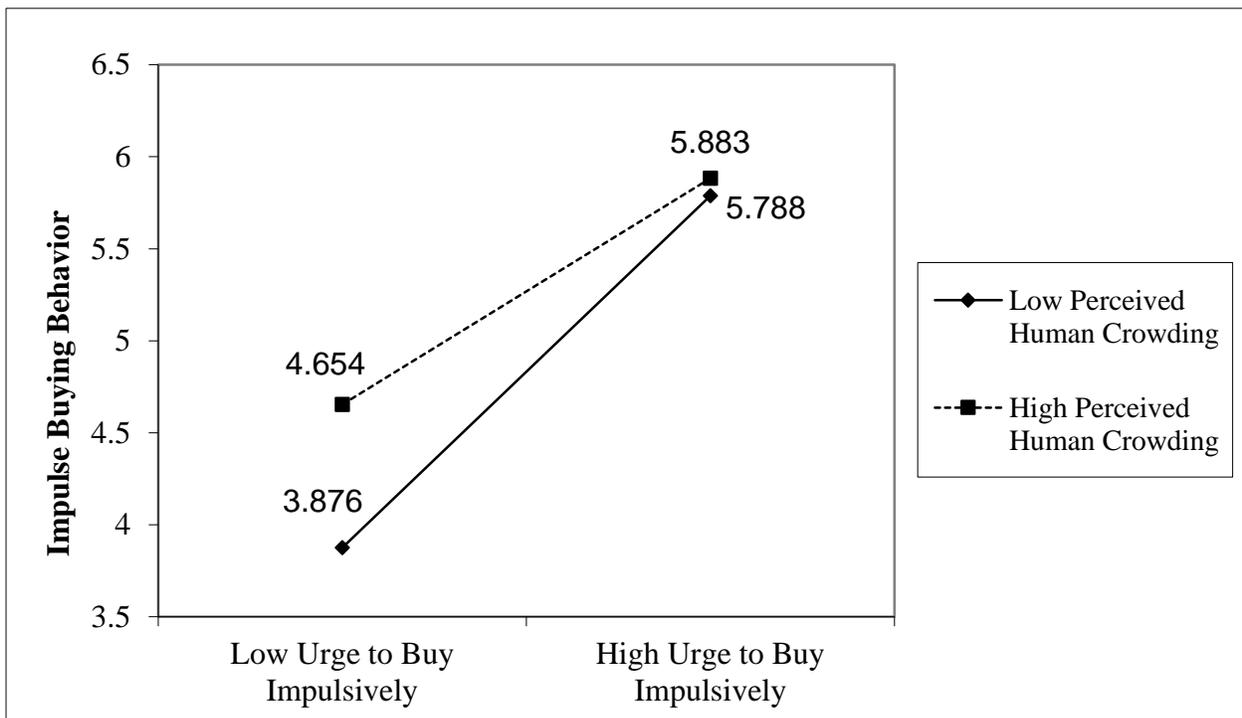
Variable	Impulse Buying Behavior								
	Model 1			Model 2			Model 3		
	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>	<i>B</i>	$\beta$	<i>t</i>
Constant	5.286		12.966***	5.063		17.572***	5.013		17.608***
Gender	.071	.026	.465	-.004	-.001	-.037	-.004	-.001	-.034
Age	-.040	-.051	-.931	-.038	-.049	-1.272	-.036	-.046	-1.197
Frequency	-.052	-.044	-.795	.021	.017	.444	.035	.029	.756
Urge to Buy Impulsively				.824	.696	17.713***	.748	.631	14.393***
Perceived Human Crowding				.083	.106	2.706**	.142	.182	3.988***
Urge to Buy Impulsively × Perceived Human Crowding							-.102	-.154	-3.141**
<i>R</i> <sup>2</sup> (Adjusted <i>R</i> <sup>2</sup> )	.005(-.004)			.511(.504)			.526(.517)		
$\Delta R^2$	.005			.506			.014		
$\Delta F$	.562			167.805***			9.866**		

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

The simple slope analysis was conducted to have better understanding of the moderating effect and to determine if the result may be practically meaningful. As presented in Figure 5.4, linear regression lines were plotted using one standard deviation (Aiken & West, 1991). The relationship between the urge to buy impulsively and impulse buying behavior is strong. An interaction effect of the urge to buy impulsively and perceived human crowding on impulse buying behavior was found. For both low and high crowding situations, impulse buying behavior increases significantly as the urge to buy impulsively increases from low to high levels. The slope is less steep for high perceived human crowding ( $\Delta Y = 1.229$ ) than for low perceived human crowding ( $\Delta Y = 1.912$ ). Regarding the high urge to buy impulsively, the level of human crowding does not make much difference in impulse buying behavior (difference = .095);

however, in situations where the urge to buy impulsively is low, the level of human crowding makes a difference in impulse buying behavior (difference = .778).

More specifically, when the level of urge to buy impulsively is low, one's impulse buying behavior becomes greatly lower in low perceived crowding than in high perceived human crowding. The finding indicates that individuals who feel fewer urges to buy impulsively would be more likely to buy food items on impulse when they perceive many customers around a food vendor. Therefore, perceived human crowding attenuates the relationship between the urge to buy impulsively and impulse buying behavior, thus supporting Hypothesis 11.



**Figure 5.4 Simple Slope Analysis for the Moderating Role of Perceived Human Crowding in Urge to Buy Impulsively - Impulse Buying Behavior**

## Discussion and Implications

Today street food business can be found in nearly every state and major city in the United States. More and more passersby seem to become interested in trying these foods. Like other

goods or services, food choices are complicated and are affected by numerous factors. Personal characteristics may be one of the factors that influence food choices. In addition, street food settings may emphasize the importance of human crowding, driving instant food purchases. Based on the above reasoning, five hypotheses were tested to examine the moderating effects of food neophobia and perceived human crowding in the proposed relationships.

This study expected that food neophobia would moderate the link between arousal and pleasure and the urge to buy impulsively (Hypotheses 7 and 8). The main effect of food neophobia on the urge to buy impulsively was significant, implying that individuals with food neophobia have fewer urges to buy impulsively. Because food neophobia is generally a negative influence that decreases individual food preferences or choices and involvement in food-related activities (Eertmans et al., 2005), one's buying urges may drop. This means that food neophobia is still a crucial factor to consider among food vendors. Unpredictably, none of the moderating effects of food neophobia was found in the proposed relationships. One possible explanation for the result is that relatively high average scores in arousal and pleasure may significantly offset the effects of food neophobia on the urge to buy impulsively (see Table 5.2). In addition, the ongoing argument over the use of the FNS might be another reason for not successfully explaining the moderating effect. Developed by Pliner and Hobden (1992), the scale consists of 10 items including both positive and negative sentences that may measure the opposite end of individual characteristics. In other words, there is no definite border between food neophobia and food neophilia, which is a tendency to accept new/unfamiliar foods. Some researchers have argued about the validity of the scale and large variation of the number of items used in studies (e.g., Ritchey, Frank, Hursti, & Tuorila, 2003; Rubio, Rigal, Boireau-Ducept, Mallet, & Meyer, 2008; Tuorila, Meiselman, Bell, Cardello, & Johnson, 1994). Another possible reason is that

people having no experience with street food were excluded from the study. Because food neophobic consumers generally tend to avoid new food, survey participants with previous experience may not truly represent individuals with food neophobia.

Perceived human crowding does moderate the relationships between arousal and the urge to buy impulsively, pleasure and the urge to buy impulsively, and the urge to buy impulsively and impulse buying behavior. It seems that human crowding has a limited effect in the situation at high levels of arousal, pleasure, and the urge to buy impulsively. To the contrary, as food vendors have more clients, potential consumers who are in low arousal and pleasure may feel stronger urges to buy on impulse. In the same vein, potential consumers with weaker instant buying urges are likely to be encouraged to make an actual impulse purchase when food vendors have more patrons. Therefore, it is important to motivate indifferent and/or not thrilled consumers to buy on impulse by managing crowds.

Similarly to the findings in this study, other studies have also confirmed that perceived human crowding had main effects on various outcomes like attitude, perception, and behavioral intention (e.g., Harrell et al., 1980; Machleit et al., 1994; Mehta, Sharma, & Swami, 2013; Mattila & Wirtz, 2008; Noone & Mattila, 2009). Unlike findings in those studies, Mattila and Wirtz (2008) found that perceived human crowding is influential to impulse buying only when it is together with employee friendliness. In sum, this finding suggests that ensuring both food quality and service quality are likely to increase consumer impulse buying.

Overall, many people around food vendors appear more of a help than a hindrance to impulsive buyers. Mowen et al. (2003) argued that festival and event zones requiring consumers' queueing strategies are connected with negative crowding perceptions. On the contrary, the findings of this study were consistent with previous studies that viewed crowds as a positive

signal for a business (e.g., Eroglu & Harrell, 1986; Pons et al., 2006). Crowding may deliver a message of appealing food and reputation of food vendors evidenced by the attribution theory (Kim et al., 2010; Tse et al., 2002).

Typically, mobile vending has no waiting area (Food Carts Portland, 2015), and thus consumer waits are often unavoidable. For consumers who are already in waiting or delaying situations, making them feel less unhappy or unpleasant during their wait is likely to be especially important (Taylor, 1994). This can be achieved through reducing their queueing perception or operations management such as shifting consumer demands to off-peak periods (Noone & Mattila, 2009). For example, free drink or discount coupons could be distributed to queueing consumers to use for the slower period of the day.

Possibly, human crowding functions to alleviate a potential consumer's concerns or worry about street food, boosting the effect of emotion on the urge to buy impulsively, in turn, on impulse buying behavior. Individuals who are highly aroused and pleased by street food, or individuals who feel strong urges for street food, may be willing to buy it on impulse regardless of the number of other customers. Practitioners may develop strategies for managing waiting in queue lines with emphasis on low arousal and pleasure as well as the low urge to buy impulsively. Sales promotion efforts (Tse et al., 2002) – for example, developing sensory-rich food, distributing a coupon, or offering free samples (Bawa & Shoemaker, 2004; Chandon & Wansink, 2012) – might be initiated to attract crowds, especially those who are in low emotional intensity, and get them queueing up.

### **Limitations and Suggestions for Future Research**

Despite several theoretical and practical implications, the following limitations should be acknowledged in interpreting results. The results may suffer from self-selection bias since

respondents were randomly selected by intercept (Trochim & Donnelly, 2008). The representativeness of a study population is a limitation of this study. Despite a sample collected on four different days, the sample was limited to consumers who bought food from a mobile vendor at a festival or an event during a particular period of time. Survey respondents may respond differently over time. Therefore, using longitudinal data in future studies will enable researchers to establish causal relationships more reliably.

Due to the use of a street intercept survey method, the researcher's accessibility to each data collection site was considered. Consequently, four festivals or events in two states (Alabama and Mississippi) were chosen to collect data from street food consumers. Further, each featured different themes: food, music, exhibitions and/or art crafts. The findings may not apply to other geographical settings and different types of festivals/events or non-festival/event settings.

Survey responses from different themes or features of festivals and events may not be homogeneous. Results from food-oriented types versus other types of festivals and events should be compared to determine meaningful differences in regard to attendees' expectation of or involvement in programs or activities provided at festivals and events. The finding may be useful in shaping appeals to draw different segments of attendees.

Lastly, use of the FNS (Pliner & Hobden, 1992) has not been uniformed in past studies that adopted the scale. This study used eight items after deleting two with low factor standardized loadings, which is not parallel with other studies. Kim et al. (2010) used only six items of the FNS, following the suggestion by Ritchey et al. (2003) that it was more valid in showing the effects of food-related personality traits (i.e., food neophobia and food involvement) on satisfaction and loyalty at a food festival. On the other hand, only five items of the FNS were adopted to measure young children's willingness to try new foods (Rubio et al., 2008). Another

issue related to the FNS is that it contains many culture-specific statements that may need to be adjusted to make it more reliable and usable in various studies (Tuorila et al., 1994). Future studies may be cautious about validity and reliability when using this scale.

Looking closely at the moderating results of food neophobia provides insight to determine if food neophobia may be a function of perceived risk and impulse buying, and not of arousal or pleasure. Food neophobes in general are concerned with the safety of food. By reducing the level of negative concerns of food, consumers may feel less risky about the food they are choosing and further increase their urgent need for food consumption. Future studies may test if food neophobia strengthens the relationship between perceived risk and the urge to buy impulsively.

This study suggests that future research may extend the concepts of impulse buying and crowding in wait management. Specifically, researchers may want to study how long or tolerantly impulsive consumers will wait in a restaurant. Because there is a general consensus that impulsive consumers easily lose self-control, waiting situations are likely to reduce their desires to buy on impulse differently from the findings of this study. Especially, festival and event participants may not be interested in food experience, but rather they want to have more activities and programs. Customer wait or crowding seems to attract other customers to the certain extent, however, extra-long waits in line at or big crowds around food vendors may lead impulsive consumers to turn down buying. Future research could explore the tolerance level for waiting of impulsive consumers by measuring actual waiting time. The finding may help food vendors better understand the point of purchase of consumers in waiting situations, and thus provide strategic guidance to food vendors.

Mobile vending contributes greatly to the success of festivals and events. Most festival and event studies, however, have focused on the effects of programs and activities on participants' satisfaction and behavioral intention. Satisfaction with food vendors and consequent outcomes have not been studied (cf. Kim et al., 2010). Further understanding on those missing links will help street food vendors ensure sustainable businesses by creating repeat patrons.

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## Chapter 6 - Summary and Conclusion

Impulse buying is a commonplace aspect of consumer behaviors and a focal point of any marketing activity (Rook, 1987); however, impulse buying research has been limited in the dining out context despite its great impact on practice and academia. The fundamental question in this study begins with identifying factors that drive people to shop for and buy food on impulse. In the setting of street foods, this study attempted to answer the following research questions:

- 1) In what ways do food-related sensory cues influence both consumer emotion and cognition?
- 2) Do emotion and cognition influence consumers to buy food impulsively? and
- 3) How do individual characteristics and situational variables moderate the effect of emotion on impulse buying?

Based on these research questions, the specific objectives of this study were to investigate the direct effects of sensory cues on arousal and pleasure representing emotion, and perceived risk representing cognition using the heuristic and systematic processing theory. Adopting the dual system model of consumer behavior and ego depletion theory, this study tested the direct effects of arousal, pleasure, and perceived risk on impulse buying. This study also tested the indirect association of sensory cues with the urge to buy impulsively through the mediating effects of arousal, pleasure, and perceived risk. This study further examined the moderating effects of food neophobia and perceived human crowding on the relationship among arousal, pleasure, and impulse buying.

Street food consumers were surveyed at festivals and events in two southern cities of the United States, and data from 361 participants were statistically analyzed using structural

equation modeling and hierarchical multiple regression to test the hypothesized relationships. All research questions were answered.

This chapter consists of four parts. In the first part, the study findings are summarized. In the second part, conclusions are drawn based on the results. Next, implications of the research findings are presented in light of related theories and practices. Limitations of the study and suggestions for future research are presented in the final section of the chapter.

### **Major Findings**

Study 1 investigated the role of emotion and cognition between sensory cues and impulse buying. Arousal and pleasure were used to assess a consumer's emotional responses. Cognition was evaluated by perceived risk. A total of eight proposed hypotheses were analyzed using structural equation modeling. Except for the relationship between sensory cues and the urge to buy impulsively (Hypothesis 1), all the relationships were confirmed as hypothesized. Indirect relationships were tested to further understand the insignificant direct effect of sensory cues on the urge to buy impulsively. As a result, three additional indirect relationships were found between sensory cues and the urge to buy impulsively. In other words, sensory cues showed significant indirect effects on the urge to buy impulsively through arousal, pleasure, and perceived risk. Arousal, pleasure, and perceived risk all functioned as partial mediators. Table 6.1 summarizes the results of hypothesis testing in Study 1.

**Table 6.1 Results of Hypothesis Test in Study 1**

	Hypothesis	Result
H1	Sensory cues are positively related to the urge to buy impulsively.	Rejected
H2a	Sensory cues are positively related to arousal.	Supported
H2b	Sensory cues are positively related to pleasure.	Supported
H3	Sensory cues are negatively related to perceived risk.	Supported
H4a	Arousal is positively related to the urge to buy impulsively.	Supported
H4b	Pleasure is positively related to the urge to buy impulsively.	Supported
H5	Perceived risk is negatively related to the urge to buy impulsively.	Supported
H6	The urge to buy impulsively is positively related to impulse buying behavior.	Supported

In Study 2, five hypotheses were proposed to investigate the moderating effects of food neophobia and perceived human crowding in the relationship between arousal and pleasure as emotion and impulse buying. Hierarchical multiple regression was conducted to test the hypothesized relationships. Results of Study 2 found that perceived human crowding had a significant moderating effect on the relationships between arousal and pleasure and the urge to buy impulsively and between the urge to buy impulsively and impulse buying behavior. To be specific, the effects of emotion on the urge to buy impulsively differed across the level of perceived human crowding. However, the relationship between the urge to buy impulsively and impulse buying behavior was strengthened by perceived human crowding. Table 6.2 reports the results of hypothesis test in Study 2.

**Table 6.2 Results of Hypothesis Test in Study 2**

	Hypothesis	Result
H7	Food neophobia moderates the relationship between arousal and the urge to buy impulsively.	Rejected
H8	Food neophobia moderates the relationship between pleasure and the urge to buy impulsively.	Rejected
H9	Perceived human crowding moderates the relationship between arousal and the urge to buy impulsively.	Supported
H10	Perceived human crowding moderates the relationship between pleasure and the urge to buy impulsively.	Supported
H11	Perceived human crowding moderates the relationship between the urge to buy impulsively and impulse buying behavior.	Supported

## **Conclusions and Implications**

### ***Direct and Indirect Relationship between Sensory Cues and the Urge to Buy***

#### ***Impulsively***

A theoretical link between sensory cues and impulse buying has not been fully articulated in the literature. A result of the direct effect of sensory cues on the urge to buy impulsively showed no statistical significance. Despite extensive food literature in relation to emotion and cognition (e.g., Byrnes & Hayes, 2013), the roles of emotion and cognition are relatively absent in the relationship between sensory cues and impulse buying. The indirect effect became significant when the direct effect was estimated together with arousal and pleasure as emotion and perceived risk as cognition as possible mediators. It indicated that the relationship between sensory cues and the urge to buy impulsively can be better explained by arousal, pleasure, and perceived risk. The finding provides a clearer and more comprehensive explanation of the process of how sensory cues lead consumers to the status of urge to buy impulsively. Findings of this study that consumers buy things on impulse when affected by emotion are in agreement with

previous literature (Aouinti, Mansali, & Zghal, 2013; Li, 2004). Cognition such as perceived risk also influenced consumer impulse buying of food, although cognition had less effect on impulse buying than emotion had. This study confirmed that human senses affect emotion such as arousal and pleasure, more than cognition, similar to the findings in previous research (e.g., Hultén, Broweus, & van Dijk, 2009; Morrin & Chebat, 2005). Overall, this study found that the effect of sensory cues on the urge to buy impulsively through an emotional state of a potential consumer was greater than the effect of sensory cues on the urge to buy impulsively through a cognitive state of the consumer. In summary, the study found that sensory-rich foods capturing basic human senses including smell, sound, and appearance are positively related to the urge to buy impulsively through arousal, pleasure, and perceived risk. Mobile food vendors wishing to enhance consumer arousal and pleasure in addition to reducing the level of concern with food need to infuse food with positive sensory characteristics such as good smells, presentation, and sounds (e.g., sizzling meat on the grill or popping popcorn). In addition, menu descriptions of food items, calories, or taste would help consumer risk reduction of street food.

### ***Relationship between Sensory Cues and Emotion and Cognition***

Sensory cues were a significant predictor of emotion and cognition, which is consistent with previous findings (Chang, Eckman, & Yan, 2011; Hultén, Broweus, & van Dijk, 2009; Morrin & Chebat, 2005). Arousal and pleasure represented emotion while perceived risk represented cognition. In particular, sensory cues had a positive relationship with arousal and pleasure and a negative relationship with perceived risk. Food sensory cues were found to influence favorable emotional responses that make consumers feel excited and happy. Further, sensory cues played a role of risk reduction that consumers perceive regarding street food. Therefore, street food consumers who are exposed to food-related sensory cues are likely to

exhibit favorable feelings such as arousal and pleasure. Those consumers are also likely to perceive fewer risks relating to street foods because information through sensory cues may function to alleviate their anxiety and concern. Therefore, mobile restaurant owners must highlight food characteristics using sensory cues such as ear-catching cooking sounds, pleasant smells, and eye-opening presentation to elicit potential consumers' surprise and joy and to ensure the safety of food.

### ***Relationship between Emotion and Cognition and the Urge to Buy Impulsively***

Both emotion and cognition were important predictors of the urge to buy impulsively. This study used arousal and pleasure to assess emotional responses and perceived risk to evaluate cognitive responses. To be specific, arousal and pleasure were positively associated with the urge to buy impulsively, and perceived risk was negatively associated with the urge to buy impulsively. Most studies have examined behavioral intention and actual behavior (e.g., Mitchell, 1999; Ryu & Jang, 2007, 2008) in relation to emotion and cognition. The current study is one of the early studies that found the effects of emotion and cognition on the urge to buy impulsively as a specific type of buying format (Kaur & Singh, 2007). Further, unlike Lee and Yi's (2008) study, this study supported perceived risk as a significant predictor of the urge to buy impulsively. When aroused and pleased, people may feel immediate needs to buy street food. Similarly, when people perceive less risk associated with street foods, their "buy now" intention tends to increase. Therefore, street vendors should consider ways to elevate potential consumers' excitement and enjoyment and, at the same time, minimize their anxiety of food.

### ***Relationship between the Urge to Buy Impulsively and Impulse Buying Behavior***

There is a clear conceptual distinction between the urge to buy impulsively and impulse buying behavior as illustrated in Beatty and Ferrell's (1988) study. According to Rook and

Fisher (1995), the urge to buy impulsively is a desire to “buy now” in the encounter of a product or service. On the other hand, impulse buying behavior is an act of buying after experiencing a sudden, immediate urge. The felt urge is not always acted upon because people use strategies to control the urge (Hoch & Loewenstein, 1991; Rook & Fisher, 1995). Therefore, the urge to buy impulsively is obviously different from the actual impulse action. Consistent with previous literature (e.g., Beatty & Ferrell, 1998), this study supported that the urge to buy impulsively precedes impulse buying behavior. This study found that the effect of the urge to buy impulsively on impulse buying behavior can be further strengthened by perceived human crowding. Consumers with strong buying urges will be more likely to make actual purchases of food no matter how crowded a food vendor is. On the other hand, individuals with weaker buying urges may be motivated to buy food items impulsively when food vendors are crowded with customers. Overall, developing strategies to make prospective consumers feel urges to buy may ensure their instant buying. Food vendors may use personalized promotional materials, such as flyers and printout menus, to increase consumer urges (Marinova, Murphy, & Massey, 2002). Attracting other customers and getting them around the vendor will increase the chance for the individuals who have low buying urges to result in actual purchases on impulse. Such buying desire or urge might be felt by encountering a product or service. Providing a free sample of a sensory-rich food or money-saving coupons might be helpful for greater impulsive urges to buy, which in turn facilitates actual buying of street food impulse (Bawa & Shoemaker, 2004; Chandon & Wansink, 2012).

### ***Interaction Effect of Emotion and Food Neophobia on the Urge to Buy Impulsively***

The study posited that food neophobia would moderate the association between emotion and the urge to buy impulsively. Food neophobia, however, did not have a moderating effect.

The result implies that food neophobia may not necessarily reduce positive emotions such as arousal and pleasure and the urge to buy impulsively, even if people who feel aroused or pleased act upon their urge to buy street food without forward planning. The result suggests that there might be validity issues of the measurement items of food neophobia (e.g., Rubio, Rigal, Boireau-Ducept, Mallet, & Meyer, 2008; Tuorila, Meiselman, Bell, Cardello, & Johnson, 1994) and offset effects on the urge to buy impulsively because of high average mean scores of arousal and pleasure.

***Interaction Effect of Emotion and Perceived Human Crowding on the Urge to Buy Impulsively and Impulse Buying Behavior***

Perceived human crowding moderated the relationship between arousal and pleasure as emotion and the urge to buy impulsively, which in turn influenced impulse buying behavior. Overall, high volumes of customers are likely helpful in attracting potential consumers. To be specific, consumers in low levels of arousal or pleasure may feel stronger urges to buy on impulse in the situation of larger crowds. Further, potential consumers with weaker instant buying urges are likely to be encouraged to make an actual impulse purchase when food vendors have more customers. This might be because a large group of customers reflects the vendor's reputation. The finding is consistent with previous research using the attribution theory (Kim, Wen, & Doh, 2010; Tse, Sin, & Yim, 2002). On the other hand, in the state of high arousal, pleasure, and urge to buy impulsively, people were likely to feel their instant urges to buy no matter how crowded a food vendor was. Therefore, it is important for food vendors to manage crowds to engage indifferent and/or not thrilled consumers in impulse buying. Often consumer waits are no exception because waiting areas are mostly not provided by food vendors (Food Carts Portland, 2015). Therefore, consumers already in a queue or with service delays may need

special treatment such as reducing their wait perception (Taylor, 1994). Shifting buying demands to slow periods is another means to retain consumers (Noone & Mattila, 2009). Sales promotion might persuade a potential consumer to get queueing up at street vendors and thus buy their food (Tse et al., 2002). With emphasis on low arousal and pleasure as well as low urge to buy impulsively, practitioners may develop sensory-rich food, distributing a coupon to make them buy, or offering free samples (Bawa & Shoemaker, 2004; Chandon & Wansink, 2012).

### **Limitations and Suggestions for Future Research**

Despite its multiple contributions, this study also has some limitations which future research may address. Because respondents were conveniently intercepted, a sample bias may have occurred which decreases the ability to generalize the findings to other consumer groups (Trochim & Donnelly, 2008). A potential gender bias may be presented since the majority of the respondents were females (> 70%).

This study used cross-sectional data. Because the study population was surveyed at a defined time, the response may change over time. Due to the convenience of access to each site and the number of street food vendors available at the events, data were collected only at four festivals or events held in two southeastern states. Thus, the findings cannot be generalized to other geographical settings and different types of festivals/events or non-festival/event settings.

Another limitation is related to design of a survey questionnaire. It would be worthwhile to capture differences among impulse buying types, such as pure, reminder, suggestion, and planned impulse buying. Asking about a specific type of impulse buying that respondents made may allow researchers and practitioners to detect what truly puts consumers in an action of impulse buying. These results would help identify specific marketing strategies to increase consumer impulse buying.

A single item scale may not be appropriate to measure each sub-dimension of sensory cues and perceived risk due to the plausible threats to construct validity and content validity. Future researchers should use multiple items to measure each sub-dimension of the concepts (Churchill, 1979).

Since the food neophobia scale (Pliner & Hobden, 1992) involves many different contexts (daily- and culture-specific statements) and measures the opposite ends (i.e., food neophobia and neophilia), items are selected differently in studies. This study used eight out of ten items; however, five items were used in Rubio et al. (2008), and six items were used in Kim et al. (2010) and Ritchey, Frank, Hursti, and Tuorila (2003). This should be used with caution (Tuorila et al., 1994).

The moderating effect of food neophobia in the relationship between emotion and impulse buying was insignificant. It is assumed that food neophobia may function between perceived risk and impulse buying. Because food neophobia explains an individual's negative concerns with food, the level of consumers' risk perception and their impulse buying tend to be facilitated by food neophobia. Further, food neophobes generally dislike to explore new or unfamiliar food and their involvement in food is low (Eertmans et al., 2005), so they may not visit food-oriented festivals and events. Because festival and event attendees with no experience with street food were disqualified for the survey, this study may have only included food neophilic individuals. Therefore, survey respondents may not clearly articulate their thoughts on food neophobic tendency.

Crowding could be a positive result of a restaurant's fame (Tse et al., 2002). To the contrary, big crowds or long waits in line at food vendors might let impulsive consumers avoid buying situations. Because impulsive consumers easily lose self-control, waiting situations tend

to reduce their urgent buying desires (Dion, 2004), unlike the study findings. Therefore, future studies may consider exploring how tolerant impulsive buyers would be by measuring their actual waiting time in consumption situations. Rather than measuring crowding perception, knowing an actual waiting time is likely to provide industry practitioners with clearer operational guidance.

Despite its contribution, mobile food vending at festivals and events is under-researched. Satisfaction with food vendors and behavioral outcomes such as patronage or revisit intention are yet to be explored (cf. Kim, Suh, & Eves, 2010). Understanding consumer needs and evaluations will help street food vendors make marketing decisions.

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## **Appendix A - Survey Invitation Letter**

October ##, 2015



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

Dear Participants,

First and foremost, thank you for your participation.

We ask that you respond to a short survey on how the senses affect impulse buying of food from booths and/or trucks such as what you see around you. We are interested in whether unfamiliarity with the food and the crowds in this area affect impulse buying of street food. The goal of our research study is to provide small business owners with meaningful insights into how they can better market to their customers.

Your completion of the survey is essential to the success of this research. Participation in this survey is strictly voluntary. You must be at least 18 years old to participate. We are not aware of any risks and discomfort you may experience when completing this survey. You may refuse to participate or stop answering the survey at any time. Returning the completed questionnaire indicates your willingness to participate.

It should take about 10 minutes to complete this survey. There are no right or wrong answers, so just answer the questionnaires based on your true feelings and best judgments. All responses and any personal information shared with us will remain strictly confidential and anonymous. No individual responses will be shared. Only aggregate responses will be reported. A summary of results will be available on K-State research exchange (<http://krex.k-state.edu/dspace/>) when the study is finalized. To thank you for your help, a \$5 retail gift card will be given to individuals who complete the survey.

This study has been approved by the committee for Research Involving Human Subjects (IRB#7890) on September 29, 2015 at Kansas State University. If you have any questions regarding this research, please feel free to contact Dr. Carol W. Shanklin at (785) 532-3215 or Juwon Choi at (601) 266-4650. For questions about your rights as a participant or the manner in which the study is conducted, you may contact Dr. Rick Scheidt, Chair of the Committee on Research Involving Human Subjects at (785) 532-3224, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506.

Again, thank you for your cooperation and contribution to this study. Please retain this cover letter should you wish to contact either of us or KSU Research Compliance Office.

Sincerely,

Juwon Choi, Ph.D. Candidate  
Dept. of Hospitality Management  
Kansas State University

Carol W. Shanklin, Professor  
Dept. of Hospitality Management  
Kansas State University

## Appendix B - Survey Questionnaire

### Survey Description:

We are conducting research on factors influencing consumers' decision to buy street foods. The specific purpose of the research is to determine if sensory cues influence impulse buying of street foods. We also want to see if unfamiliarity with the type of food and the crowding around you affects impulse buying. Our goal is to provide small business owners with a better understanding of who buys their foods and give them meaningful insights into how they can better market to their customers.

### Survey Instructions:

Some questions may look similar, but each question was designed to measure different things. So, please respond to **all the questions**. There are no right or wrong answers. Please answer the questions based on your true feelings and best judgment.

#### Definition:

Street foods are ready-to-eat foods and beverages prepared and/or sold from mobile trucks, motorized or non-motorized carts, booths, or stands. Street foods are available at festivals and events such you are participating today.

#### Special Instructions:

Please remember **one food you bought from street vendors that appealed to you the most during this festival/event.**

Please specify the NAME of food: \_\_\_\_\_

Was this food that you had INTENDED to buy **before** you came to this festival/event?

Yes       No

Then respond to each question based on this particular food throughout the survey.

## SECTION I: SENSORY CUES

**INSTRUCTIONS:** The following statements ask you to evaluate the sensory cues of the food sold from street vendors during this festival/event. Please indicate the level of agreement with each statement by circling the number on the scale.

Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Neutral 4	Somewhat Agree 5	Agree 6	Strongly Agree 7				
				←	←	←	→	→	→	
<u>The food</u> smelled good.				1	2	3	4	5	6	7
<u>The food</u> looked nice.				1	2	3	4	5	6	7
<u>The food</u> generated appealing sounds as it cooked <i>(e.g., 'sizzling' meat on the grill, 'popping' popcorn, 'boiling' soup, 'pouring' oil into the pan, a tea kettle 'whistling').</i>				1	2	3	4	5	6	7

## SECTION II: EMOTIONS

**INSTRUCTIONS:** The following statements ask how you feel about the food sold from street vendors during this festival/event. Please indicate the level of agreement with each statement by circling the number on the scale.

Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Neutral 4	Somewhat Agree 5	Agree 6	Strongly Agree 7				
				←	←	←	→	→	→	
<b>When experiencing <u>the food</u> through my senses (smell, vision, and sound), .....</b>										
I felt cheerful.				1	2	3	4	5	6	7
I felt excited.				1	2	3	4	5	6	7
I felt surprised.				1	2	3	4	5	6	7
I felt awake.				1	2	3	4	5	6	7
I felt happy.				1	2	3	4	5	6	7
I felt pleased.				1	2	3	4	5	6	7
I felt entertained.				1	2	3	4	5	6	7
I felt delighted.				1	2	3	4	5	6	7

### SECTION III: PERCEIVED RISK

**INSTRUCTIONS:** The following statements ask about whether you see any risk in the food sold from street vendors during this festival/event. Please indicate the level of agreement with each statement by circling the number on the scale.

	Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Neutral 4	Somewhat Agree 5	Agree 6	Strongly Agree 7
	Strongly Disagree			Neutral	Strongly Agree		
<b>I worried that .....</b>	←	←	←		→	→	→
<u>the food</u> would not taste as good as I thought it would.	1	2	3	4	5	6	7
my friends and relatives will think more highly of me if I buy <u>the food</u> .	1	2	3	4	5	6	7
<u>the food</u> fits well with my image.	1	2	3	4	5	6	7
eating <u>the food</u> would cause danger to my health or safety.	1	2	3	4	5	6	7
I would pay a competitive price for <u>the food</u> .	1	2	3	4	5	6	7

### SECTION IV: THE URGE TO BUY IMPULSIVELY

**INSTRUCTIONS:** The following statements ask about your urge to impulsively buy the food sold from street vendors during this festival/event. Please indicate the level of agreement with each statement by circling the number on the scale.

	Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Neutral 4	Somewhat Agree 5	Agree 6	Strongly Agree 7
	Strongly Disagree			Neutral	Strongly Agree		
	←	←	←		→	→	→
I experienced sudden urges to buy <u>the food</u> I had not planned to purchase.	1	2	3	4	5	6	7
I wanted to buy <u>the food</u> even though I had not initially intended to do so.	1	2	3	4	5	6	7
I experienced no strong urge to make an unplanned purchase of <u>the food</u> .	1	2	3	4	5	6	7
I felt a sudden urge to buy <u>the food</u> .	1	2	3	4	5	6	7

## SECTION V: IMPULSE BUYING BEHAVIOR

**INSTRUCTIONS:** The following statements ask you about the food you bought from street vendors during this festival/event. Please indicate the level of agreement with each statement by circling the number on the scale.

Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Neutral 4	Somewhat Agree 5	Agree 6	Strongly Agree 7				
				Strongly Disagree	Neutral	Strongly Agree				
				← ← ←	→ → →					
I ended up buying <u>the food</u> even though I had not initially intended to do so.				1	2	3	4	5	6	7
I bought <u>the food</u> on impulse.				1	2	3	4	5	6	7
I indulged in impulsively buying <u>the food</u> .				1	2	3	4	5	6	7

## SECTION VI: FOOD-RELATED PERSONALITY TRAITS

**INSTRUCTIONS:** The following statements refer to how you think of new and/or unfamiliar food. Please circle the most appropriate response for each item.

Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Neutral 4	Somewhat Agree 5	Agree 6	Strongly Agree 7				
				Strongly Disagree	Neutral	Strongly Agree				
				← ← ←	→ → →					
I am constantly sampling new and different foods.				1	2	3	4	5	6	7
I do not trust new foods.				1	2	3	4	5	6	7
If I do not know what is in food, I won't try it.				1	2	3	4	5	6	7
I like foods from different countries.				1	2	3	4	5	6	7
Ethnic food looks too weird to eat.				1	2	3	4	5	6	7
At dinner parties, I will try new foods.				1	2	3	4	5	6	7
I am afraid to eat things I have never had before.				1	2	3	4	5	6	7
I am very particular about the foods I eat.				1	2	3	4	5	6	7
I will eat almost anything.				1	2	3	4	5	6	7
I like to try new ethnic restaurants.				1	2	3	4	5	6	7

## SECTION VII: PERCEIVED HUMAN CROWDING

**INSTRUCTIONS:** The following statements refer to how crowded it was around the food vendor. Please circle the most appropriate response for each item.

Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Neutral 4	Somewhat Agree 5	Agree 6	Strongly Agree 7				
				←	←	←	→	→	→	
This vendor was crowded with customers.				1	2	3	4	5	6	7
This vendor was busy serving customers.				1	2	3	4	5	6	7
This vendor had several customers.				1	2	3	4	5	6	7

## SECTION VIII: INFORMATION ABOUT YOURSELF

**INSTRUCTIONS:** Please place a mark in the category that describes you best for the following questions.

1. What is your gender?                       Male       Female       Other
2. What is your age?                      \_\_\_\_\_ years old
3. What is your race/ethnicity?
  - White       Black/African American       American Indian/Alaska Native
  - Asian       Native Hawaiian/Pacific Islander       Hispanic/Latino
  - Other, please specify: \_\_\_\_\_
4. What is the highest level of education you have completed?
  - Less than high school       High school       2-year college
  - 4-year college/university       Postgraduate (i.e., master's or doctoral degree)
5. Which category describes your total income level, before taxes?
  - Under \$25,000       \$25,000-\$39,999       \$40,000-\$54,999
  - \$55,000-\$69,999       \$70,000-\$84,999       \$85,000-\$99,999       Over \$100,000
6. Where was the food your response to the survey based bought?
  - Truck       Cart       Booth       Stand       Other, please specify: \_\_\_\_\_
7. How often do you buy street foods on average?
  - Daily       Weekly       Biweekly       Monthly       Annually

**Thank you so much for taking your time to complete the survey. 😊**