

**INTERRUPTION OF AN IMMERSIVE EXPERIENCE
IN AN ETHNIC RESTAURANT**

by

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Abstract

The service industry has evolved towards experience immersion, representing a viable strategy for long-term sustainability of food service – one of the top five industries providing the highest employment across Canada. This topic is explored from two perspectives, (1) the context of ethnically-themed restaurant operations, and (2) cognition as related to the attention of diners to aspects of their restaurant experience and effects of distraction on these attentional processes. This study investigates whether distraction by personal electronic devices (PEDs) reduces diners' attention to their experience.

The hypothesis was tested across two interrelated studies. Study One is comprised of qualitative work to develop a bank of questionnaire items that assess the range of content and a scaling model for the dependent variables assessing diners' attention. Study Two investigates the dimensionality of the items comprising the dependent measures. Results suggest that, rather than a distraction, PED usage might enhance diners' sensory immersive experience.

Keywords: Attention, cognitive load, distraction task, ethnic restaurant, experience economy, experience memorability, fine dining, immersive multisensory perception, perceptual load, personal electronic device, working memory.

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Introduction

This Introduction is organized into two parts to represent two perspectives on the cognitive effects of distraction on diners' immersive experiences in an ethnically themed restaurant: The first perspective sets the context for this research through a review of the setting in which immersive restaurant experiences occur in the new experience economy; the second perspective examines the likely the role of cognition in diners' experiences with a special emphasis on the cognitive effects of distraction on cognitive processes. As will be seen, the literature from cognitive science has a considerable amount to say about how diners will experience an immersive restaurant experience, and how distractions might have an effect in disrupting that experience. At the end of the Introduction a hypothesis is presented that brings together the literature that is introduced in this section. This hypothesis, which is subsequently tested through two interrelated studies, summarizes the likely effect of distraction on diners' immersive experience within an ethnically themed restaurant.

Context: The Importance of the Experience Economy to Entrepreneurial Business

The "experience economy" can be described on a historic timeline depicting the evolution of the economy from commodities to goods, services, and finally, the marketing, packaging, and sale of experience wrought immersive (Pine II & Gilmore, 1998). It is evident that experience immersion is becoming ever present in the economy at large, and as the human experience of "reality" and the ways that humans interface with information is ever increasingly altered by information and virtual technology, goods and services must and will change to accommodate this technological revolution (Pine II & Gilmore, 1998; Thon, 2008). Therefore, the evolving economy requires entrepreneurs and businesses to innovate on marketing these newly designed interactive service-products beyond promoting goods and services to focusing on

products-service positioning and price point analysis for packaged immersive experiences. For restaurants, this can mean exploring ways to stimulate multiple sensory modalities, focusing them on themes, motifs and sensations to create a comprehensive experience that allows customers to feel immersed into the restaurant brand; be it an adventure or educational exploration (e.g. Rainforest Cafe), a philosophical or existential query (e.g. Cafe Ke'ilu) or the cultural and ethnic origin of the faire (e.g. Shiraz Café and Restaurant).

Context: Experience Immersion versus Personal Electronic Devices¹

Experience immersion at independent restaurants may seem to some to be a subjective concept with indeterminate material impacts on businesses and industry. A growing body of literature makes the case for memorability via immersion leading to repeat patronage (e.g. Ferreira & Teixeira, 2013). (The theoretical basis of memorability via immersion will be discussed in more detail in the Introduction section on Cognition.) Experience immersion can increase brand loyalty through creating memorable experiences. The result should be a more profitable and successful restaurant business.

Experience immersion is one way to increase economic experience. Economic experience is defined as, “an experience occurs when a company intentionally uses services as the stage, and goods as props, to engage individual customers in a way that creates a memorable event,” (Pine II & Gilmore, 1998). While the classic economic offerings - commodities, goods, and services - are external to the buyers, experiences are inherently personal, existing only in the mind of an individual who has been engaged on an emotional, physical, intellectual, or even spiritual level. Some businesses have even taken this era as an opportunity to pursue a

¹ For a biography of Shiraz Café and Restaurant owner, Reza Akbari, see Appendix A.

counterintuitive approach to experience immersion, offering environs such as dining in the dark – a sensory deprivation experience designed to heighten the gustatory senses (e.g. O.NOIR, Montreal & Toronto; Dark Table, Vancouver). The latest research suggests that it is the emotions aroused, not the personal significance of the event, which makes such events easier to remember. By employing these concepts, the experience economy can create a greater impact on the stage of customer emotion and feeling. Studies of experience immersion in independent full-service restaurants is certainly research worthy.

Pine II and Gilmore (1998) epitomize the move toward the experience economy in the iconic birthday product that has transitioned from baking ingredients (commodity) to cake (product) to party (service) to party place (experience) over time. Although parents (primarily mothers, initially) first purchased the ingredients for baking a birthday cake at home, bakers and ice cream parlors later began selling icing-engraved birthday cakes whole; eventually, birthday party services could be rendered, and finally, many childrens' fantasy-made-real has been born out as the full birthday experience designed and delivered at Chucky Cheese, Buba Baloo's, or Disney Land.

For many years, this concept of marketing and selling units of virtual, interactive, or immersive experiences was the domain explored solely in the theater or play house. As many studies suggest, today the trend from a commodity to an experience economy involves businesses that would previously have been positioned squarely in the service sector; this trend is becoming ever more prevalent in the economy (cite the “many studies” that “suggest” this). With this said, restaurateurs hoping to create the complete immersive experience are faced by a novel threat, the personal electronic device (PED), named the new “distraction dejour” by Upserve (Hill, 2012; McCormack, 2014; Swipely Team, 2013). To combat this version of

“distracted diner syndrome,” (Reimer, 2014) several locales have implemented policies to reduce cell phone usage, including discounts, fees, or cell phone lockers (Burton, 2012; O'Neil, 2013; Shah, 2014).

These reactions to the PED wave are testimony to how ubiquitously challenging immersion-experience oriented restaurateurs find this new technology and its associated behaviours. However, confiscation and deprivation are methods that necessarily represent the double-negative of ‘distraction-removal.’ The cost of ensuring experience immersion in this way may be that it hazards dissatisfied customers, which could translate into lowered customer returns and loss of business. Restaurant owners might be wise to employ techniques to ‘combat’ PED usage only after the ‘threat’ has been determined to be real. This thesis is specifically designed to determine whether PEDs are such a threat. In doing so, the author will put scientific evidence toward answering the question of whether PEDs are truly a threat to the intended benefits of experience immersion in restaurant settings. Results from this type of research study can be used to guide business, marketing, and customer service decisions in response to large-scale changes in technology and consumer behaviour.

Restaurateurs have tested various means to reduce the PED “threat” in a trial-and-error fashion. A small restaurant in Beirut, Lebanon, offers a 10% discount to customers if they check their cell phones at the door (O'Neil, 2013). Visitors to an Iowa restaurant, Sneaky’s Chicken, are given the same discount if they store their phones in boxes at their tables, and socialize in person (Shah, 2014). The Faraday Café in Vancouver invited guests into a signal-blocking cage, with coffee served by donation, at a two-week long interactive art installation and social experiment (Mercier & CBC Staff, 2014). These techniques to counter cell phone usage might appear innovative, however, the reality is that the viability and profitability of the business must also be

sustained if a restaurant is not going to join the long list of failed attempts at restaurant start-ups (Feloni 2013). The above examples risk lost opportunities for promotions gratis via social media (Windels, 2012); if reductions in customer PED use are anything but voluntary or incentivized, policies against the use of personal devices may disgruntle customers. Further, PEDs are valuable, contain private information, and could be utilized to breach personal domains if they are taken away from customers, thus the provisional transfer of property while dining could place liability for their confidentiality and safety on the establishment.

Some restaurateurs go to great lengths to give their customers an immersive experience. O.Noir (Toronto; Montreal), and Dark Table (Vancouver) were started by restaurant owner Moe Alameddine with the strategy of overloading the senses involved in gustatory modalities by depriving diners of other senses, specifically sight (Dark Table Restaurant, 2012; O.Noir, 2016). Guests dispense of all personal belongings in lockers upon entering, and dine in the dark served by wait staff who are blind (Dark Table Restaurant, 2012; O.Noir, 2016). Many customers are enthralled with the novelty of the venture and review the food, service, and overall outing highly (Trip Advisor, n.d.; Yelp, n.d.). However, attempting to refine the dining experience by limiting sensory perception raises the stakes considerably: Flaws in food or service are rendered glaring by the very sensory omission intended to distinguish the experience. As observed by one food reviewer:

First off, the food at O.Noir [...] had absolutely no bearing on eating in an environment void of light. You'd think that if they were going to block your sense of sight, they'd want to serve food that would heighten your other senses, like food with strong aromas or flavours. [...] In a way, the food was so bad that I'm glad my other senses weren't heightened by the lack of light. [...] a quick feel confirmed that we were

using those cheapo hotel-style metal chairs and wooden tables. [...] if our senses were supposed to be heightened, then surely our sense of touch should be a part of that. [...] I'd argue that because you're eating in the dark, the restaurant needs to spend more on the space and everything in the environment needs to be taken into consideration.

(TOFoodReviews, n.d.)

This observation speaks to the need for an immersive dining experience that involves and integrates all the diner's primary senses; this idea is explored further when this thesis moves on in the next section of this introduction to a discussion of cognitive processes underlying the dining experience. As it stands, about 30% of reviews for these restaurants posted to public sites, Tripadvisor and Yelp, contain average, fair, or poor ratings, based on dissatisfaction with food quality, service and environment (Trip Advisor, n.d.; Yelp, n.d.). While the immersive experience at O.Noir is designed to isolate gustatory modalities, a substantial proportion of reviews submitted by sighted customers reveal that the disorientation of being plunged into the dark gives rise to a heightened state in which distasteful experiences are amplified, and the thrill of the social experience overcasts that of taste (Trip Advisor, n.d.; Yelp, n.d.). It is again apparent that a restaurant that attempts an immersive dining experience in one modality (e.g., sight) should pay careful attention to the other modalities as well (e.g., taste) in a more integrative understanding of the diner's experience.

The response of restaurateurs to the use of PEDs in their establishments is varied. An article in *The Star* casts the cell phone culture of the high-end Rogue 24² – a restaurant in Washington D.C. where PEDs are sacrilegious to the dinner ritual – in stark contrast to several Toronto restaurants, which take PED usage in stride, and leverage social media to boost client-

² Rogue 24 is now closed – whether this is related to its stance on PED usage is unknown (OpenTable, 2016).

proprietor communications (Teotonio, 2011). Teotonio spotlights Jason Bangerter, executive chef for several Oliver & Bonacini Restaurants locations in Toronto: The i-phone wielding chef maintains constant contact with his customer base through his phone, tweeting guests from the kitchen as they dine (2011). While in reality, PED-dining culture between D.C. and Toronto may not be as different as this juxtaposition portrays (there may exist D.C. restaurants that are pro-PED) this article may reflect to the friendliness and community-oriented culture that Canadians are proud of.

In this regard, Prince George and northern BC are no different. They tend towards a close-knit community culture wherein aiding one's neighbour (especially through harsh winter conditions) and gathering around food establishes and reinforces bonds, wherein acquaintances beget friendships, and friendships beget family. Tactics that presume a business' authority to obstruct behaviours and technologies that enhance communicability and sociability are therefore a misfit to this environment, making the discomfort with the notion of suppressing PED usage in a Prince George restaurant palpable. Tamping down on PED usage could undermine opportunities for synergizing connectivity between restaurant and community, given that these new technologies and their attendant behaviours offer massive potential for leveraging a sustainable, long-term client base by networking community relationships. Furthermore, the concept of sensory deprivation, while offering a novel, radical experience, may be more suited to the large city atmosphere than to a small town like Prince George.

Here we come to the impetus for the research reported in this thesis. Businesses in the restaurant industry have mainly responded in a knee-jerk fashion to the PED issue and have enacted unexplored solutions on the ground, in ways that can affect businesses and customers in real time. No literature found in this review presents research conducted to investigate the nature

and magnitude of PED distraction, its effects on experience immersion and business sustainability, or whether particular solutions, if any, are necessary. The research reported in this thesis is intended to aid in filling this gap.

Context: Independent Restaurants in the Canadian Economy

Food service is among the top 5 industries providing the highest employment across Canada, with positions in the industry growing steadily since 2011 (Statistics Canada, 2015). The total number of jobs in accommodations and food services rose from 1,141,100 in 2011 to 1,210,600 in 2015, representing an increase of 69,500, or 6.1% since 2011, and an average annual increase of 1.5% (Statistics Canada, 2015). A GE Capital Franchise Finance annual report on the Canadian Chain Restaurant industry reveals that 64.5% percent of the full-service restaurant industry market share belongs to franchise restaurants; 35.5% are independent. Quebec has the highest rate of independent restaurants with 45% of the total number of restaurants in the province, followed closely by western Canada at 36.8% and Ontario at 33.9% (GE-Capital, 2015). The Canadian average of 36.8% is most similar to the proportion of independent restaurants in the West (GE-Capital, 2015).

By 2015 census figures, Ontario and Quebec have the highest and second highest populations of all provinces at 13,792.1 and 8,263.6 respectively, representing a combined 61.6 percent of the total Canadian population (Statistics Canada, 2015). Table 1 displays commercial food service sales, and commercial food sales per capita, comparing both indicators with the national average (GE-Capital, 2015).

2014 Commercial Foodservice Sales and Commercial Foodservice per capita by Province

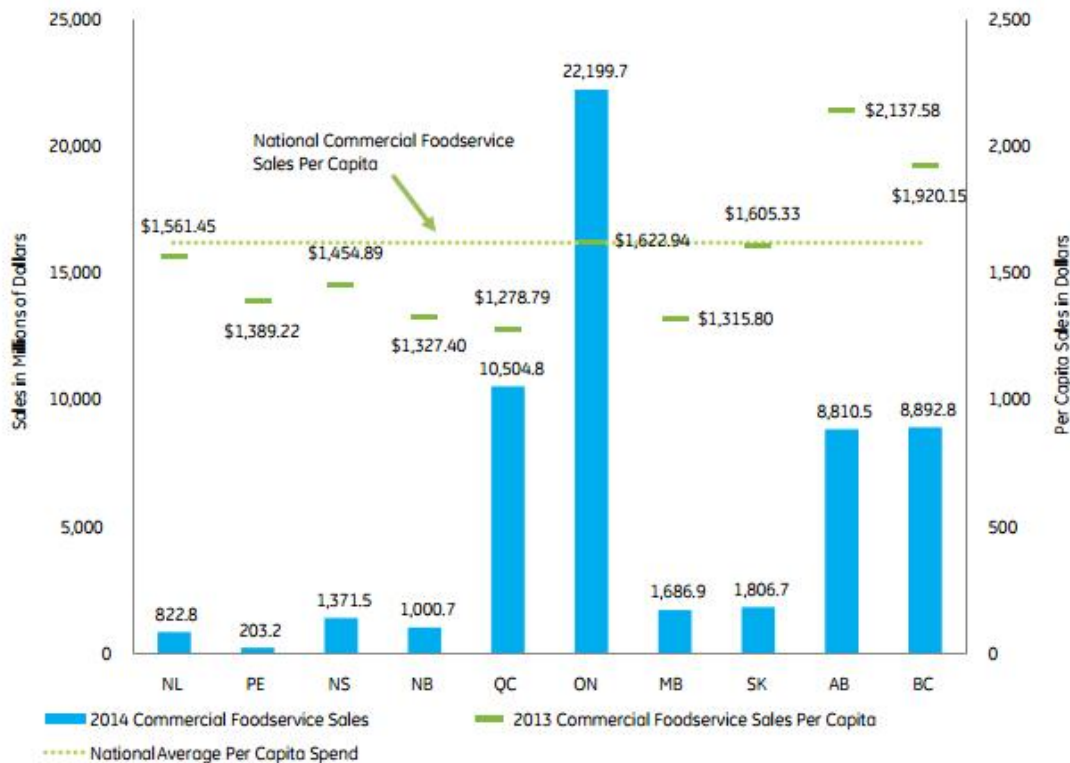


Figure 1. 2014 Commercial Foodservice Sales and Commercial Foodservice per capita by Province. Reproduced from 2015 Canadian Chain Restaurant Review by GE Capital Franchise Finance, p. 13

With the highest provincial populations, Ontario and Quebec also have the greatest commercial foodservice sales, most likely driven by their larger populations. However, Ontario is the only province with total commercial sales that are higher than both the national average per capita spent, and the total commercial food sales per capita in the province. This indicates two main factors: There is a higher demand for commercial food products, and higher competition in the market, which leads businesses to lower their selling prices. Quebec has the lowest per capita commercial foodservice sales of \$1,278. Alberta continues to have the greatest commercial foodservice sales per capita at \$2,137, followed by British Columbia with \$1,920, or 15.5% of national sales. These figures demonstrate that the difference between sales and sales per capita is much larger in BC and Alberta, indicating that food service is more competitive for

consumer expenditure. In other words, within BC, the price of commercial food is higher in the consumer expenditure basket, meaning that in BC, residents spend a higher percentage of their annual household expenditure on commercial foods than do residents of other provinces in Canada, making BC a favorable climate for independent restaurants.

According to the same Canadian Chain Restaurant Industry review, price fluctuations of major ingredients, such as produce and meats that are imported from USA or other parts of the world, had huge impacts on the cost of goods sold in the restaurant industry (GE Capital, 2015). The main reason for this is that most of these products are not produced or grown locally, therefore many economic factors will impact price, including the value of the Canadian dollar, increases in carbon tax, longer transportation routes and increases in delivery costs, and weather and climate change. On the other hand, items produced within Canada such as dairy and bakery ingredients have increased steadily and always remain below the minimum inflation rate. Such information suggests that increased local production provides more economic sustainability that in turn would help the restaurant industry to manage the cost of goods sold (GE Capital, 2015).

A 2013 report by CUPE-CIVIC and Economic BC illustrates how small independent retailers and the restaurant business market share have been strongly impacted by economic change. The market share of independent retailers and restaurants has decreased compared to its chain competitors (CUPE- CIVIC & Economic BC, 2013). The study shows BC independent retailers and restaurants recirculate over 2.6 times as much revenue in the local economy as chain competitors. In addition, BC independent businesses produce more jobs and spend more on wages compared to chains with equal revenue (CUPE- CIVIC & Economic BC, 2013). The report also indicates that Canadian independent retailers generally outperform their British Columbian peers in market share, and the independent full-service restaurant industry performs

slightly better and is very close to its Canadian independent full-service restaurant industry (CUPE- CIVIC & Economic BC, 2013). In conclusion, the study suggests that only a 10% increase in the market share of independent retailers and the restaurant industry will lead to 31,000 jobs, paying \$940 million in annual wages to BC workers (CUPE- CIVIC & Economic BC, 2013). It is therefore essential for the government of BC, educational institutions and city municipalities to invest in research, develop laws, and provide a network of support to grow independent retailers and the restaurant industry in BC.

At the local scale, Prince George has been planning and investing in the growth of small businesses especially in the downtown area (City of Prince George, n.d.). Shiraz, a restaurant built and owned by the author of this thesis, not only has been a new face among small businesses in town, it also adds a bright new colour, taste, and culture and has contributed to the diversity in Prince George. Shiraz on average spends \$9000 on raw ingredients every month, more than 70% of which is purchased locally from other independent stores such as Shoppers Wholesale, and northern BC farms. The rest is purchased from other parts of the province. Every week, Shiraz contributes to the arts and musical culture of Prince George economically and socially by showcasing local musicians who perform at Shiraz on Fridays and Saturdays. Depending on the number of band members, Shiraz pays \$300-\$600 to the musician and the musical agent who works on promotions and communication. Except wages, rent, and legal and professional fees, Shiraz contributes \$12,000-\$14,000 to the local economy, more than 95% of which recirculates within local independent businesses.

Context: Experience Immersion at Shiraz Café and Restaurant

Data collection for the two empirical studies presented in this thesis took place in Shiraz Café and Restaurant, which was opened, and is owned and operated by the author of this thesis.

A description of Shiraz Café is provided here to better describe the context for the empirical parts of this thesis. Shiraz was started with an initial investment of \$220,000.00, and during the first year, an additional \$60,032.00 was invested in renovations and equipment upgrades and repair. In the first year, annual revenue was \$318,850.00, with a total cost of \$448,000.00 (operational cost 86.6%, renovation 3.5% and equipment improvement 9.9%). In the second year, the annual revenue was \$398,150.00, which increased by 24% compared to the year before. The total annual revenue was \$433,980.00 in sales in the third year, which represents a 9% increase compared to the second year and a 36% increase compared to the first year. The total operation cost of the restaurant in the third year was \$356,600.00 which brought the restaurant to a total net profit of \$77,600.00 in the third year. While revenue has grown in the last three years, due to the major loss of the first year, the company is still recovering financially. First year losses were a result of renovations and equipment upgrade costs, which are recorded as additional investments in the company's financial report.

While the food and beverage industry is growing in Canada, this industry is one of the riskiest to invest in. Moreover, independent restaurants take the hardest hit in sparse economic times, losing out to chain restaurants with lower prices and economies of scale to absorb the impact. In a difficult economy fine dining such as that at Shiraz can become a luxury. In fact, some restaurateurs have moved into the chain restaurant business to survive (Orcini, 2012). The overall prospects for the survival of independent restaurants such as Shiraz appear to be bleak. According to an article in Business Insider, 60% of restaurants fail (the business closes their doors) within their first 2 years, and 75% fail in the first five years (Feloni, 2014). A top reason for such a high failure rate is having, “no unique selling point,” (Feloni, 2014) meaning that there is nothing about the business that differentiates it from its competitors.

For Shiraz to defy the general trend of restaurant failures, maintaining and improving business success depends upon building a loyal, long term consumer base, which in turn is increased and sustained by immersing clientele in the Shiraz experience. To this end, the strategy to ensure the future sustainability of the restaurant will be to employ two objectives that are independent in their deployment with synergistic results – increasing weekly traffic, and extending the Shiraz experience beyond the parent location. The latter goal is being executed by offering the Shiraz menu at various locations, such as the weekly University Farmer’s Market (UFM) and annual exhibition, fundraising and promotional events, as well as through the design and development of a new mobile kitchen. The unique Shiraz brand of experience immersion must be ubiquitous whether a diner is eating at the parent or a satellite location; the tastes, sights, sounds and smells are transported to each venue via décor, equipment, cooking methods, and the values and culture of the Shiraz staff. In turn, the higher visibility of the experience and brand is expected to increase traffic to all locations. Whether all of these elements can provide sufficient saturation to withstand the distraction by PEDs will remain to be seen in the results of this study.

The thesis will now shift its focus to the scientific study of cognitive processes that might underlie the distraction of diners away from their immersive experience when they use PEDs. The author developed Figure 2 to provide a diagrammatic roadmap to the scientific literature cited in the remainder of this Introduction section. At the top of the figure are presented the broader topics from the relevant cognitive science literature, and then the focus narrows to more specific topics relevant to distraction by PEDs and the Introduction section ends with the study

hypothesis that brings together the literature discussed throughout the Introduction section of this thesis.

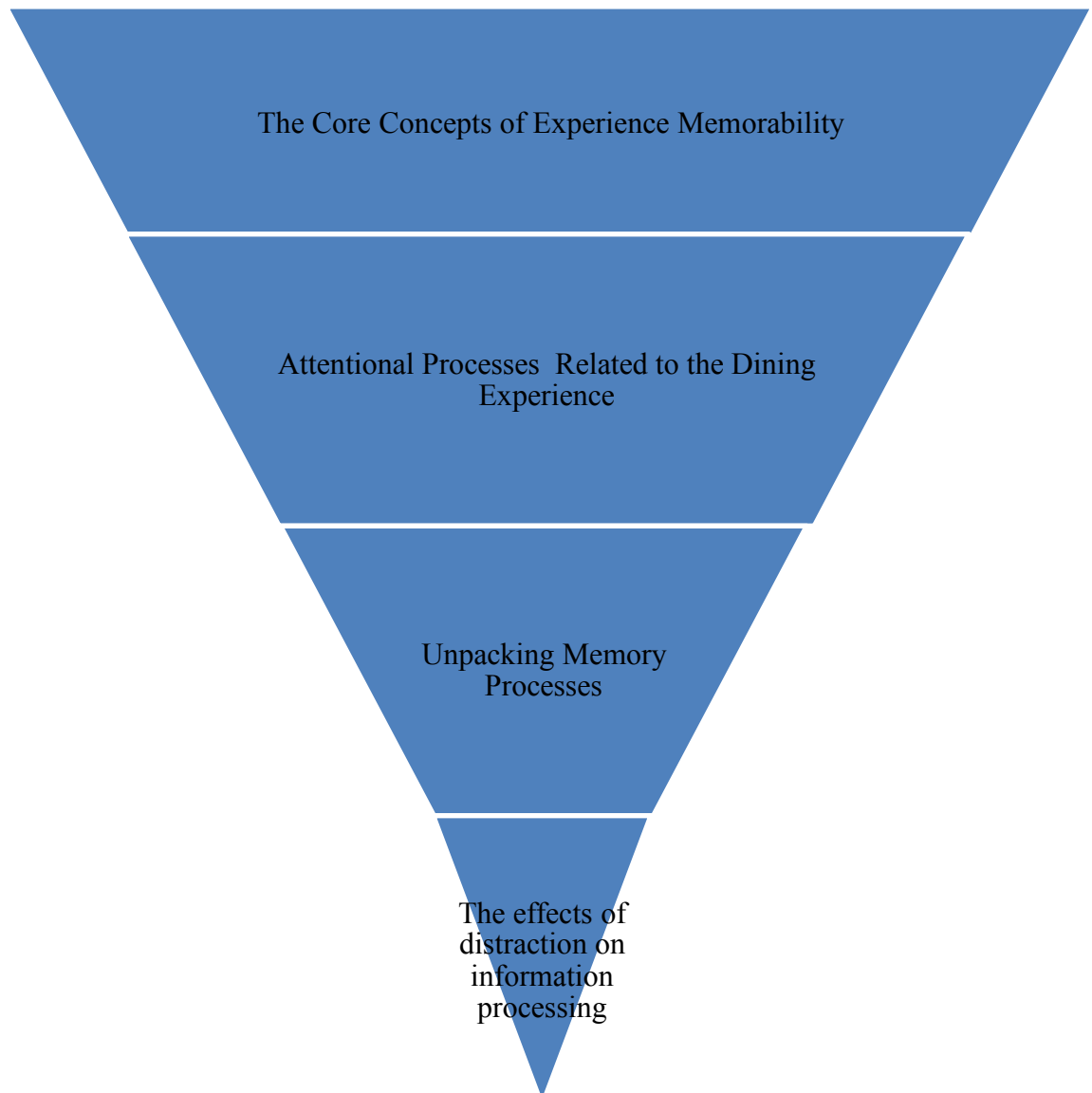


Figure 2. Summary of literature review of the cognition science literature

Cognition: The Core Concepts of Experience Memorability

Experience memorability is now written large – from the context of the individual restaurant-goer to the economy as a whole – and the concept of the experience economy has been taken up in new and exciting developments in marketing, both in academia and practice. This

trend is clearly reflected in an increasing number of related studies, such as a piece by Ferreira and Teixeira (2013) who show that between 2008 and 2013, a focus on customer experience and related concepts has been steadily increasing in the literature of business and management (Ferreira & Teixeira, 2013). Aside from experience memorability, the two concepts of attention and perceptual load theory are key landmarks along the literature review that helped guide the development of this thesis.

The longevity of a memory is enhanced when multiple senses are engaged in the experience of a time and place. Piqueras-Fiszman (2012) investigated how human perceptions are shaped during the restaurant experience. She developed a model of four elements of multisensory perception that explains how humans interpret experiences that are antecedent to, and subsequently shape, perception. This thesis elaborates on the impacts of attention, which is the first stage of Piqueras-Fiszman's model. It is important to note that Piqueras-Fiszman studied the sensory capacity of attention in the context of people's dining experience; this study tests a related theoretical question, likewise in the context of people's dining experience.

Perceptual load theory (Lavie & Hirst, 2004) defines distraction as irrelevant information that captures parts of working memory. This irrelevant information, i.e., distraction, should detract from the dining experience by taking customers' attention away from the restaurant theme deliberately designed and introduced by the restaurant owner. According to this theory, as the level of distraction increases, working memory capacity will be increasingly loaded with irrelevant information and the quality of diners' experience that depends on the attention of the diners to the restaurant theme will be progressively eroded. The owner of a restaurant usually intends that the customer's dining experiences are personally involving and emotionally satisfying. If the diner is distracted from the restaurant theme then, by this line of argument, the

experience memorability within the themed context of the restaurant will not be shaped as intended by the owner when the diner is distracted (the distraction tested in this thesis is the use of a personal electronic device (PED)).

If the customer is distracted during their dining experience, then he or she should be less likely to differentiate the restaurant from other dining options based on its unique theme. The owner should then see at least four negative outcomes for his or her restaurant business: (1) Customer loyalty will suffer; (2) Customers will devalue their restaurant experience and will be less willing to pay a premium price for the dining experience; (3) Diners are less likely to return to the restaurant in future; and (4) Diners are less likely to recommend the restaurant to family and friends. The problem of distraction detracting from diners' experience memorability now assumes considerable importance to the restaurant owner, for whom the creation of a unique selling point for their business becomes critical. More specifically, if the diner does not attend fully to the theme created by the restaurateur due to the distraction caused by their usage of a personal electronic device then memorability of the experience will suffer, and the quality of the diner's immersion in the dining experience, should suffer.

Cognitive science is the study of how the brain receives, processes, and interprets information. In order to understand the research question, this multidisciplinary study draws on studies detailing cognition in the human brain in processing language, emotion, memory, attention, and distraction. The cognitive science literature states that experiences are committed to long term memory by a sequence of mental processes: A person will begin by processing their surroundings and perceptions, cognitively analyzing new information as it is encountered. This is where distraction tasks come in: The process of experiences being stored as long-term memories can be affected by the level of perceptual load and mental efforts may be expended to

control the degree of load. Should PEDs distract customers from their experience and environment; this will overload sensory perception, disallowing customers to store their dining experiences long term: The restaurant experience which is the subject of this thesis may be forgotten, or rendered insignificant in customer's minds. Figure 3, which was adapted from the book on consumer psychology by Solomon, Barmossy, Askegaards, & Hogg (2006), is a sequential representation of these processes, and provides a visual roadmap to the organization of the literature review.

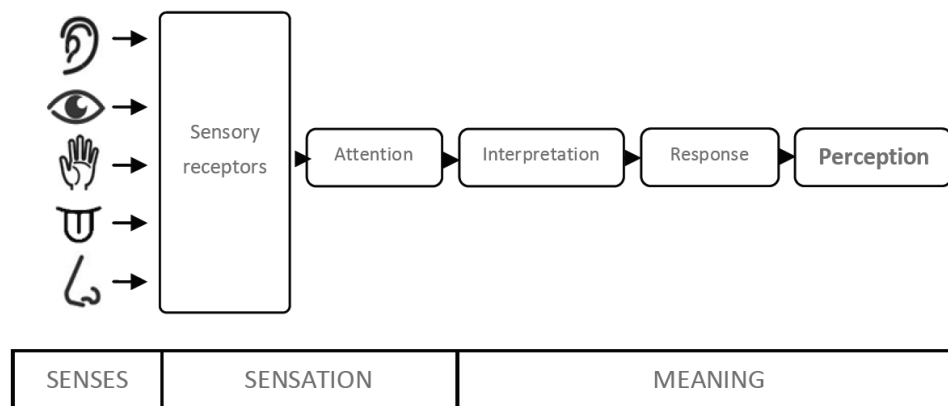


Figure 3. A Multisensory Model of the Perception of Products that are Marketed to Consumers; adapted from Solomon, Barmossy, Askegaards, & Hogg, 2006 (p.37)

The process of perception starts when sensory receptors responsible for hearing, seeing, feeling, tasting, and smelling, receive input. The perceiver will attend to only a small part of this sensory input. As the person attends to selected sensory input, they will experience sensation. This thesis is mainly concerned with the perceptual processes that occur up to this point in Figure 3. The person will then often work to place an interpretation on the meaning of the multisensory stimuli that he or she was exposed to; this interpretation is necessary if the person is to extract meaning from their overall experience of an event. The person may then respond based on their interpretation of an event or situation. One is reminded of a restaurant patron who experiences the sights, sounds, smells, and other sensations structured into the restaurant environment by the

entrepreneur, places an interpretation on this sensory information (e.g., this is a pleasant or unpleasant dining experience) and responds accordingly (e.g., leaves the restaurant without ordering or stays for a long satisfying dining experience). During and after the restaurant experience, the diner will put a meaning to what they have experienced and this meaning (e.g. they had a good versus bad restaurant experience in that establishment) will probably be coded in long-term memory for future reference.

Research in consumer psychology supports the multisensory model of the perception. Piqueras-Fiszman (2012) assessed the impact of the extrinsic factors on the multisensory perception of food products, perception and its process are described as a stimulus (in this framework, a food/drink product) being firstly affected by its various sensory properties (both intrinsic, referring to those of the food itself, and extrinsic, that is, those of the elements surrounding the food). However, people do not process all of the information that happens to be present; in fact, only a very small proportion of the available stimuli are noticed, and even a smaller number are attended to. The filtering of information, the attention paid to it, and its interpretation, is influenced by the consumer's unique bias, based on their own needs, experiences and motivation (Piqueras-Fiszman, 2012).

When we think or talk about how we perceive a food product and restaurant experience, researchers commonly emphasize flavour perception. However, there is an ongoing debate around the definition of the term “flavour,” and what senses are involved in its perception. According to the International Standard Organization (ISO), flavour is defined as the, “complex combination of the olfactory, gustatory and trigeminal sensations perceived during tasting. Flavour may be influenced by tactile, thermal, painful and/or kinaesthetic effects” (ISO 5492, 2008). Therefore, based on this definition, flavour perception arises from the unified sensations

of taste and smell (both orthonasal and retronasal) (Lawless, 2001, Murphy, Cain, & Bartoshuk, 1977) and also, oral-somatosensory qualities of foods, such as their texture, temperature and even their ability to elicit painful sensations (Christensen, 1984; Lawless Rozin, & Shenker, 1985; Stevenson, 2009; Szczensiak, 2002). That is, gustatory, olfactory, trigeminal, and oral-somatosensory cues would be the only senses that contribute directly to the perception of flavour. These four interceptive sensory inputs are combined through multisensory integration to deliver flavour perception (Spence, 2012).

On the other hand, visual indications, primarily those related to a food's colour, exert a profound effect on consumers' perception of the identity and, to a lesser extent, the intensity of a food's taste and flavour. In addition, the sound the food may produce while being handled (together with the feeling of its texture in our hands), and the smell it releases can also influence flavour perception. These four other cues (namely visual, orthonasal olfactory, distal auditory, and tactile), are referred to as exteroceptive cues, or flavour expectancy cues (Stevenson, 2009). Therefore, in the majority of cases these cues are available prior to the food's consumption; they are typically the most representative in terms of our expectations about its likely texture, aroma, and/or taste. Hence, these other senses also play an important contributory role in terms of flavour perception (Shankar, Levitan, & Spence, 2010).

From a multisensory perspective, many researchers have delved into how certain dimensions of experience are shared across the senses, or, in other words, the associations that most people make between diverse sensory attributes perceived via different modalities. These connections are commonly referred to as cross modal correspondences (Schifferstein & Spence, 2008; Spence, 2011). The latest research findings demonstrate that cross modal (or multisensory) interactions play a crucial role in our product perception and experience, and hence should be

taken into account when designing products and their packages. In the food industry, cross modal correspondences between the container and its contents are gaining ever-more relevance. For example, it has been shown that the packaging or container attributes (e.g., the sounds it makes, its smell, feel, shape, and/or colour) will affect subsequent taste experiences and product appraisals, but not only due to physical interactions, but also as a result of cross modal associations and/or perceptual illusions (see Cheskin, (1957); Gal, Wheeler, & Shiv, 2007; Hine, 1995; Schifferstein 2009; Schifferstein & Spence, 2008; Spence & Gallace, 2011). Apart from packaging, containers such as cups and bottles have also been shown to modulate people's perception of the contents (Krishna & Morrin, 2007; Schifferstein, 2009). The multisensory perception perspective probably also holds for services offered to customers (e.g., fine dining) in addition to the products that have been the focus of this research.

This brings us to the matter of the restaurateur's design intentions when setting up and operating their restaurant. Design can be defined as a multidisciplinary process that requires the ability to materialize predefined intentions and expectations into new design solutions. Ideally, good design should improve the user's experience (Buchanan, 1989). From its many dimensions, designers can manipulate different variables, such as a product's sensory properties in order to, for example, alter user behaviour and/or enhance product functionality. The restaurateur can and most often will use design intentions to inform the food offering to consumers but also the overall ambience intended for the restaurant as a whole. These design intentions can be very apparent in ethically-themed restaurants that offer relatively unfamiliar or novel dining experiences to their customers.

Cognition: A Model of the Attentional Processes Related to the Dining Experience

With a larger suite of cognitive processes now explained, this thesis will now focus especially on the attentional processes that are the major concern for the development of the hypothesis given at the end of this Introduction section. Figure 4 was developed by the author to organize extant materials about attention that are most relevant to this thesis. The subsequent text in this section of the thesis will then amplify on processes and relationships contained within the model in Figure 4.

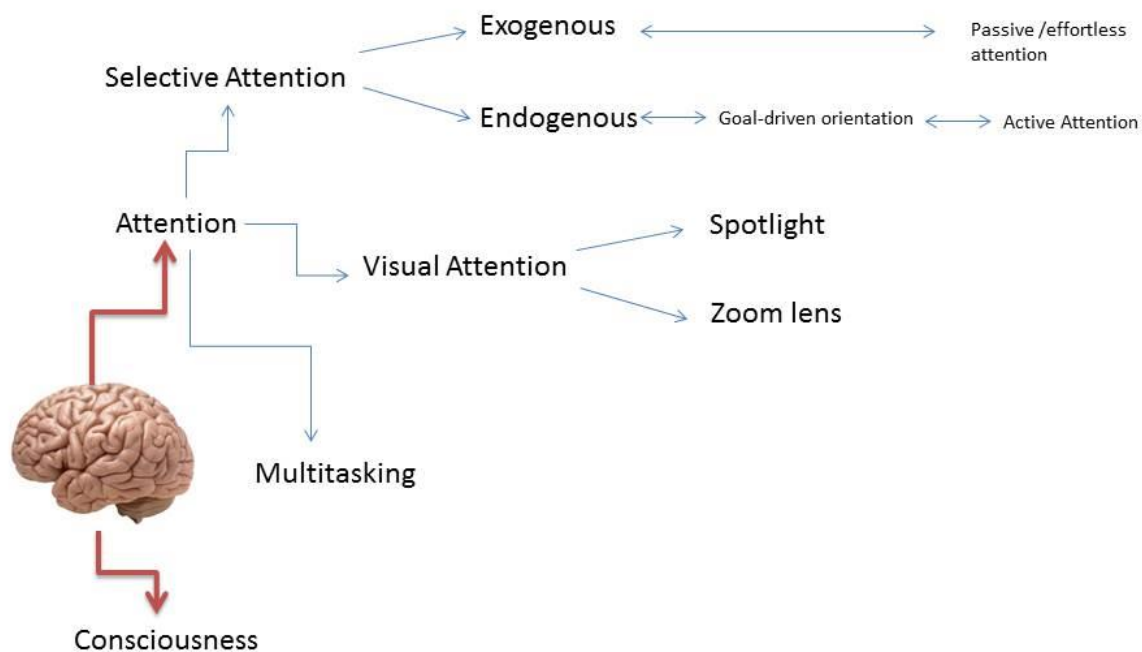


Figure 4. A Model of Attentional Processing; developed by Reza Akbari for this thesis

Figure 4 proposes that attention and consciousness are separable processes. This distinction in brain processing is proposed by Christof and Naotsugu (2007) who argue that attention and consciousness are two separate phenomena in brain processing; an individual can

attend to objects or events without consciously perceiving them. In addition, an individual can consciously perceive events or objects without going through selective attention processing (Koch & Tsuchiya, 2007). William James (see Andrewes, 2015) describes in 1880 selective attention as following two patterns; bottom-up (exogenous) and top-down (endogenous). Exogenous selective attention is driven by external stimuli and may be initially apprehended unconsciously. In a restaurant setting, the sound of a plate breaking on the floor after it is dropped by a server would be a good example of a stimulus that would attract exogenous attention. Endogenous selective attention is goal-directed and relies heavily on conscious processing of the type pictured in Figure 4. The restaurant may display photographs or pictures on the walls which reflect a particular theme (e.g., a Greek restaurant may have a map of Greece displayed in a prominent place); this type of design feature in the restaurant will elicit endogenous attention which is lower and deliberative. The perceiver will shift attention back and forth between the endogenous and exogenous modes as circumstances demand. It is selective attention, especially of the endogenous type, that should be heavily impacted (interrupted) by distraction due to use of a personal electronic device.

The model of attentional processing diagrammed in Figure 4 proposes two other types of attention: Visual attention and multi-tasking. These other two modes of attentional processing in Figure 4 are now discussed.

Visual attention. The cognitive literature in this area suggests two models of how visual attention processes information (Jonides, 1983). The amount of cognitive resources that can be devoted to visual attention is limited. According to the spot-light theory of attention, a person can only attend to one region of space at a given time; attention cannot be divided. This theory assumes a limited degree of flexibility on the part of the person in selecting the objects of their

attention (Posner, 1980). The zoom theory of attention maintains that a person can shift their attention from location to location within the visual field and can “zoom” in on features of particular interest (Posner, 1980). Both types of visual information might apply to a customer’s dining experience. When scanning the cultural artifacts and materials in an ethically-themed restaurant like Shiraz, the customer will focus on one part of the overall scene before moving on to another scene (spotlight) or shift their attention quickly between objects across scenes and narrow the focus down to specific features of objects (zoom).

Multi-tasking. Diners might also multi-task when attending to the restaurant environment. Multi-tasking is defined by Lee and Taatgen (2002) as, “the ability to handle the demands of multiple tasks simultaneously” (p.572). The restaurant patron would be multi-tasking when simultaneously consuming food, listening to the conversation of another diner, and trying to get the attention of a server. Appelbaum, Marchionni, and Fernandez (2008) propose that multi-tasking requires “continuous partial attention” which may, as with other modes of attention, be impaired due to the effects of interruptions or distractions (e.g., usage of personal electronic devices).

Cognition: Unpacking Memory Processes

Information that is attended to, whether under distraction or not, can be committed to memory. Memory in turn influences the conscious processing required by endogenous selective attention, visual attention, and continuous partial attention.

Memory. Many people think of memory as a library of tapes in our minds that have recorded things that we see, touch, taste, smell or hear (sensory model). Referencing memory is like walking through this library and choosing one or more tapes to review or connect with the

message or feeling of the current moment. The more connection we can find between the current situations (messages) with our memory, the more understanding we can have from the message that we are exposed to. In other words, our knowledge (recalling information) from past experiences plays an important role in understanding what we are experiencing on a regular basis. The first word pattern seen below shows a simple example of remembering information that Dr. Graham Cooper presented on his research into cognitive load theory.

Look at each of the following, and note what you see.

1. TAE CAT
2. A a H a A a A a A A

Figure 5. Reproduced from Dr. Graham Cooper, University of New South Wales, Australia, Research into Cognitive Load Theory and Instructional Design at UNSW, December 1998, (p. 3)

In line 1, most people read “The Cat” even though the middle character is the same ‘in-between A and H’ shape in both words - it is interpreted as either A or H depending on the context of letters in the word in which it appears. Similarly, in line 2, people read each character as “A” regardless of the fact that no two characters are identical. We are able to do so because of our pre-existing knowledge of what constitutes the character for “A”. As Cooper (1998) notes:

These examples demonstrate that we cannot help but to impose meaning on things that we sense. Humans are able to behave and think in 'intelligent' ways because of their ability to quickly identify meaning in presented stimuli. Our knowledge and skills in activities as diverse as reading, driving, mathematics and gardening all derive from the knowledge base which we hold more-or-less permanently in long-term memory. (p.2)

Memory can be divided to three main categories: 1. Sensory memory, 2. working memory, and 3. long term memory.

Sensory memory. Sensory memory is involved with incoming stimuli from the sensory system; sights, smells, taste and touches. Studies have elucidated that the process of identifying, classifying, and assigning meaning to information through this sensory model is rapid. In other words, the brain must identify new information quickly, or it will be gone forever (Cooper, 1998).

Long term memory. Long term memory refers to the shape of knowledge that we hold more or less in a permanently accessible format: A person's phone numbers, last name, date of birth, home address; how to read, drive, play chess – everything one “knows” is a part of long term memory (Cooper, 1998).

Working memory. “Working memory is the part of our mind that provides our consciousness. It is the vehicle which enables us to think (both logically and creatively), to solve problems and to be expressive,” (Cooper, 1998). The biggest limitation of working memory is its capacity to deal with no more than about seven elements of information simultaneously (Miller, 1956). This limitation of working memory is illustrated by mentally performing these two calculations:

Question 1:	46+
	<u>37</u>
Question 2:	83 468 446+
	93 849 937
	<u>58 493 900</u>

Figure 6. Reproduced from. Graham Cooper University of New South Wales, Australia, Research into Cognitive Load Theory and Instructional Design at UNSW, December 1998 (p. 5)

For most people, it is possible to answer the first problem without a pen and paper. However, it is almost impossible to answer the second problem in the same way. This is because the capacity of working memory is exceeded and cannot cope with the large numbers that must be held in working memory in order to complete the second calculation.

Cognition: The effects of distraction on information processing

For many years, researchers focused on attention theory and focused attention, which allows people to ignore irrelevant distractions. The consequence of the inability to focus attention is a reduced quality of life, for example, not being able to focus while reading a good book, or even when you are carrying out a specific task such as driving a car. This can also happen while dining at a restaurant. Studies have discovered different levels of selective attention performance; whereas in some circumstances we are able to be highly selective, at other times we can experience high levels of distraction. People have limited perceptual processing capacity, and they will perceive just what they attend to. In order to understand the effects of distraction tasks, cognitive load theory will be discussed here. To do so requires taking a step back and looking at the case in wide range memory. This chapter investigates how the human brain processes information when distracted.

Cognitive load theory was developed in 1980 by an Australian educational psychologist, John Sweller, studying problem solving (Sweller, 1980). Cognitive load refers to the total amount of mental effort being used in the working memory in order to process perceived information. According to Cooper's (1998) paper, "the major factor that contributes to cognitive load is the number of elements that need to be attended to..." (p. 11). To understand this statement, we demonstrate here with another of Cooper's examples:

Table 1. Reproduced from. Graham Cooper University of New South Wales, Australia, Research into Cognitive Load Theory and Instructional Design at UNSW, December 1998, (p, 11)

Number Sequence 1: 9 2	has a cognitive load of 2
Number Sequence 2: 6 568	has a cognitive load of 4
Number Sequence 3: 9 83 49 76	has a cognitive load of 8
Number Sequence 4: 9 83 47 97 62 7258	has a cognitive load of 13

Number Sequence 2 has twice the number of digits as Number Sequence 1, yet seems more than twice as difficult to remember. While Number Sequence 3 can be remembered with effort, Number Sequence 4 is impossible for most people to remember without some form of practice or memory aid. While this can explain why the learning of some material is difficult, it also shows that human working memory has a threshold of somewhere between 4 and 10 elements (Cooper, 1998).

Cooper (1998) determines that cognitive load theory focuses on the role of working memory in the learning process. He also defines the principle of cognitive load theory in 4 propositions:

1. Working memory is extremely limited.
2. Long term memory is essentially unlimited.
3. The process of learning requires working memory to be actively engaged in the comprehension (and processing) of instructional material to encode to-be-learned information into long term memory.
4. If the resources of working memory are exceeded then learning will be ineffective (p.15).

The main goal of attention theory is to identify patterns (focused attention) to avoid or ignore irrelevant distractions. The effects of distraction on attention is very difficult to study so researchers have studied whether focused attention can be developed in controlled environments where participants can ignore distractive elements. However, the tendency for audiences to frequently not perceive all distractions also needs to be considered, because the working memory of the human brain has a limited capacity, as described in the preceding chapter. For example, people attending to a ball game have failed to notice a child walking across the pitch and holding up a blue umbrella. In order to understand the relationship between the load theory of attention, cognitive control, and distraction, perceptual load theory was developed by Lavie and Dalton (2014).

The work of Lavie and her colleagues provide a resolution to the debate on the role of attention in information processing. She argued that when perceptual selective mechanisms increased, it led the attention processes to exclude irrelevant distraction stimuli (Lavie & Dalton, 2014; Lavie & Hirst, 2004). In other words, in a situation when perceptual load is high, the attended information used almost all working memory or exceeded the capacity of working memory; therefore, unattended information naturally will be reduced or ignored. In addition, in a situation of low perceptual load, since the perception cannot be voluntarily stopped, the remaining capacity of working memory processes unattended information which leads to increases in distractor interference. In other words, when cognitive control load increases, the distractor interference also increases (Lavie & Hirst, 2004).

Liu and Fu (2007) studied how distraction tasks Influence the interaction of working memory and long-term memory. They suggested distraction tasks have significant effects on the availability of long-term memory (LTM) facilitated by prior attention-driven processing in

working memory (WM). In addition, the pattern of semantic priming effects observed was reversed between the condition with and without the distraction task. These findings support the hypothesis that semantic activation is an implicit automatic process, and semantic activation of LTM benefits from less attention resources being focused on the process (Ye Liu, Xiaolan Fu, 2007). In another study Darowski, Helder, Hasher and Hambrick (2008) focus on the role of distraction control. They argue that the ability to ignore and control the processing of distraction information may underlie many age-related and individual differences in cognitive abilities. They used reading with a distraction task to examine the role of distraction control in the relationship between age and higher order cognition (Connelly, Hasher, & Zacks, 1991). Their study results suggest that distraction control, as measured by this paradigm, plays an important role in mediating age-related effects on measures of working memory and matrix reasoning.

Research has demonstrated that the paradigm of reading with a distraction has shown age-related differences in the impact of distraction on reading time (Connelly et al., 1991; Duchek et al., 1998; Dywan & Murphy, 1996; Earles et al., 1997; Kim et al., 2007; Salthouse et al., 2003). Consistent with Hasher and Zacks' theory, Darowski et al. suggest that susceptibility to distraction, as measured by the reading with distraction paradigm, plays a role in mediating the effects of adult age on working memory (2008). In particular, while the low-distraction and high-distraction variables had similar correlations with age, only the latter was a statistically significant predictor of working memory and matrix reasoning. This was true in the total sample and in young, middle-aged, and older adult subgroups (Darowski et al., 2008).

Distraction influences eating behaviour. However, studies have shown that the potential for consuming more and overeating is higher when a meal is had under conditions of high cognitive load (Ward & Mann, 2000; Mann & Ward, 2004), or when distracted (Bellisle &

Dalix, 2001; Wansink & Park, 2001; Boon et al. 2002; Bellisle et al. 2004). This is very important as consuming large meal sizes is a major indicator of obesity. Brustrom and Mitchell, on their study of effects of distraction on the development of satiety, conducted two experiments to investigate the hypothesis that distraction causes a reduced sensitivity to the physiological and sensory cues that signal when to terminate a meal.

Study Hypothesis

The literature presented in this Introduction dealt with (1) the context of ethically-themed restaurant operations and 2) cognition as related to the attention of diners to aspects of their restaurant experience as well as effects of distraction on these attentional processes. When the literature across themes 1) and 2) are taken together, the following hypothesis is derived:

Study Hypothesis: Distraction of a personal electronic device (PED) reduces diners' attention to their fine dining experience.

This hypothesis is tested in this thesis across two interrelated studies which are presented sequentially throughout the remainder of this thesis. Study One is comprised of qualitative work to develop a bank of questionnaire items that assess the range of content and a scaling model for the dependent variables assessing diners' attention to their fine dining experience to be used in the hypothesis in Study Two. Study Two investigates the dimensionality of the items comprising the dependent measures and then, with the dependent measures operationalized through a combination of work in Study One and the initial phase of Study Two, the study hypothesis will then be tested.

Study One

Methods

Study Setting: An Ethnically-Themed Restaurant Used as An Academic Laboratory

When a customer walks into Shiraz Café and Restaurant, they enter an environment designed to transport them into the culture and atmosphere of Persia. The interior palette is dominated by two colours, purple and yellow, each given equal prominence on alternating walls. The purple represents wine; the yellow symbolizes saffron – the most valuable spice in the world and a key ingredient in Persian cuisine. Each dining table bears a traditional table cloth with a paisley motif of blue and red on natural cotton, protected by glass panes which provide a clear view of the pattern beneath. Hand crafted candle holders embellished with popular artistic patterns stand at each table. The tablecloths and candle holders were all imported directly from the Esfahan Province of Iran, well known for its hand-made artisan crafts. Burgundy and black tie together the bar, booths, tables and chairs. The bar is home to a large, steaming, Samavar (traditional tea maker) which, hearth like, warms the ambience from the centre of the restaurant, in full view of customers. All along the walls, the restaurant is wrapped in burgundy wood work which encases the booths on one side, providing insulation from both cold and noise.

There are four wall-mounted television monitors, two on each side of the restaurant, on which there are slide shows depicting the restaurant cuisine, themes, and culture. On one monitor are images of the restaurant, dishes, and catering; another shows slides of various events at the restaurant. A third monitor shares slides of different parts of Iran, mainly from the capital city of Tehran, as well as the province of Fars where Shiraz city is located. The fourth monitor projects

pictures from the first photographer in Iran, Jules Richard, a French man who, as stated in his diaries, arrived in Tehran in 1844. Since the restaurant opened, many community members became intertwined with the business to some capacity. To honour and acknowledge these ties, a creative concept was implemented to re-present them within the Shiraz environ. A film strip of 136 community member portraits runs all along the walls, each frame displaying a close-up of a person who has had some level of connection with the restaurant owner, as roommate, friend, co-worker, or university faculty and staff.

The Shiraz business model is based on offering a unique ethnic eating experience, and given the interior design described above, the Persian fare and highly trained staff, its quality with regards to ambiance, food, and service have all been attested to by customer feedback, awards won, and the financial viability of the business. Customer reviews from multiple sources would suggest that guests to the restaurant have felt welcomed into the Shiraz atmosphere, and have been able to appreciate the taste of Persia the restaurant provides (see Appendix A).

Plan for the Development of the Dependent Measure(s) of Diners' Attention to their Fine Dining Experience

In his tutorial on the development of measures for use in survey questionnaires, Hinkin (1998) provides a conceptual framework for the development of measurement scales for social and psychological research in accordance with established psychometric principles for the use of these measures in field studies. Hinkin (1998) notes that:

The American Psychological Association (APA, 1995) states that an appropriate operational definition of the construct a measure purports to represent should include a demonstration of content validity, criterion-related validity, and internal consistency (p. 105).

Study One is intended to generate the items assessing the underlying construct of diners' attention to their fine dining experience; the internal consistency of the items as well as their correlations with other constructs of interest are determined in Study Two.

Nunnally (1978), who is an authority in the field of psychometrics, proposes three major steps in construct validation and theory testing:

Specifying the domain of construct,

Empirically determining the extent to which items measure that domain

Examining the extent to which the measure produces results that are predictable from theoretical hypotheses (Nunnally, 1978).

These three steps are followed through Studies One and Two. The first stage of scale development is to specify the construct domain; in this case, the construct domain of diners' attention to their fine dining experience in an ethnically themed restaurant. This step is accomplished in Study One. In Step (2) Nunnally specifies that items will be needed for the measure of the construct domain identified in Step (1) that can be shown on the basis of empirical analysis to belong to that construct domain. Step (2) is accomplished in the initial phase of Study Two. Nunnally's Step (2) is addressed by the test of the study hypothesis reported in the results section of Study 2 below. To reiterate, the Introduction of this thesis articulates the theoretical foundation that defines the content domain for the purpose of Study One; the Introduction also gives the theoretical rationale for determining which items identified in Study One assess the domain of the dependent measure as determined by item analyses in Study Two; Nunnally's third concern is for a test of the efficacy of the predictions is stated in the

study hypothesis and is tested in Study Two along with predictive analyses of related constructs that may correlate with the dependent variable.

As part of this Step (2) a set of items was for each construct domain, i.e., attention in each sense modality. There are several ways to generate preliminary items. Two common approaches are the deductive (logical partitioning or classification from above) and the inductive (grouping or classification from below) methods (Hinkin 1998). The deductive technique usually is used when the theoretical foundation provides enough information to generate the initial set of items or variables (Hinkin 1998). However, the inductive technique is the most effective approach when the conceptual basis and theoretical basis do not provide easily an identifiable scope for which items or variables can be generated (Hinkin, 1998). In Study One, a combination of deductive and inductive methods were utilized to develop items for the construct domains of the dependent variable(s).

Scaling concerns are relevant to the development of the dependent variable(s) in Study One. The dependent variable(s) in Study Two are defined more precisely as the degree or extent of attention to sensory information surrounding the quality of the ethnically-themed fine dining experience coming through one or more sensory modalities (gustatory, olfactory, auditory, visual, and tactile): The independent variable is defined by this author as a feature of the environment specially the use of personal electronic devices that distracts patrons' attention away from the ethnically-themed fine-dining restaurant experience.

Two types of scales were used for the attention items in the survey questionnaire that is reproduced in Appendix E. Both are Likert-type scales: One is anchored by degree of agreement the respondent has with the statement given in the item (i.e., 1= Not at all; 5= To a great extent); the other type of scale is anchored in the extent of agreement the respondent has with the

statement given in the item (i.e., 1 = Strongly disagree; 5 = Strongly agree). The rationale for including two types of scales in the survey questionnaire was based on whether the item asks for an objective report on restaurant features attended or an opinion about whether a particular feature exists. These scaling types are further explained by now presenting items from the survey questionnaire.

1.3) How would you rate the relationship between the aspect of restaurant décor and its theme as Persian restaurant?

1	2	3	4	5
Not at all	Slight extent	Some extent	Considerable extent	Great extent

The response format for item 1.3 is anchored on the basis of extent of attention because the respondent is being asked to make an objective judgment about what features they have noticed in the restaurant environment through the use of one or more sensory modalities.

Aspects of the restaurant décor or equipment take your attention away from the ethnic experience.

1	2	3	4	5
Highly disagree	Disagree	Did not care and did not get my attention	Agree	Strongly Agree

The response format for this item is anchored on the basis of agreement because the respondent is being asked to express an opinion on salience of that particular feature in the restaurant environment.

Study One Participants

The total number of participants in Study One was 21: Twelve female with an average age of 29 (their ages ranged between 22 and 58 years old), and nine males with an average age of 31, (with an age range from 24 and 64 years old). Seventeen people were residents of Prince George and the rest were visitors on business trips to Prince George. Fifteen people had already experienced dining at Shiraz previously, and the rest were experiencing dining at Shiraz for the first time. Refer to Table 2 for the summary of the demographic for Study One.

Table 2 - Study One participants' demographic information

SEX	Male 9	
	Female 12	
AGE		
16-22	-	
23-28	4	
29-34	9	
35-40	4	
41-46	3	
47 older	1	
RESIDENCE OF PRINCE GEORGE	Yes 17	No 4

Study One Procedure

Participants were recruited from a pool of walk-in patrons to the restaurant during dinner hours. In order to reduce additional distractions that might have reduced attention to aspects of the restaurant environment, only patrons who dined alone were chosen. The researcher approached patrons at the end of their meals to invite their participation in the interview that forms the primarily methodology for Study One. The purpose of Study One and its procedure was explained to potential participants; they were provided with a consent form (see Appendix B). The author asked participants to answer interview questions (see Appendix C) which elicited environmental features that they noticed during their dining experience at Shiraz. The researcher

recorded a summary of the participants' responses to each question which he subsequently content analyzed (see next section on Content Analysis). Each interview took 15-20 minutes, and participants were provided with a \$10.00 gift certificate to Shiraz Restaurant for their next visit to compensate for their time and effort.

Content Analysis

All participant responses were entered into a spreadsheet using Microsoft Excel. Under each sensory modality (e.g., auditory) the participant responses were compiled and classified in preparation for writing an individual item. For example, the majority of respondents mentioned that they attended to sounds coming from the kitchen during their dining experience. Participant responses were coded into the five senses of the multisensory perception model in Figure 3. The aspects of attention were mentioned by more than 80 percent of participants are given in Appendix D under their corresponding sensory modalities. The individual aspects of the sensory modalities listed in Appendix D were used as a basis for writing self-report items for inclusion in the survey questionnaire which would be administered in Study Two. These responses were rewritten by the researcher into the self-report questionnaire items given in Appendix D. All of the items in Appendix D were written in accordance with accepted item-writing rules and conventions.

Results for Study One

Study One was successful in generating a set of items assessing attention to features in the restaurant environment by diners. The participants in Study One were asked to identify aspects of the context under the three primary senses of sight, sound, and smell. Responses that achieved a high degree of consensus among the Study One participants were rendered into stems for survey questionnaire items and appropriate Likert-type rating scales were attached each of

the stems. The survey questionnaire was then ready for administration to the participants in Study Two.

Discussion for Study One

Almost every single participant talked about their attention to sights, sounds, and smells based on the theme of the restaurant as an ethnic Persian restaurant. Apparently the theme of the restaurant created some level of perceptual load for the customers as soon as they entered the restaurant. During the interview, participants attended to features that either represented the theme of the restaurant or helped them to learn more about the theme of the restaurant. They commented less on ordinary and everyday items such as salt and pepper shakers or napkins. In fact, the participants were so occupied with responding to interview questions from the researcher that they would forget about ordering their food.

Study Two

Study Two Methods

Study Participants. The total number of participants in Study Two was 34: Eighteen female with an average age of 29 (their ages ranged between 21 and 61 years old), and sixteen males with an average age of 31, (with an age range from 23 and 65 years old). Twenty-six people were residents of Prince George and eight people were visitors on business trips to Prince George. Refer to the Table 3 for the demographic information on participants of the Study Two.

Table 3- Participants' demographic information for Study Two

SEX	Male 16	
	Female 18	
AGE		
16-22	1	
23-28	13	
29-34	7	
35-40	2	
41-46	5	
47 older	6	
RESIDENCE OF PRINCE GEORGE	Yes 26	No 8

Procedure for Study Two. Similar to the procedure for Study One, participants were recruited from a pool of walk-in customers who were at the restaurant for the purpose of dining during dinner hours. In order to avoid any addition distraction factors only diners who were alone with no company were chosen. The researcher approached patrons at the end of their meals for participation in the study. After the purpose of the study and procedure was explained to potential participant, he or she was provided with consent form (see Appendix B). The survey in Appendix E was then administered to the resident. All respondents were surveyed individually. Estimated time to complete survey was 15 to 20 minutes, and participants were provided with \$10.00 gift certificate to Shiraz Restaurant for their next visit to compensate for their time and effort on participation.

Variables in Study Two. Study Two was correlational in nature in that both the independent and dependent variables were measured (i.e., there was no experimental manipulation of the independent variable. Other variables were measured to serve as a possible basis for partial construct validation of the dependent variable(s).

Independent Variable. The independent variable for the purpose of testing the study hypothesis in this thesis consisted of the single item (item 3.4 in Appendix E). This item assesses the extent that diners were distracted by using their cell phone and is measured on scale of 1 to 5 (1= not at all, 5= great extent).

Dependent Variable(s). Based on the psychometric principles reviewed in Study One it was expected that the items developed in Study One would reach a satisfactory level of internal consistency within the constructs represented by the three of the distinct sensory modalities depicted in the upper left-hand area of Figure 3. Item total correlations were computed for each of the five sense modalities, e.g., the sight modality-related items 1.2 through 1.12 from Appendix E were summated into a composite score and the score on each of the items 1.12 through 1.12 was correlated individually with the sight composite. As shown in Table 4, no meaningful patterns of internal consistency were seen for any of the three sensory modalities with the exception of two smells items. In short, the conventional psychometric approach failed to uncover an underlying structure across the three sensory modalities.

Table 4 - Item Statistics across Three Sensory Modality

Sight Items Modality	Item total correlation	Item Mean	Item Standard division	
Item #1.2	0.20	4.18	0.67	
Item #1.3	0.39	4.03	0.71	
Item #1.5	0.22	4.15	0.89	
Item #1.6	0.30	4.59	0.50	
Item #1.7	0.36	3.53	0.70	
Item #1.8	0.31	4.15	0.82	
Item #1.9	-0.03	4.32	0.72	
Item#1.10	0.26	2.79	0.94	
Item #1.11	0.45	4.03	0.71	
Item #1.12	0.17	3.56	1.10	
		39.32	3.60	0.57
Sound Items Modality	Item total correlation	Item Mean	Item Standard division	
Item #2.1	0.66	4.38	0.65	
Item #2.2	0.66	4.56	0.82	
		8.94	1.35	0.78
Smell Items Modality	Item total correlation	Item Mean	Item Standard division	
Item #4.1	0.39	3.29	1.00	
Item #4.2	0.60	2.65	1.47	
Item #4.3	0.29	1.85	1.26	
Item #4.4	0.39	4.26	0.93	
		12.06	3.25	0.62

A different approach was needed to reflect any underlying pattern of sensory attention across the items in Appendix E which could comprise one or more dependent variables for the purposes of the hypothesis test. A hint is found in Figure 4: Sensory input may not be discretely attended by individual modality; instead, people might integrate these individual sensory modalities into integrated sensations. Diners might attend to these integrative sensations rather than to individual sensory modalities. This possibility was tested by conducting a multidimensional scaling (MDS) analysis across all the items in Appendix E that assess attention to any of the sensory modalities. The MDS was conducted with the specifications that (1) the items are summed to measure their underlying constructs at an ordinal level of measurement; (2) the distances in the MDS are Euclidean differences between the scale items (DVs) in Appendix

E; and (3) the MDS was carried out until a number of dimensions was extracted that yielded an acceptable stress value.

The result of multidimensional scaling analysis depicted in Figure 7 clearly shows that the attention items (D) when submitted to multidimensional scaling analysis grouped into two clusters. Remarkably these two clusters conform with the conceptual definitions of endogenous selective attention by diners to their fine dining experience or ENATT (See Cluster A in Figure 7) and exogenous selective attention by diners to their fine dining experience or EXATT (see Cluster B in Figure 7). Close examination of the items in Cluster A show that the diners' attention to these aspects of their restaurant experience is controlled and deliberative (goal-directed) and is probably guided by the ethic theming of the restaurant intended by the restaurateur to constitute an immersive dining experience. Examination of the two items in Cluster B shows that both of these items reflect the sudden and vivid intrusion of smells (olfactory stimulus-driven) which immediately capture the diners' attention. The correspondence of the two clusters derived by the multidimensional scaling analysis to the two aspects of selective attention found in the model in Figure 4 developed by the author provide some interesting theoretical and explanatory material that is discussed in greater detail in the Discussion section of Study 2 as well as the overall Discussion.

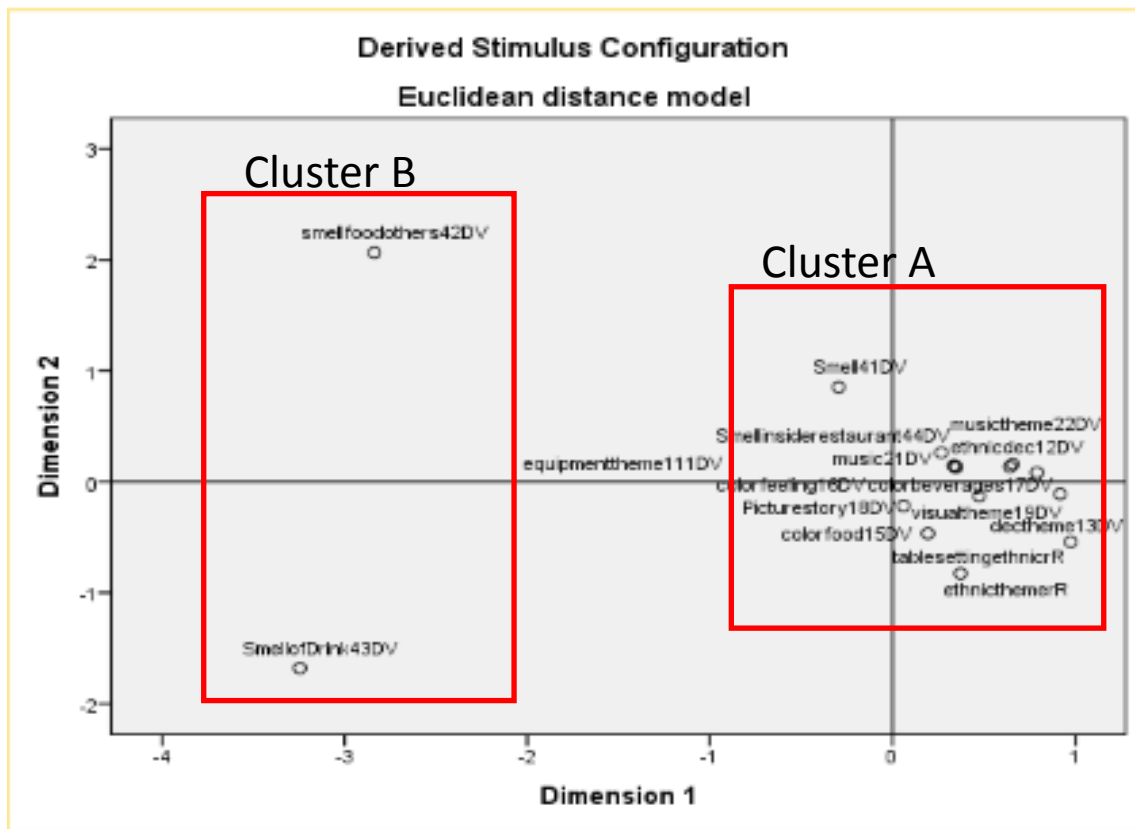


Figure 7. Multidimensional Analysis by SPSS of the Sensory Attention Items identified in Study One

Table 5 - Stimulus Coordinates in Two Dimensions for Data Points Graphed in Figure 7

Item Number	Item Name	Stimulus Coordinates Dimension1	Stimulus Coordinates Dimension2
1.2	ethnicde	.6581	.1573
1.3	dectheme	.4748	-.1273
1.5	colorfoo	.1936	-.4666
1.6	colorfee	.6428	.1350
1.7	colorbev	.7900	.0829
1.8	Pictures	.0606	-.2164
1.9	visualth	.9175	-.1109
1.11	equipmen	.3347	.1455
2.1	music21D	.3456	.1282
2.2	musicthe	.3431	.1421
4.1	Smell41D	-.2949	.8532
4.2	smellfoo	-2.8361	2.0636
4.3	SmellofD	-3.2444	-1.6796
4.4	Smellins	.2676	.2628
1.10	ethnicth	.3723	-.8267
1.12	tableset	.9747	-.5430

The items in Cluster One were collectively interpreted as endogenous selective attention by diners to their fine dining experience and a summation of the items in this cluster (ENATT) was interpretable as attention to and within an immersive restaurant experience. Consequently, ENATT was used as the dependent variable for the purposes of testing the study hypothesis. To assess the reader in interpreting Figure 7, the stimulus coordinates for corresponding to the scatter gram in Figure 7 are presented in Table 4.

Other Variables

Several other items were placed into the responded questionnaire for the purpose of conducting explorative analysis for construct validation of the dependent variable ENATT. The two items in Cluster Two (items 4.2 and 4.3) of the previously reported multidimensional scaling analysis were summated to yield a measure (EXATT) of exogenous selective attention by diners to their fine dining experience. Age was assessed by item 1D in Appendix E and scored into six age ranges (16- 22; 23-28; 29-34; 35-40; 41-46; 47 or older). Sex was assessed by item 2D in Appendix E (coded as male = 1; female = 2). Five items were also included in the survey questionnaire in Appendix E to assess other types of distraction besides in the use of a personal electronic device: Distraction of the restaurant décor or equipment (item 1.5.); Distraction of kitchen and food/drink preparation (item 2.4); Distraction of sounds in the restaurant (e.g., from the kitchen, other diners) (item 3.4); Distraction from diner conversations at other tables (3.5); and Distraction of restaurant staff talking to other diners (item 3.6).

A Priori Power Analysis

A power analysis was conducted to determine the number of participants that would be needed for the hypothesis test in Study 2. Based on the literature review in the Introduction

section, it was expected that a large effect would be found when the study hypothesis was tested. Cohen states that an effect size of .50 or larger comprises a large effect and so the value of .50 was assumed for this study. Other values that were set for the power analysis were: (1) a one-directional hypothesis test was assumed; (2) an alpha (α) = .05 was set; and (3) the desired power for the hypothesis test was assumed to be .80. Reference to power tables in Cunningham, Weathington, and Pittenger (2013) yielded a required sample size of at least 24 participants.

Results for Study Two

Test of Hypothesis. The study hypothesis was tested by correlating the independent variable assessing the extent that diners were distracted by using their cell phone with the dependent variable: Assessing endogenous selective attention by diners to their fine dining experience (ENATT). The theoretical expectation was that a greater extent of cell phone usage would correlate negatively with diners' attention to their fine dining experience. These two variables correlated at .26. This result is opposite to that hypothesized; therefore, the study hypothesis was disconfirmed. It appears that greater use of a diner's cellphone was not associated with greater (endogenously-driven) attention to the various aspects of the fine dining experience.

Exploratory Analyses. Interestingly, the test of the study hypothesis was not supported and endogenous attention was not affected by distraction of a personal electronic device (PED), the correlation of exogenous attention with the distraction of a PED was .29 ($p < .05$; one-tailed test). This second result which correlates exogenous attention with use of a PED shows that a greater extent of cell phone use is positively associated with stimulus-driven attention to smells in the restaurant environment. Correlation of the sex variable with ENATT yielded a value of 10

(ns); the correlation of the sex variable with EXATT was .21 (ns). Therefore, there does not appear to be any differences between males and females in either their endogenous or exogenous attention to their fine dining experience. Correlation of the age variable with ENATT yielded a correlation of $-.35$ ($p < .05$; one-directional test) and with EXATT a correlation of $-.21$ (ns); older patrons of the fine dining establish are less likely to endogenously attend to the ethnically-themed immersive experience offered by the restaurant than are younger people. None of the ten correlations of the other five distraction measures described under Other Variables were significant in their relationships with either ENATT or EXATT.

Discussion for Study Two

Study Two took some unexpected turns. First, the items in the survey questionnaire that were intended for inclusion in the dependent variable(s) did not relate highly with the other items for the same construct, e.g., sight. The traditional psychometric approach did not provide a satisfactory solution in this instance. However, when all of the attention items in the survey questionnaire were taken together and submitted to an exploratory analysis (i.e., multidimensional scaling) two clusters were found that were highly interpretable within the theoretical developments presented in the Introduction. These findings identified a very suitable dependent variable for testing the study hypothesis (endogenous selective attention by diners to their fine dining experience or ENATT).

The hypothesis was disconfirmed because the expected negative relationship with the distraction of a personal electronic device and ENATT was found. In fact the positive significant correlation of distraction by a PED with exogenous selective attention by diners to their fine dining experience (ENATT) was found which required a re-thinking of the effects of personal electronic devices in immersive restaurant experiences. The overall discussion now

picks up on the threads of both Study One and Study Two to propose three possible exploratory hypotheses that can be tested in future research into the effect of cellphone distraction on diners' attention to their immersive experiences.

Combined Discussion for Studies One and Two

There are at least three possible explanations for the failure to support the study hypothesis tested in this thesis. The first can be called the stimulus blocking hypothesis. This explanation invokes the idea that diners' working memory was overloaded due to the effect of the immersive experience in an ethnically-themed restaurant. This overload of working memory decreased the likelihood that the distraction caused by the monitoring the diners' personal electronic device occupied a significant portion of the limited capacity of the working memory. In this case, the stimulus represented by the personal electronic device may have been at least partially blocked in working memory by the predominance of stimuli from the larger restaurant context. In fact, Lavie and her colleagues (Lavie & Dalton, 2014; Lavie & Hirst, 2004), when studying perceptual selection mechanisms, found that when the amount of relevant information is increased (resulting in higher perceptual load), people will tend to exclude irrelevant (distractive) stimuli. If the stimulus blocking hypothesis proves to be correct then the restaurateur would be well advised to deepen and enrich the restaurant ethnic theme in order to block out the distraction of personal electronic devices rather than trying to minimize or remove the distraction of the personal electronic device.

The second possible explanation for the failure to support the study hypothesis can be called the stimulus override hypothesis. Whereas the first hypothesis (stimulus blocking) invoked working memory, the stimulus override hypothesis focuses on the function of long-term memory in directing the diner's attention. If the stimulus override hypothesis proves to be

correct then information about the rich context of the immersive restaurant experience is stored in long-term memory and this experience memorability (referring back to the Introduction section of this thesis) would override the distraction effect of using a personal electronic device. If the stimulus override hypothesis was proved to be correct in subsequent research, then the restaurateur would again be well advised to further build up the restaurant theme to engage diners to an even greater extent through the restaurateur-designed immersive experience rather than trying to minimize or remove the distraction of the personal electronic device.

The third possible explanation for the failure to support the study hypothesis will only hold if future research can definitively establish a positive relationship between the distraction of the personal electronic device with endogenous attention to diners' immersive experience. This explanation, if supported by further empirical study, could be called the stimulus search hypothesis. In this case, diners would actively search for features that are consistent with and support the overall theme of the immersive experience. These diners would use their personal electronic devices as ready-to-hand tools for enhancing or sharing their immersive dining experience (e.g., they might post a picture of the meal in the themed restaurant to their family and friends in real time and get a restaurant discount to do so). The stimulus search hypothesis views diners as highly motivated actors on the stage of the immersive dining experience who might look to personal electronic devices as a means to enhance their dining experience rather than as a focus of attention that detracts from their immersion in the restaurant theme. If the stimulus search hypothesis is borne out, then restaurateurs should encourage diners to bring their cellphones and other personal electronic devices onto the theatrical stage which is the immersive dining experience and to use these devices creatively to enrich their dining experience

while at the same time providing no- or low-cost personal relationship marketing and goodwill for the restaurant.

Aspects of the restaurant that are inconsistent with the theme driving the immersive experience may become distractions in their own right. For example, a few of the participants mentioned that they generally do not like TVs in restaurants because they find them distracting; however, the fact that the TVs in Shiraz were showing slide shows of Iran got their attention. Another example was mentioned by a few participants who paid attention to background music to a greater extent if it was a popular western tune with Farsi lyrics – this music might have become a distraction if the song was sung with English lyrics and a country twang. Again, it is up to the restaurateur to design a dining environment that will provide an engaging immersive experience that does not impose unnecessary distractions that diners may find disruptive of that immersive experience.

A Different Source of Immersive Experience: Video Games

Immersion is a term widely used in the video game industry. Video game designs have successfully incorporated positive user experiences, leading players of the game to play for hours at a time. This persistent willingness to play is associated with immersion but, from previous work, it is clear that immersion is not a simple concept. Instead, there are different levels of immersion and games must not block the achievement of these different levels if a player is to achieve immersion. Even so, players do not expect to be fully immersed (present) in the game all the time (Cheng & Cairns, 2005). Some principles of immersive experience from the gaming industry might be usefully transplanted to restaurant settings.

A study by Cheng and Cairns (2005) showed that participants were engaged with the game at such a level that they did not notice a tenfold change in their character's jumping ability, despite being forced to utilize jumping on several occasions to complete the level. This result demonstrates that immersion can overcome usability elements that players might otherwise find deleterious. Due to immersion, the participants completely failed to notice what had been determined to be modal incoherence - a mismatch between graphical and behavioural realism - compared to what the participant expected. Building on this work, and considering responses of participants in Study 1, future studies can be designed to examine people's expectations of how a themed restaurant should build its theme and what would occur if that theme became incoherent due to the intrusion of features that are inconsistent with, or even undermine, the restaurant theme. In other words, the relationship between immersive effect and cognitive control load at the restaurant can be another interesting realm of research. Again, application of knowledge from the gaming industry may help in the research and design of immersive experiences in restaurant settings.

Emotion versus Cognition in Immersive Restaurant Experiences

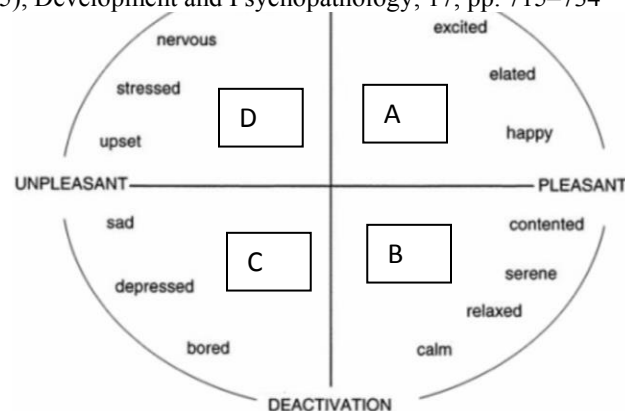
The two studies in this thesis focus on the cognitive processes of diners in an immersive restaurant experience. There is good reason however to believe that the pleasant affective (emotional) reactions of the diners will be important in creating a memorable experience for them. Figure 8 gives a graphical representation of the Circumplex Model of Affect (Posner, Russel & Peterson, 2005) with the horizontal axis representing the valence (pleasant to unpleasant) dimension and the vertical axis representing the arousal or activation dimension. Posner, Russel and Peterson (2005) argue that discrete and independent neural system subserves every emotion, that emotions can be divided into discrete and independent categories, and that

specific neural structures and pathways subserve each of these emotional categories. The Circumplex Model of Affect (Posner, Russel & Peterson, 2005) presented in Figure 8 suggests some interesting possibilities for future research that might explore how cognitive and affective processes support and augment each other during an immersive experience in a restaurant setting.

Consider a scenario where the immersive restaurant experience activates pleasant feelings in customers where they become excited, happy, or elated (See Quadrant A of the Circumplex Model). Because emotion impacts on retention of information in long-term memory, greater activation of affect that is experienced as pleasant should result in more sustained attention and the dining experience should be remembered more easily. The design goal for the restaurateur then becomes the activation of pleasant emotions to create a more memorable experience for diners by engaging both their cognitive and affect, so enhancing the positive effects of the dining experience or the customer and affording greater economic success to the restaurateur.

Research and practice should address how cognition and emotion support and augment each other in immersive restaurant experiences.

Figure 8. The Circumplex Model of Affect. Reproduced from: An integrative approach to affective neuroscience, cognitive development, and psychopathology by Jonathan Posner, James A. Russell, and Bradley S. Peterson (2005), *Development and Psychopathology*, 17, pp. 715–734



Age Effects on Endogenous Attention

The exploratory analyses in Study Two found that older patrons of the fine dining establishment are less likely to endogenously attend to the ethnically-themed immersive experience offered by the restaurant than are younger people. This result parallels research finding that older people score lower on the Big Five Personality Factor of Openness to Experience (McCrae et al., 1999). Perhaps the lower openness to experience of older people makes them less receptive to the novelers' experiences of an ethnically-themed restaurant and less likely to attend to ethnic features of the restaurant environment.

Perhaps future research might establish that the activation of pleasant emotional experiences though restaurant design has a greater impact on older people than on younger people; if so, this effect might offset the lower attention by older people to the themed aspects of the restaurant and so encourage them to come back to the restaurant. This is especially true in light of research indicating that emotional well-being and agreeableness improve over the life span and into old age (Carstensen et al., 2011; McCrae et al., 1999). It is becoming clear that both cognitive and affective processes of diners in different age groups should be considered in restaurant design.

Limitations and Recommendations for Future Research

Based on the literature review in the introduction to this thesis, the likely effect size when testing the study hypothesis was expected to be large and the power analysis reported in the Methods section of Study 2 suggested that adequate power for testing the hypothesis would be achieved with a relatively small number of respondents. The data collection in Studies One and Two was labour-intensive and time-consuming, as well as being done on an individual basis and depending on the presence of single diners in Shiraz. Therefore, it was reasonable and even necessary to be economical in the use of respondents and not to collect data for Study Two much

in excess of the power requirements. However, the effect sizes for the correlations between the attention and distraction variables were considerably smaller than those anticipated in the power analysis (and of course the sign of the correlations were opposite to that predicted by the study hypothesis). If these relationships are explored in future research, it is recommended that the number of respondents be increased; the effect sizes reported in this thesis can provide estimates that can be entered into a power analyses for future studies on the topic.

This study was employed only single diners who were alone at their table. This strategy was taken to minimize any confounds that might occur due to possible distraction of other people at the table. However, the generalizability of the study results is correspondingly limited. Future research should test the effect of PED distraction on attention in restaurant settings where more than one diner is seated at the table.

Conclusion

The results of this thesis provide some suggestive hints about the effects of PED usage in a restaurant setting where the operator has a goal of creating an immersive experience for diners. Rather than proving to be a distraction, PED usage might under some circumstances enrich the immersive restaurant experience. Use of a PED as a part of the diner's experience immersion might enhance their sensory experience. Furthermore, although this question is not studied in this thesis, PED usage might also help in relationship building between the restaurant owner and patrons, as well as the wider community and culture, as a part and parcel of the larger restaurant experience. Used in a positive way, PEDs could in fact make a valuable contribution to the business model, rather than taking away from the customer experience and from the business' success.

If it can be concluded that PEDs do not detract from, but might add to, the diner's immersive experience then perhaps PEDs can be used organically for PR, marketing, and communication with clientele as the restaurant experience unfolds – unlike pre-internet times, people/consumers now have public profiles, which allow them to be contacted without breaching the private domain. As such, patrons can form relationships with proprietors, businesses, and organizations, thereby finding multiple communications channels via which to close feedback loops to producers and alter goods and services at their source. In the experience immersion independent restaurant industry, PEDs might be a key tool for doing so: Research should be conducted to determine the possible efficacy of PED usage within restaurant operations and to better understand the cognitive basis for these effects.

Last but not least, this research study and immersive thesis experienced has provided me with a deeper knowledge and learning on customer behavior and their responses to the efforts of the restaurateur to provide an immersive experience for his customers. I believe that I will become a better and more successful restaurateur and business person as a result.

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Appendix A

Shiraz Café and Restaurant: Customer Reviews

Shiraz is like visiting another city or country. The atmosphere really feels comfortable and gives a real Persian feel. (Guest review, 2016a) on Trip Advisor 1/15/2016

The decor inside is very nice and romantic. (Guest review, 2016b) 2/22/2016 Guest rev.

Enjoyed the beautiful pictures of Iran on the screen. Loved the ambiance. Would definitely return and would highly recommend. (Guest review, 2016c) 2/8/2016 Guest review on Trip Advisor

The atmosphere was also very nice in this restaurant and it felt like you were transported to the Middle East while you dine here. (Guest review, 2016d) 1/14/2016 guest review on Trip Advisor

Open concept and warm atmosphere. We had a warm welcome and sat by the window with a view. Great waitress with a good knowledge of the traditional food there.” (Guest review, 2015) 11/19/2015 guest review on trip advisor

In addition to guest reviews on public websites, Shiraz has won numerous awards since opening, including the Premier's People's Choice Award in February 2016.

Appendix B

School of Business
University of Northern British Columbia

Study Team

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Acting Chair, School of Business
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Innovation and Study Purpose

We want to learn more about consumer perception in food industry especially during peoples' dining experience in a fine dining restaurant. Today, most research on consumer perception in food industry are done as propriety research by large corporations who keep the results of their studies private, don't publish them publically, and only use them to their own benefit. This study will help small businesses to have a better and scientifically-based understanding of consumer perception during the fine dining experience.

This study is an investigation into the factors that impact the attentiveness of an individual during their fine dining experience. Research has shown that visual cues, primarily those related to a food's colour, exert a profound effect on consumers' perception of their dining experience and, to a lesser extent, their perception of the intensity of a food's taste and flavour. In addition, the sound of food preparation while the food is being handled in the cooking area may influence flavour perceptions by the diner who is overhearing this activity. The sense of smell as well as four other cues (namely visual, orthonasal olfactory, distal auditory, and tactile), are referred to as exteroceptive cues, or (to use other words) flavor expectancy cues. Therefore, in the majority of cases

these cues are available prior to the food's consumption; they typically provide the greatest contributions in terms of our expectations about the food's likely texture, aroma, and/or taste. Hence, these four other senses also play an important contributory role in terms of flavour perception.

Study Procedures

We use interview and survey methods to collect data. You are being invited to take part in this research study because you are a diner at the Shiraz Restaurant and participants for this study are being recruited from customers who walk into the restaurant for purpose of dining during dinner hours. The participants must be alone and not be in the company of others. Participation in this study is entirely voluntary and you are in no way obligated to participate in this research. You are free to withdraw from this study at any time. You are also free not to answer any questions that make you feel uncomfortable. The questions in this study are centred around the things that get your attention or distract you during your dining experience at Shiraz. If you agree to participate in this study here is what will happen next.

- You will sign the research informed consent form
The interview should not take longer than 5 minutes.
- The researcher will interview you and ask you questions related to your dining experiences; the researcher may also ask you to complete some questionnaire measures
- If you decide to withdraw from the study at any time, all of the information you provided will also be withdrawn and destroyed.
- Only researcher (Reza Akbari) and his supervisor (Dr. Steven Cronshaw) have access to the raw data. All the information will be kept securely at the researcher's office and will be in a locked shelf. The information will be kept until the study is finished and defended successfully. After, all the information will be shredded and destroyed.
- After the study is completed or at any time you choose to leave the study, you will receive \$10 gift certificate to Shiraz plus you can receive the written result of study at a future time if you wish

- It is important to know that you will receive \$10 Gift certificate even if you decide to not participate or decide to withdraw from the study at any time.
- Given the public nature of your participation, we would like to inform you that anonymity cannot be guaranteed.

Potential Risks of Study

There are no physical risks from participating in this study. We do not think there is anything in this study that could harm you. However, if at any point in the study you feel uncomfortable or upset and wish to end your participation, please notify the researcher immediately and your wishes will be respected.

All documents related to this study will be identified by code number and kept in a locked filing cabinet in a locked office. Subjects will not be identified by name in any reports of the completed study.

The results of this study will be reported in a graduate thesis authored by Reza Akbari and supervised by Dr. Steven Cronshaw. The results may also be published in journal articles and books. Please contact, Reza Akbari (researcher and master student) at the following e-mail address reza1akbari@gmail.com if you have any questions regarding this study. You can also contact his supervisor Dr. Steven Cronshaw.

Contact information for Research Ethic Board of the University of Northern British Columbia for any complaints.

Phone [250.960.5852](tel:250.960.5852) Email: reb@unbc.ca

We expect to finish the study before March 2016. Therefore you can expect to receive a copy of the study via email by end of April 2016.

If you are in agreement with the above, please sign and date two copies of this Informed Consent. You will receive a copy of this Informed Consent Form for your own records.

RESEARCH INFORMED CONSENT FORM

Title of Project:	Study One / Study Two 1-Identifying dependable variables 2-Measuring the level and impact of dependable Variable	Ethics Approval Number:	
Investigator(s)/ Researcher:	Reza Akbari	Researcher Email:	Reza1akbari@gmail.com shaerba@unbc.ca

Faculty Investigator: Dr. Steven Cronshaw
Acting Chair, School of Business
Professor, Human Resources Management

Please read the following statements and, if you agree, initial the corresponding box to confirm agreement:

	Initials
You confirm that have read and understand the information sheet for the above study. You have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
You understand that your participation is <u>voluntary</u> and that you are free to withdraw at any time without giving any reason. You understand that You will receive a \$10.00 gift certificate to Shiraz restaurant either for participating at Study One or Study Two. You understand you will receive the gift certificate whether you participate in this study or not, or withdraw at any time without giving any reason.	
You understand that your data will be treated confidentially and any publication resulting from this work will report only data that does not identify you.	
You freely agree to participate in this study.	

Signatures:

_____ Name of participant	_____ Date	_____ Signature
------------------------------	---------------	--------------------

_____ Researcher	_____ Date	_____ Signature
---------------------	---------------	--------------------

Appendix C

Interview Questions for Study One

- 1) Is it your first time at this Restaurant?

Yes No
- 2) If this is not your first time at Shiraz how often do you visit Shiraz?
 - a. Once every two months
 - b. Once every month
 - c. Two or more per month
- 3) Gender
 - a. A. female
 - b. B. Male
- 4) How old are you?
 - a. 18-25
 - b. 26-31
 - c. 32-37
 - d. 38-45
 - e. Older than 45

Vision:

- 1) Are there things that you saw or attend to that were important during your dining experience at Shiraz?
- 2) Are there things that distracted you from your dining experience at Shiraz?

Hearing:

- 3) Are there things that you heard or attend to that were important during your dining experience at Shiraz?
- 1- Are there things that you heard and distracted you?

Smell:

- 1) Are there things that you smelled or you attend to smell and positively impacted your experience at a Persian restaurant?
- 2) Are there things that you smelled or you attend to smell and negative impacted or distracted you from your experience at a Persian restaurant?

- Did you use any electrical device during your dining in?

YES NO

- Did you response to your messages or email during your dining experience?

Yes No

Would visit a restaurant with restriction of “Distraction free” means no electric device is allowed during your dinning in.?

No

Yes, once in blue moon

Yes, once in every two months

Yes, at least once in a month

Appendix D

The summary of items (study one) under each element of the sensory model is shown below:

Sight

- The colours of the restaurant decor (walls, finish, etc.) match the ethnic theme (Persian)
- Aspects of the restaurant décor or equipment take your attention away from the ethnic experience
- The colours of the restaurant (walls, finish, etc.) complement the state of the spice used in the food (saffron)
- The colours of the restaurant are warm and welcoming
- The colours of the restaurant complement the brand of wine served
- Pictures on the wall reflect the personal story of the restaurant
- The visual presentations (TV) in the restaurant reflect the restaurant's ethnic theme (Persian)
- Some aspects of the restaurant do not fit the ethnic theme
- The food- and drink-making equipment, is integrated into the diner's experience of the ethnic theme
- The table setting (e.g., salt and pepper shakers, menu, other script) does not fit the ethnic theme of the restaurant

Sound

- The music in the restaurant is pleasant
- The music in the restaurant complements the restaurant's ethnic theme

- Sounds from the kitchen and food/drink preparation carry into the restaurant
- The sounds in the restaurant (e.g., from the kitchen, other diners) disrupt my dining experience]
- Diners at other tables engage in conversation
- The restaurant staff talk to other diners

Smell

- Smell of food is noticeable throughout the restaurant
- Smell of food taken to other tables by restaurant
- Smell of drink (Persian tea) is noticeable when served

All of these items were transformed to the scale based questions to estimate the strength of each item (dependent variables) in quantitative format.

Appendix E

Questionnaire completed by subject in study two

NOTE: The terms in bold and bracketing were added to this questionnaire during the analysis phase of this project, and so were not visible to the study participants.

Added variable codes for purpose of data analysis:

These codes were added to the questioner after data was collected, in order to provide map connecting these into data analysis in the result section. The study participants did not see these codes.

D: demographic variable

IV: independent variable

DV: dependent variable

SV: Summative variable

R: Scale for that item is reverse-coded

C(x); [X=A,B,C,D] indicate the multidimensional scaling cluster to which this variable belongs after MDS analysis as reported in the result section for study two.

How old are you? **(1D)**

16- 22 23-28 29-34 35-40 41-46 47or older

Circle one: male or female **(2D)**

1.1) How would you rate the effects of the restaurant décor and items on your dining experience? **(SV1)**

1: Very comfortable

2: somewhat comfortable

3: somewhat uncomfortable and stressful

4: very uncomfortable

Please consider the following aspect of restaurant environment and rate each aspect on 5 point scale provided.

1.2) To what extent did you notice the restaurant Persian theme décor? **(DV) (CA)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

1.3) How would you rate the relationship between the aspect of restaurant décor and its theme as Persian restaurant? **(DV) (CA)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

1.4) Aspects of the restaurant décor or equipment take your attention away from the ethnic experience **(IV)**

1	2	3	4	5
Highly disagree	Disagree	Did not care and did not get my attention	Agree	Strongly Agree

1.5) The colours of the restaurant (walls, finish, etc.) complement the taste of the spice used in the food such as (saffron) **(DV) (CA)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

1.6) The colours of the restaurant are warm and welcoming **(DV) (CA)**

1	2	3	4	5
Highly disagree	Disagree	Did not care and did not get my attention	Agree	Strongly Agree

1.7) The colours of the restaurant complement the brand of wine and beverages served **(DV) (CA)**

1	2	3	4	5
Highly disagree	Disagree	Did not care and did not get my attention	Agree	Strongly Agree

1.8) Pictures on the wall reflect the personal story of the restaurant **(DV) (CA)**

1	2	3	4	5
Highly disagree	Disagree	Did not care and did not get my attention	Agree	Strongly Agree

1.9) The visual presentations (TV) in the restaurant reflect the restaurant's ethic theme (Persian) **(DV) (CA)**

1	2	3	4	5
Highly disagree	Disagree	Did not care and did not get my attention	Agree	Strongly Agree

1.10) Some aspects of the restaurant do not fit the ethnic theme **(DV) (R) (CA)**

1	2	3	4	5
Highly disagree	Disagree	Did not care and did not get my attention	Agree	Strongly Agree

Can you give example: (Optional)

1.11) To what extent the food-and drink making equipment, is consistent with the ethnic theme, for example Traditional tea maker at the bar (Samovar). **(DV) (CA)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

1.12) The table setting (e.g., salt and pepper shakers, menu) does not fit the ethnic theme of the restaurant **(DV) (R) (CA)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

Sound

2.1) The music in the restaurant is pleasant **(DV) (CA)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

2.2) The music in the restaurant complements the restaurant's ethnic theme **(DV)**
(CA)

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

To what Extent did the following factors distracted you while you were dining at the restaurant:

2.3) Sounds from the kitchen and food/drink preparation carry into the restaurant **(IV)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

3.1) The sounds in the restaurant (e.g., from the kitchen, other diners) disrupts my dining experience] **(IV)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

3.2) Diners at other tables engage in conversation got my attention, and it was unpleasantly distractive. **(IV)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

3.3) The restaurant staffs talk to other diners, got my attention, and it was unpleasantly distractive. **(IV)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

3.4) To what extend were you distracted by using your cellphone? **(IV)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

Smell

4.1) Smell of food is noticeable throughout the restaurant **(DV) (CA)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

4.2) Smell of food taken to other tables by restaurant staff is noticeable and got my attention **(DV) (CB)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

4.3) Smell of drink (Persian tea) is noticeable when served **(DV) (CB)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

4.4) Smell inside of the restaurant is soft, easy and related to the theme of the restaurant. **(DV) (CA)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

Rate your experience based on “how was your feeling or mood during your dining experience”, 1 is not positive at all, 5 is the best and very positive. **(SV2)**

1	2	3	4	5
Not at all	Slightly extent	Some extent	Considerable extent	Great extent

Any comment on things that distracted you or got your attention during your dining experience at the restaurant?