5-1-2017

Examining the Decoy and the Phantom Decoy Effects on the Menu Item Choice

Yang-Su Chen
University of Nevada, Las Vegas, idleartist413@gmail.com

EXAMINING THE DECOY AND THE PHANTOM DECOY EFFECTS ON THE MENU ITEM CHOICE

By

Yang-Su Chen

Bachelor of Science in Business Administration
National Chung Hsing University, Taiwan
2009

Master of Science in Hospitality and Tourism Management
Purdue University
2012

A dissertation submitted in partial fulfillment
of the requirements for the

Doctor of Philosophy – Hospitality Administration

Hospitality Management
William F. Harrah College of Hotel Administration
The Graduate College
University of Nevada, Las Vegas
May 2017

UNLV | GRADUATE COLLEGE

Dissertation Approval

The Graduate College
The University of Nevada, Las Vegas

April 3, 2017

This dissertation prepared by

Yang-Su Chen

entitled

Examining the Decoy and the Phantom Decoy Effects on the Menu Item Choice

is approved in partial fulfillment of the requirements for the degree of

Doctor of Philosophy – Hospitality Administration
Hospitality Management

Carola Raab, Ph.D.
Examination Committee Chair

Kathryn Hausbeck Korgan, Ph.D.
Graduate College Interim Dean

Chih-Chien Chen, Ph.D.
Examination Committee Member

Yen-Soon Kim, Ph.D.
Examination Committee Member

Anjala Krishen, Ph.D.
Graduate College Faculty Representative

ABSTRACT

EXAMINING THE DECOY AND THE PHANTOM DECOY EFFECTS ON THE MENU ITEM CHOICE

by

Yang-Su Chen
Dr. Carola Raab, Committee Chair
Professor of Hotel Administration
University of Nevada, Las Vegas

In the modern foodservice industry, restaurant potential customers encounter a vast quantity of information that influences their dining choices. Using theoretical foundations of traditional asymmetrical-dominating decoy and phantom decoy effects, this dissertation empirically tested a variety of decoy and phantom decoy items applied to a menu and investigated whether these effects increase the attractiveness of the target item and further increase customers' likelihood of choosing the target item, as well as their post-choice assessments. Two separate experimental designs that manipulated different decoy and phantom decoy conditions and customers' familiarity with the food items were conducted.

The results of study 1 suggest that small-portion decoy items create significant impacts to sway people's choice of small-portion menu items when they are familiar with such items. However, customers with low-familiarity are more likely to choose large-portion menu items. The results of study 2 demonstrate how the incorporation of distant phantom decoy items can influence customers' decisions. Specifically, this relationship is moderated by customers' familiarity levels with such food items. The results of this dissertation lend support to the effectiveness of strategically including decoy and phantom decoy items on the menu. Specific practical applications with regards to the decoy effects are provided to restaurant operators.

ACKNOWLEDGEMENTS

I would first like to express the deepest appreciation to you, my committee chair, Dr. Carola Raab, as an extraordinary mentor and supporter of my three-year journey in the doctoral program. Thank you for all you have done for me, including those countless hours we spent in your office on both weekdays and weekends. Thank you for your continuous support and encouragement when I encountered frustration, and thank you for sharing laughter and life experiences with me. Without your guidance and persistent help, this journey would not have been so fruitful. You have positively influenced my "theoretical and practical" life, and I am looking forward to exploring more significant phenomena with you in the future.

I would like to thank my committee members. To Dr. Chih-Chien Chen, I am grateful for the knowledge you have bestowed upon me by spending endless hours exploring research ideas and methodology. I am honored to have had two journal articles published with you during my Ph.D. journey. I cannot believe three years have passed since we first met on a scorching summer day in Vegas. Thank you for being there as a mentor, a listener, and a friend to share happiness and achievements with me for the past three years.

To Dr. Anjala Krishen, I will always miss the time I spent sitting in your Marketing Research class every Wednesday night in my crazy 5th semester. Your contagious vibes in the classroom have taught me to be a great teacher, a great supporter, and an outstanding researcher. Thank you for always providing valuable insight into our research projects. Your advice will never be absent in my future research work.

To Dr. Yen-Soon Kim, thank you for being a great supporter and a cheerleader throughout the time I have been in the program. Your personality has always energized me to work harder and study harder. I appreciate all your efforts with me.

I would also like to thank Dr. Dina Zemke for trusting me and including me in your research project. It was an amazing learning experience. Also, thank you, Dr. Billy Bai, for being a great research mentor throughout my journey at UNLV. Thank you, Dr. Mehmet Erdem, for being a wonderful mentor and supporter. Thank you, Dr. Finley Cotrone, for being my inspirational teaching role model in the classroom when I joined the program.

A special acknowledgement to Dr. James Busser for your support, patience, and guidance throughout these three years. I will always remember the first day I sat in your office for the Ph.D. admission interview. Thank you for believing in me and giving me the opportunity to be who I am in this program.

To my family; my dad, Dr. Yung-Pin Chen, my mom, Jan Yang, and my brother, Erik Chen, have provided endless support and unending love since the day I decided to pursue my graduate degree in the United States. I would like to dedicate this dissertation to you. I cannot thank you enough for your belief in and encouragement of me. Without you, none of this magic would have been possible. Pour le meilleur et pour le pire, AI, tu es toujours mon ami et mon armour de ma vie. Je veux tout avoir et tout faire avec toi. Je t'aime tous les jours.

Lastly, I would like to thank my Ph.D. cohorts for being there as we supported and cheered each other throughout the past three years. We made it!

Funding for this research was provided by the William F. Harrah College of Hotel Administration at the University of Nevada, Las Vegas.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

The National Restaurant Association (NRA)'s *Industry Forecast Project Report* revealed that restaurant and foodservice sales reached $709.2 billion in 2015, yielding an increase of 3.8% over 2014. The foodservice industry remained the second-largest private-sector employer, with approximately 14.4 million employees, and was estimated to create 1.7 million new jobs in the next 10 years (NRA, 2016). The foodservice industry accounts for 4% of the United States' GDP, with sales of $783 billion in 2016 (NRA, 2016). The NRA industry report also indicated that consumers in the United States spend 47% of their food budget dining at various foodservice facilities (NRA, 2016). This number was 25.9% out of the total food expenditure in 1970 and further rose to 43.1% by 2012 (USDA Economic Research Service, 2016). Certain factors contributed to this trend toward dining-away-from-home, including an increase in double-income families, a plethora of affordable and convenient fast-food restaurants, an increase of women in the labor force, and higher incomes and salaries (USDA Economic Research Service, 2016). Additionally, Jamrisko (2015) indicated that, on average, Americans spend more money dining out than they do on buying groceries to make food at home. To survive in a multi-billion dollar, highly competitive industry, it is imperative for restauranteurs and operation managers to understand how customers make food purchase decisions and which the underlying factors determine their decisions.

In the classic rational choice theory, or rational action theory, it is assumed that consumers behave rationally and make logical decisions, matching their highest self-interests and

greatest benefits (Coleman & Fararo, 1992). In this regard, rational consumers should purchase an item whenever the perceived value exceeds the real product price and maximizes their personal advantage (Monroe, 1979; Thaler, 1980). This utility-maximization view claims that decisions are generally influenced by either the need to maximize the accuracy of a choice or to minimize the cognitive effort to make a choice confidently (Montgomery & Svenson, 1976).

In behavioral economics, it is assumed that consumers are interested in value maximization and that they share perfect information about offerings in the market (Robertson, Zielinski, & Ward, 1984). These assumptions are consistently violated. In fact, rational and utility-maximizing decisions do not always determine customers' behaviors. Namely, consumers' decisions and willingness to pay are not determined simply by economic utility but also by psychological utility (Ariely, 2008), such as the relative incentives of the transaction, the consistency between the actual price and the salient reference price, the cost of goods sold, and the perceptions of fairness of price charged across different product categories (Gourville, 1999). In addition, consumers' choices from a set of alternatives normally rely on specific attribute values, product types, the relative importance and nature of each attribute, and the decision maker's personal characteristics (Simonson, 2014). In general, studies in consumer behavior have evolved from an early emphasis on rational choice to a focus on irrational buying behaviors using logical flow models of bounded rationality (Holbrook & Hirschman, 1982). The focus of the current dissertation – decoy and phantom decoy effects – is one examples of the violation of rational choice assumptions in consumer choice behavior.

The decoy effect is manifest in our lives. The following scenario is a very simple example of such an effect. Consider the last time you went to a movie theater with your friend

and were drawn to the smell of popcorn. The super-sized popcorn (85 oz.) was only $1 more than the medium-sized popcorn (46 oz.). Which would you choose?

The above example is the simplest form of applying the decoy effect to a menu by creating a high-priced, low-value option compared to alternatives in the choice set to manipulate people's choices. The target-marketing item in the example above is the super-sized popcorn. The creation of a medium-sized item (decoy) is intended simply to draw people's attention toward the target item rather than to generate sales of the decoy item (Shoemaker, 1994). Schwartz and Cohen (1999) defined decoy as "the practice of offering one (or more) low value/price ratio products as decoys to make high value/price ratio products, the targets, look more favorable" (p. 24). In the literature of decoy effects, many theories have been applied to different products and scenarios, which makes this stream of study directly applicable to not only theoretical but also applied interests.

The following sections briefly discuss the problem statement of the current research.

Problem Statement

In today's foodservice industry, restaurants' potential customers have more dining choices than ever. This dissertation empirically tested the decoy effect and the phantom decoy effect applied to a menu and whether these effects increase the attractiveness of the target item and further increase customers' likelihood of choosing the target-marketing item. A number of studies have demonstrated that the inclusion of decoy and phantom decoy items in the choice set offers practical benefits (Ariely & Wallsten, 1995; Huber, Payne, & Puto, 1982; Pettibone & Wedell, 2000; Simonson, 1989). However, the paucity of related studies applied in the hospitality field, especially the restaurant setting, makes the author wonder whether this

ubiquitous effect can be applied in this specific setting. In addition, most previous studies tested the decoy effect or the phantom decoy effect separately but ignored the pivotal moderating factor – familiarity with the purchased product – to determine customers' purchase decisions. In the current studies, the moderating role of familiarity level to the food items is simultaneously considered with these two effects in a simulated menu item choice context. In addition, most of the literature focused on the analysis of three alternatives in two-dimension scenarios (between one target item, one competing item, and one decoy item) (Carroll & Vallen, 2014; Highhouse, 1996; Monk et al., 2016; Pettibone & Wedell, 2007) instead of considering the incorporation of multiple decoy or phantom decoy items at the same time. This issue was also addressed and further studied in the current research. Finally, since decoy and phantom decoy items may create different levels of emotional response in individuals due to the essence of their unavailability (Scarpi & Pizzi, 2013), the perceptions of satisfaction and the attitudes of customers when they encounter decoy or phantom decoy items of a choice task in the restaurant were explored and the potential effects on their behavioral intentions were further investigated.

The current research is structured as follows. First, the background literature and theories of the consumer-choice behavior literature and the decoy effect vis-à-vis the phantom decoy effect are comprehensively reviewed. Next, the predictions and hypotheses of the decoy effect and the phantom decoy effect based on the theoretical frameworks in the context of the restaurant scenario are generated. Subsequently, the methodology implemented in the current research is proposed. Findings and results based on the proposed hypotheses were further discussed. Lastly, theoretical and practical implications were presented at the end of this dissertation, along with limitations and suggestions for future research.

Purpose of the Study

The purpose of this research is to explore how decoy and phantom decoy effects interact with restaurant marketing strategies, such as menu item presentation, to influence food purchase decisions. The current study has the following research objectives.

1. Examine the effectiveness of incorporating decoy items in the menu and investigate whether the decoy effect still holds among customers who have different levels of familiarity with the food items.
2. Investigate the effectiveness of including phantom decoy items in the menu and understand whether the interplay of price and portion size of phantom decoy items will alter customers' choices with respect to the target-marketing item. In addition, the moderating role of familiarity was examined.
3. Confirm which proposed theory/theories hold to explain the decoy and phantom decoy effects.
4. Explore customers' post-choice attitudes, satisfaction, and behavioral intentions toward the decoy and phantom decoy menu items related to the individual's choice.

Research Questions

The aforementioned research objectives are attained through two studies. Each study answers specific research question(s) that target the objectives of this dissertation. Study 1 focuses on the practicability of incorporating decoy items and the investigation of the decoy effects in the menu. Specifically, the first part of Study 1 answers the research question: Does the decoy item change the purchase proportion of the target item? In the second part of Study 1, the moderating role of a customer's familiarity with specific food items is further tested to answer

the research question: Does customers' familiarity moderate their choices to be influenced by the decoy effect? In addition, customers' post-choice assessments of their decisions were investigated by inquiring about their post-choice attitudes, satisfaction, and behavioral intentions when decoy items are present on or absent from the menu.

Study 2 shifts the focus to the effectiveness of incorporating phantom decoy items in the menu. This study mainly answers the research question: Do different phantom decoy items change the purchase proportion of the target item and to what magnitude do these phantom decoy effects exist or subside? Additionally, in the second part of Study 2, the emphasis turns to understanding the moderating role of familiarity. Similar to Study 1, the research question is replicated in the phantom decoy conditions: Does customers' familiarity moderate their choices to be influenced by the phantom decoy effect? Lastly, Study 2 also examined whether significant differences exist with respect to customers' post-choice attitudes, satisfaction, and behavioral intentions when phantom decoy items are present on or absent from the menu.

The results of both studies provide further understanding of the decoy and phantom decoy effects on consumer food purchase behavior. Furthermore, these studies provide insights into thw ways in which a consumer's familiarity with a specific food item can influence the prediction of decoy and phantom decoy effects. Finally, the research also enables an understanding of customers' post-purchase attitudes and the behavioral intentions of making such decisions and also provides a comprehensive perspective for restaurant practitioners when developing their optimal marketing strategies.

Delimitations

The limitations of this research are as follows:

1. Online data was collected based on the hypothetical scenarios in which customers made decisions without real monetary payoffs. Nevertheless, the majority of research on consumer decision-making suffers from the same restriction. In the current research, internal validity has been verified.
2. The current research provided hypothetical online scenarios depicting different food-choice settings and menus. Therefore, the findings of this research may have issues involving ecological validity, which limits the generalizability of the results beyond this dissertation's context. However, realism checks of experimental designs were conducted to ensure experimental treatments are sufficiently realistic to real-world restaurant settings.
3. Six different food items were incorporated into the experiment scenarios to test the moderating role of a customer's familiarity with such items. The findings of the current research may be difficult to generalize to other food items. However, if the familiarity level of a new food item can be identified a priori, the findings regarding the moderating role of familiarity may still apply to other food items.
4. Study 2 examined four different phantom decoy items and six different experiment treatment combinations. However, the interplays of two close phantoms and two distant phantoms on two dimensions can generate another seven different treatment combinations (e.g. LL and LS, HH and AY, LL and HH, LS and AY, LL and LS and HH, LL and LS and AY, LL and LS and HH and AY), which may provide more complexities and in-depth interpretations. Due to the complexities and endless permutations, the current research aims to focus on the essence of exploring the effectiveness of phantom

decoy items on the menu. Future researchers may consider taking this possibility into account.

Significance of the Study

The current research provides significant theoretical and practical contributions to the consumer choice and restaurant management literature. From a theoretical perspective, this research investigates the ways in which the inclusion of extra asymmetrically dominated decoy items on the menu can influence restaurant consumers' decisions. Furthermore, the introduction of phantom decoy items in the context of the hospitality industry also fills a gap in past findings of durable goods.

Several significant gaps remain unfilled from past research and are as follows. First, prior research in decoy effects mostly placed lopsided emphasis on durable goods, which are typically relatively high-priced items. It is rational to assume that, when purchasing this type of good, consumers collect and analyze more external information before making decisions and engage in more time-consuming and detailed information processing (Hansen, 1972). However, non-durable products have not been studied extensively in the decoy and phantom decoy contexts. Since food items are normally lower-priced non-durable goods, these types of products have not received enough attention. In addition, with respect to the subject matter, a paucity of decoy effects has been published in the hospitality discipline, especially in the context of food and beverage operations. In the few published articles, surprisingly, portion size and the price of the products have not been empirically tested, although these two characteristics are regarded as the most easily quantifiable characteristics in determining the value of the individual items.

Second, phantom decoys have not been studied in the hospitality field even though they are omnipresent in this industry (e.g., lunch or happy hour menu items displayed on the dinner menu, certain types of rooms being sold out but still visible on a third-party website). The characteristic of being visible but unavailable at the time of making a purchase makes phantom decoys a uniquely interesting topic to investigate. Unfortunately, due to the complexity of the research design, the lack of previous research investigating interactions between decoy and phantom decoy effects leaves this topic unanswered.

Third, although the choice process is individualistic, systematic similarities and differences exist based on the characteristics of consumers (Babutsidze, 2012). In terms of the characteristics of consumers, previous studies normally dichotomized them into experts and novices based on their familiarity with the products in the choice set (Babutsidze, 2012; Bettman & Zins, 1977; Hansen, 1972; Lussier & Olshavsky, 1979; Moorthy, Ratchford, & Talukdar, 1997). In marketing literature, familiarity is normally interpreted as the prior knowledge a consumer has about a product (Park & Lessig, 1981). The construct of familiarity was found to produce different effects on the choice task. Thus, *familiarity* should be a relevant and highly influential factor to moderate people's choice decisions. However, to the author's best knowledge, this factor has been ignored as an effective moderator in investigating decoy or phantom decoy effects.

Moreover, most of the research has emphasized only an analysis of three alternatives in two-dimension scenarios – between one target item, one competitive item, and one decoy item (Carroll & Vallen, 2014; Highhouse, 1996; Monk et al., 2016; Pettibone & Wedell, 2007). Although previous researchers have suggested that the increasing complexity of choice tasks

may limit the decoy effect since decision makers may not recognize the dominated option (Huber et al., 1982), the interaction between the decoy and the target item has been restricted to a three-alternative assumption. This is normally not the case when customers consider menu items in a restaurant. Therefore, to better understand consumers' purchase behavior in restaurants, it is imperative to expand the understanding of decoy effects beyond a three-alternative assumption in the context of restaurant consumption.

Finally, most studies measure the choice only in a binary answer (e.g., whether the subjects choose the target item) or compare the choice share (e.g., what is the percentage of subjects to choose the target item) without studying customers' post-choice evaluations and behavioral intentions. Methodology-wise, pure experimental designs in field or lab settings are prevalent, but the underlying post-hoc choice perception and behavioral intention of subjects, which can be measured on several continuous variables, were ignored in the previous studies. In the current study, these variables were also investigated and tested to provide a holistic view for understanding the whole decision-making process and predicting future consumption behavior.

Definition of Key Terms

The following are the definition of the key concepts and terms that are used throughout the dissertation.

Decoy effect: the phenomenon whereby customers are likely to change their preference and choose from among the existing options when they are exposed to an alternate and asymmetrically dominated option (Huber et al., 1982).

Phantom decoy: superior to the target product, are attractive and dominating alternatives among the choice set but unavailable (Scarpi & Pizzi, 2013).

Familiarity: the number of product-related experiences that have been accumulated by the consumer (Alba & Hutchinson, 1987).

Symmetrical domination: a situation in which the higher-priced items are perceived to be of higher quality (Huber et al. 1982).

Asymmetrical domination: a situation that the option is inferior in all respects to one existing option, but it is inferior in some respects and superior in other respects, to other items (Sellers-Rubio & Nicolau-Gonzalbez, 2015).

Compromise effect: also known as extremeness aversion, is the tendency for people to avoid extreme choices and further choose the intermediate options (Simonson & Tversky, 1992).

Attraction effect: the addition of an inferior option in the original choice set enhances the attractiveness of the target item, which is the dominant alternative in the original choice set (Huber & Puto, 1983).

Health consciousness: an individual's concern for his or her health and an individual's readiness to act upon healthy behavior (Lee & McCleary, 2013).

Summary

Based on the research questions, this dissertation is outlined as follows. In Chapter 2, the literature on consumer choice, decoy effects, phantom decoy effects, and familiarity are reviewed in order to develop a theoretical framework that examines how decoy effects and phantom decoy effects influence consumers' decision-making. In Chapter 3, research design, sample, stimuli, procedures, instruments, and data analysis used in this dissertation are discussed. Findings from the two experiments are reported in Chapter 4. Key findings of the dissertation, its theoretical and practical implications, and directions for future research are discussed in Chapter

5. All the other detailed contents and information about the procedures to conduct this research are included in the appendices attached in the end of this dissertation.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

This chapter offers a comprehensive review of literature in the areas of consumer choice, decoy effects, and phantom decoy effects, in both the general business literature and hospitality-related contexts. This chapter is structured as follows: First, it provides the background of the restaurant industry in the United States, followed by the choice literature in consumer behavior and dining out decision-making. Second, it defines and explains the decoy effect in the general business setting, along with the application in the hospitality field. Third, the construct of familiarity is reviewed and further proposed as a moderating role in the current study. Fourth, the phantom decoy is defined and explained based on different proposed theories. Health consciousness is also introduced as a controlled factor in the current studies. Finally, this chapter concludes with research hypotheses formulated based on the theoretical supports of existing literature.

Restaurant Industry in the US

Rising costs, increased competition, and customers' alternative demands in recent years all signal the evolving and ever-changing nature of the foodservice and restaurant industry in the United States. The foodservice industry reached the sales of $783 billion, a growth rate of 2.3% at the end of 2016 (NRA, 2016). Specifically, the sales at limited service restaurants, which include quick-service restaurants (QSR), increased by 2.2%; full-service or table-service restaurants by 2.5%; and bars and taverns by 1%. Among the sub-segments, the most popular fast-casual restaurants, such as The Cheesecake Factory, Olive Garden, and The Grand Lux

Café, increased sales by a whopping 8%, followed by prepared or frozen food sold at the supermarket at 6.5%. Hudson Riehle, senior vice president of the National Restaurant Association (NRA), said, "Looking ahead to 2016, one would expect industry sales to expand and it should be at a slightly better rate than 2014. So it should be the 7th consecutive year of real sales growth" (NRA, 2016). For an individual who is working closely in the field, such as a restauranteur, a foodservice employee, or a hospitality educator, it is imperative to maintain a firm grasp on the trends in this industry. The dynamism of the foodservice industry has prompted a wide variety of studies seeking to understand customers' choice behavior for dining-out.

Choice in Consumer Behavior

People like choices. The inherent attractiveness of choices leads marketers to provide more choice alternatives even when they are disconnected from practical benefits. It was found that even animals are more attracted to a choice-qua-choice than a no-choice condition (Catania, 1980; Voss & Homzie, 1970). Generally speaking, people prefer a choice alternative when the available options lead to the equivalent no-choice option (Suzuki, 2000). This phenomenon is called the "lure of choice" and is caused by the natural tendency of people to defer commitment because they are unwilling to face the reality of losing, and to implement simplifying heuristics (Bown, Read, & Summers, 2003).

Early studies of consumer behavior focused on individuals and their perceptions of the environment (Bauer, 1960; Holbrook & Hirschman, 1982; Bettman & Zins, 1977). The most recognizable model of consumer purchase decision-making proposed by Engel, Blackwell, and Miniard (1995) consists of five stages: problem recognition, information search, alternative evaluation, purchase decision, and post-purchase behavior (Engel, Blackwell, & Miniard, 1995).

They also identified three factors that influence consumer purchase decision-making: personal, psychological, and social. Specifically, the analyses focused on psychological or social-psychological levels (Hansen, 1972). These works emphasized the role of an individual customer's perceptions of the environment, and claimed their decisions are contingent upon those perceptions (Payne, 1982). In decision-making, the range of choices and options presented to customers should be carefully assessed. Bown, Read, and Summers (2003) demonstrated the "lure of choice" by finding that people prefer the option that offers them choices compared to a solitary item, even when the option with a choice does not necessarily lead to a better outcome. This set of alternatives under consumers' consideration is called contexts (Simonson & Tversky, 1992). Scarpi (2008) further highlighted the importance of the context effect and its relevance to studies of consumer decision making. Highhouse (1996) also used a very simple example of the selection of job candidates to explain the context effect (Table 1).

Consider a situation in which an HR hiring manager is deciding among three job candidates based on the scores of two predictors (e.g., job performance and related experiences). Initially, the manager chooses Candidate A. Now, consider that instead of the scenario in Table 1, Candidate C scores high on Predictor 2 and low on Predictor 1. Oddly, the manager's decision may flip and he may opt for Candidate B.

Table 1

The Example of Job Candidate Selection

	Predictor 1	Predictor 2
Candidate A	High	Average
Candidate B	Average	High
Candidate C	High	Low

Note. Adopted from Highhouse (1996), *Context-dependent selection: The effects of decoy and phantom job candidates*, p. 68.

However, too many alternatives in a choice set may cause choice overload and information overload, which will create possible negative consequences for suppliers, such as consumers making no choice and experiencing perceived regret (Park & Jang, 2013). Specifically, choice overload emphasizes the number of choices in the choice set, whereas information overload focuses on the number of alternatives and attribute characteristics simultaneously (Scheibhenne, Greifeneder, & Todd, 2010). Park and Jang (2013) found that the existence of more than 22 choices increased the likelihood that consumers would make the "no choice" decision when purchasing tourism products regardless of their familiarity with the travel destinations.

Specifically, consumers tend to compare the option they are considering to other alternatives in the choice set or to alternatives they remember from the past due to context-dependent memory and reinstatement (Siegel, 2001). However, in reality, owing to their limited cognitive abilities, customers tend to limit the time and energy they spend processing information by using *heuristics*. Heuristics are the shortcuts of simplified rules for handling all

available information. Without heuristics, too many choices can easily cause information overload and force customers to make poor decisions (Jacoby, Speller, & Berning, 1974). Payne, Bettman, and Johnson (1993) also suggested that an easier-to-make choice procedure involves choosing a more taxing one ceteris paribus in the first place. This raises the question of which range of ideal items to present to customers in the choice set and how to present those items.

Additionally, when a person faces large sets of decision alternatives, previous studies found a screening procedure is usually utilized to simplify the option set before a detailed evaluation is conducted (Clemen & Reilly, 2013; Farquhar & Pratkanis, 1993). This proved the choice process is not a single-stage process. Lussier and Olshavsky (1979) also proposed the two-stage choice process – general screening and final choice. In the same vein, Payne (1982) and Bettman and Park (1980) indicated the choice process is a multistage process in nature. They suggested that customers use more external information during the first decision-making stage and further implement their personal feelings for the final decisions. An early study also pointed out that individuals tend to ignore all other options being screened out through the screening procedure (Wright & Barbour, 1977). They focus only on a small pool of contenders that they remember from prior decision-making phases.

Consumer Choice for Dining

Restaurant attributes such as food quality, service quality, and ambience have been comprehensively studied in the consumer behavior literature focusing on foodservice (Bujisic, Hutchinson, & Parsa, 2014; Jang, Liu, & Namkung, 2011; Namkung & Jang, 2007). The widely known DINESERV scale incorporated these three attributes to assess a restaurant's quality of guest service and what arose with respect to these attributes to become prevalent measures

(Knutson, Stevens, & Patton, 1996). Prior research revealed that different restaurant attributes contribute to different customers' restaurant evaluations. For instance, Keyt, Yavas, and Riecken (1994) found that restaurant attributes such as food quality, service quality, food variety, and atmosphere were the most salient attributes in determining the assessment of a restaurant. Back (2012) conducted an importance-performance analysis with 239 respondents at Korean restaurants and found that food taste and cleanliness were the most crucial restaurant attributes. Ponnam and Balaji (2014) conducted a mixed method study and retrieved food-related, service-related, restaurant-type-related, and price-related attributes from their focus group in determining restaurant experience. Namkung and Jang (2008) indicated the subjective nature of quality evaluations in determining restaurant experiences.

Generally speaking, quality is measured by technical quality and functional quality. In the context of restaurants, technical quality represents the tangible products or objectively measurable components of the outcome (e.g., food quality), whereas functional quality refers to intangibles such as the process of delivering the service (e.g., service quality) (Namkung & Jang, 2007). Food quality is highly related to consumer choice and decision-making and was consistently regarded as the most influential factor when choosing restaurants (Auty, 1992; Jung, Sydnor, Lee, & Almanza, 2015; Lewis, 1981). Specifically, food quality can be broken down into several attributes, including taste, presentation of food, portion size, freshness, dietary acceptability, and nutrition (Sulek & Hensley, 2004; Namkung & Jung, 2007). Among these, taste and presentation of food were found to significantly influence a customer's satisfaction and behavioral intentions (Ha & Jang, 2010; Namkung & Jang, 2007). Food quality was also found to be a major predictor of behavioral intentions (Sulek & Hensley, 2004) and customer loyalty

(Mattila, 2001). Gourmet taste and variety-options-in-menus were both found to be the most important attributes determining the restaurant experience in casual dining settings (Ponnam & Balaji, 2014). In addition, familiarity of the food item and healthy food options were also crucial determinants in the selection process (Myung, McCool, & Feinstein, 2008).

The restaurant environment, which includes physical, social, and ambient dimensions, is another pivotal factor determining restaurant experiences for customers (Baker, 1986). The physical dimension includes the restaurant décor, seating capacity, layout, and architecture. The service dimension covers the direct and indirect interactions between service personnel and customers. The ambient dimension is formed by the atmospheric features of the restaurant. Previous studies found that environmental factors can influence customers' emotions and perceived value (Kim, Lee, & Yoo, 2006; Liu & Jang, 2009). Different environmental elements have also been extensively studied, such as music (Sullivan, 2002), dining equipment (Ryu & Jang, 2007), noise (Raab et al., 2013), scents in the dining room (Zemke & Shoemaker, 2008), and atmospherics (Ha & Jang, 2010). Although numerous studies have addressed the importance of atmosphere and the environmental quality of foodservice operations (Ha & Jang, 2010; Ryu & Han, 2010), atmosphere represents a crucial factor only when food quality is satisfactory to customers (Ponnam & Balaji, 2014). Surprisingly, although environmental cleanliness was found to be one of the most important elements at Korean restaurants, a comfortable atmosphere was deemed least important in restaurant evaluations (Back, 2012).

Other studies indicated service quality is a key determinant influencing perceived value, selection of a restaurant, customer emotions, and behavioral intentions, such as return intention and word of mouth (Arora & Singer, 2006; Ryu, Lee, & Kim, 2012). Yet, Jung, Sydnor, Lee, and

Almanza (2015) conducted a discrete choice experiment with different levels of restaurant attributes and prices in casual dining restaurants and found that even when food quality is highly correlated with consumer choice, good service quality does not increase choice likelihood. One quarter of respondents do not trade off food quality for a lower price or better service. In addition, price is considered the most pivotal factor when a customer chooses a restaurant (Lewis, 1981) and a bundled prix fixe menu (Myung, McCool, & Feinstein, 2008). Menu price serves as the proxy of quality for a product or service and is considered a tangible non-food-related attribute to communicate restaurant quality (Ponnam & Balaji, 2014; Zeithaml, Bitner, & Gremler, 2006). Hence, restaurant operators should carefully deliberate their pricing strategies.

As previously stated, consumer choice research proposed several models, consisting of the steps of recognizing problems, searching for information, evaluating alternatives, purchasing and choosing, and post-purchase evaluating (Bettman & Park, 1980; Payne, Bettman, Coupey, & Johnson, 1992). Though these steps are organized as a process linear in nature, they can also be an iterative process in which decision-makers revisit each step more than once until the decision is finally made. Nevertheless, considering the relatively complicated attributes offered in a competitive modern restaurant setting, a multi-attribute decision-making assumption may be more likely.

Multi-attribute decision-making consumer behavior is based on the theory of consumer demand (Lancaster, 1966), in which consumers focus on the features of a good or service process rather than the good or service itself. The decision-makers define the benefits and perceived utility of the attributes of the goods and employ one of the following schemes: heuristics, compensatory strategies, and non-compensatory strategies (Bettman & Park, 1980; Payne et al.,

1993). Each scheme proposes different ways in which customers process information about a certain good's physical and psychological characteristics. Specifically, a heuristic scheme requires the least amount of decision time, monetary cost, and thought. Customers using heuristics normally make prompt decisions when they confront the first satisfactory option. On the other hand, the compensatory strategy scheme is the most time-consuming and mentally demanding scheme because it allows for trade-offs among different attributes (Bettman, Luce, & Payne, 1998). By implementing this scheme, customers calculate the subjective value of a set of options and finalize the choice by selecting the option providing the maximizing utility (Bettman, 1979). Considering the example of a restaurant, a customer may not favor a combination of great food quality and exorbitant menu prices at a celebrity chef restaurant. In this regard, he or she may opt for the second-best choice, a fine-dining restaurant, by calculating the subjective values with a combination of slightly lower food quality and lower price.

Additionally, the non-compensatory strategy scheme occurs when customers have cut-off levels for each attribute and when trading off between attribute levels is not considered. Customers consider a sequence of attributes in which the best value on the most important attribute is chosen. However, the benefits of some attributes cannot compensate for the weaknesses of other attributes (Swait, 2001). For example, a customer with an allergy to nuts may bypass any food items that contain nuts as an ingredient. "Menu ingredient with nuts" is the cut-off level for such a customer. Even a menu item with an outstanding taste and beautiful presentation cannot compensate for the inclusion of nuts. In general, consumers using compensatory strategy rules recognize and process the conflict of making choices, whereas consumers using non-compensatory strategy rules avoid conflict overall.

The Decoy Effect

Understanding customers' choice probabilities is a critical determinant for maximizing business owners' benefits. The *proportionality model* proposed by Luce (1959) and the *similarity model* proposed by Tversky (1972) are the most widely utilized models to understand choice probabilities in the consumer behavior context. Proportionality assumes a new alternative will proportionally take customers from others to their original share. That is, the expanded range due to any item introduced to the choice set will cause customers to defect from their initial choices (Luce, 1959). However, this assumption fails to address the fact that an addition of an alternative takes a disproportionately larger share from similar items rather than from dissimilar ones (Huber, Payne, & Puto, 1982). The similarity hypothesis proposed that customers tend to defect to items similar to original offerings, so companies should design products dissimilar from their current offerings to minimize the possibility of cannibalization (Tversky, 1972). Both models share the assumption of *regularity*, which assumes the addition of an alternative cannot increase the probability of choosing a member of the original choice set (Luce, 1959). That is, "the preference between two options is independent of the presence or absence of a third option" (Ahn & Novoa, 2016, p. 961). Yet, both models can be violated under the condition of adding a decoy in the choice set (Ariely & Wallsten, 1995; Huber et al., 1982).

The decoy effect has been widely researched in the business literature (Ariely & Wallsten, 1995; Pettibone & Wedell, 2000; Simonson, 1989) and originated from the consumer behavior literature (Huber et al., 1982). A decoy is a new alternative in the choice set that increases the tendency of customers to choose one of the existing choices that dominates the decoy option; therefore, the decoy is normally a high-priced, low-value option compared to

alternatives in the choice set (Josiam & Hobson, 1995). The primary reason to use a decoy is to draw attention to a more profitable option in the choice set rather than to generate the direct sale itself (Shoemaker, 1994). In this regard, the decoy effect in marketing refers to the phenomenon whereby customers are likely to change their preference and choose from among the existing options when exposed to an alternate and asymmetrically dominated option (Huber et al., 1982).

Two effects are associated with the decoy effect: the *compromise effect* and *attraction effect*. The compromise effect, also known as extremeness aversion, is the tendency of people to avoid extreme choices and instead choose the intermediate options (Simonson & Tversky, 1992). The share of an existing option increases when a new alternative is added to the choice set, which forces one of the original options to become a compromise choice. The attraction effect, on the other hand, as a perceptual effect (Dhar & Simonson, 2003), refers to the addition of an inferior option (a decoy) to the original choice set, enhancing the attractiveness of the target item, which is the dominant alternative in the original choice set (Huber et al., 1982). Huber and Puto (1983) utilized a simplification argument to illustrate the attraction effect that the decoy brand might be used as an anchor for comparison and further result in the superiority of the target brand. Mishra, Umesh, and Stem (1993) also suggested that the attraction effect is likely affected by a simultaneous interaction of respondents, task, and object-related factors, such as knowledge, popularity, similarity, and information relevance. However, the attraction effect was found to be possibly attenuated, eliminated, or even reversed (e.g., repulsion effect) if the attributes of the choices were presented as perceptual or inherently qualitative (e.g., picture, verbal description of quality) rather than as numerical contextual stimuli (e.g., price, quality ratings) (Frederick, Lee, & Baskin, 2014; Yang & Lynn, 2014). Based on this perspective,

because price is a quantitative attribute, if price is properly incorporated in the test, the attraction effect is likely to be observed.

Various explanations have been offered to understand the decoy effect. First, some researchers argue the **perceived attractiveness** of different attribute scores to the decision maker will change once a decoy is added to the choice set. That is, changes in the subjective valuation of attributes rely upon the context of the attributes. This explanation, also known as the **value-shift** model, has been supported by the *range-frequency theory* (Parducci, 1995), as suggested by Huber, Payne, and Puto (1982), and by the *reference-dependent theory* based on loss aversion (Tversky & Kahneman, 1991), as advocated by Highhouse (1996). According to range-frequency theory, adding a decoy, A^, to a choice between options A and B extends both the apparent ranges of the attribute on which A scores lower (thus making A's score appear less extremely low) and makes high scores on the attribute on which A excels appear more frequent. It also emphasizes B's shortcomings in this dimension. On the other hand, reference-dependent theory based its foundation on loss aversion, under the condition of riskless choice, with the assumption that losses have a greater influence on selection than do gains. The term "riskless choice" is utilized in behavioral decision making to indicate those decisions that alternative options are not able to be classified as risk seeking or risk averse a priori, such as consumer choice or employee selection (Tversky & Kahneman, 1991). Under the loss aversion model, a reference point may be determined to examine the decoy effect. The reference-dependent model predicts that a target is more attractive when it includes a moderate improvement on one attribute than when it includes a significant improvement on one attribute accompanying a loss on the other attribute (Highhouse, 1996).

The other stream of research proposes that the decision maker allocate different **relative weights to the attributes** or different importance to the dimensions (Huber et al., 1982; Tversky & Simonson, 1993; Pettibone & Wedell, 2000). This view implies a certain level of "fluidity" of a decision maker's attitudes about different dimensions (Huber & Puto, 1983). The importance of the dimension in which the target or the decoy excels is suggested to increase on the overall decision making (Ratneshwar, Shocker, & Stewart, 1987). Tversky and Simonson (1993) proposed two different theories to explain this effect. First, the concepts of loss aversion and dimensional range were incorporated together in the *dimensional weighting theory (or range-weighting theories)*. The focus of this theory is local contrast, which emphasizes items' individual values and relationship to other items. It suggests that the extension of the range on one dimension due to the addition of the decoy item leads to less relative weighting of that dimension (Pettibone & Wedell, 2007).

The second theory, *added-value theory*, proposed by Simonson (1989), underscores the concept of added value – an item's appeal to the decision maker can be influenced by other attributes instead of dimensional values. The added value is strongly related to the relationship between the structure of the choice problem and the choice process itself. After evaluating alternatives in the choice set, decision makers tend to reconstruct the information by subjectively reducing the complexity of the task (Payne, Bettman, & Johnson, 1993). This procedure is carried out by collapsing across dimensions to achieve a simple representation of items. Specifically, "attributes are combined into a smaller number of dimensions with weights determined according to the local context, such that dimensions that may help the decision maker solve the problem are weighted more heavily changes in weights are highly dependent on the

similarity relationship among the items. The more similar a set of items is, the easier it is to notice discrepancies among their dimensions, so that observed discrepancies on a given dimension increase its weight" (Ariely & Wallsten, 1995, p. 225). That said, people tend to reconstruct the complexity of information in the choice tasks before making decisions when considering the weights and values of each dimension and item (Payne, Bettman, & Johnson, 1993). Therefore, attributes were usually combined into a smaller scale of dimensions with different assigned weights based on decision makers' assessments of their individual importance. This view is constructed upon the relational-valuation model, in which a target item receives preference strength via its relationships to other alternatives in the choice set (Simonson, 1989).

Both previous explanations of the value-shift and weight-change models are derived from the classic models of choice, which assume the attractiveness of each alternative options in the choice set can be determined by dimensional values modified by dimension weights (Anderson, 1981). The third category of explanation, the **emergent-value** model, argues that the weighted dimensional values are complemented by a different type of valuation process – the process of configural information. According to Pettibone and Wedell (2000), "emergent values are based on the processing of configural information concerning the relationships among alternatives in a set that can provide additional reasons to make a choice" (p. 304). Such reasons include the need to justify a decision to others whenever making a choice. Similarly, Simonson's (1989) study found the separate components of justifiability and evaluation anxiety of the emergent-value construct both contribute to customers' final choice. Specifically, the decoy item can enhance the dimensional value of the target on that dimension through the contrast effect in dimensional judgment and similarity judgment (Pettibone & Wedell, 2000; Wedell & Pettibone, 1996).

Warning respondents to explain and justify their choices to an external audience may exacerbate the decoy effect (Simonson, 1989). On the other hand, priming respondents to consider the possible regrets they may encounter before they make the wrong choice can reduce or eliminate the decoy effect. For example, Connolly, Reb, and Kausel (2013) found that incorporating *regret salience* in the choice tasks may eliminate the decoy effect. In this case, no integration of weights and dimensional values is required to explain the decoy effect (Pettibone & Wedell, 2000).

Another direction for explaining the decoy effect centers on **dynamic, preference accumulation models**, in which a decision is made once the preference for one of the options reaches the threshold value (Trueblood & Pettibone, 2015). The multi-alternative decision field theory (MDFT), the leaky competing accumulator (LCA) model, and the multi-attribute linear ballistic accumulator (MLBA) model belong to this category (Roe, Busemeyer, & Townsend, 2001; Trueblood & Pettibone, 2015). These models generally predict the decoy effect should increase as decision makers spend more time considering the option and its alternatives. For example, decisions are modeled as a race among various accumulators in the MLBA model, and each race corresponds to a different alternative. The accumulators are determined as linear and accumulate evidence during a trial. Subsequently, the evaluations for a certain alternative are combined into a drift rate, which specifies the speed of the accumulator for an alternative race. A decision is finally made by the decision maker when one of the accumulators reaches a threshold point (Trueblood & Pettibone, 2015).

Lastly, the **simplifying choice strategy**, such as dominance heuristics, is also widely used to explain decoy effects. Specifically, decision makers are prone to use dominance heuristics to avoid making difficult tradeoffs between alternatives and to ensure they will not

make incorrect decisions (Wedell, 1991). This view also serves as a foundation to form product judgments in consumer behavior as a category-based process view (Fiske & Neuberg, 1990; Rao & Monroe, 1988) in which individuals may try to categorize a product based on the available cues that might signal a social category to which it belongs. For example, when a decision maker is attempting to make a choice based on the price and quality of a product, he or she may initially form a representation of size, desirability, performance, or other attributes into an imprecise representation of quality. The construction of representation and comparison creates the first stage of the decision process. Subsequently, the effect associated with that social category will carry over to the product without a detailed evaluation of the product sets.

Integrated with the brand name and brand knowledge, along with the availability of attribute information in the choice set, the attractiveness of a target can be mitigated or eliminated (Kim, Park, & Ryu, 2006). This phenomenon was examined by two streams of views: *averaging process view* and *category-based process view*. In the average model, adding information about alternatives tends to level off the impact of the existing information about the target and further reduce the importance of the target based on the adjusted weight. In the category-based model, "the attribute information is typically processed in accordance with implications of the exiting schema in memory" (Kim, Park, & Ryu, 2006, p. 684). Specifically, when consumers possessed extensive knowledge of different brands in the marketplace, providing the real brand names of the choice set can eliminate the decoy effect (Kim, Park, & Ryu, 2006). Alternatively, people tend to reconstruct the complexity of information in choice tasks before making decisions when considering the weights and values of each dimension and item (Payne, Bettman, & Johnson, 1993). Thus, attributes were usually combined into a smaller

scale of dimensions with different assigned weights based on decision makers' assessments of their individual importance. It was proposed that "the importance of the different dimensions changes as a function of the source of the preference relationship among the items" (Ariely & Wallsten, 1995, p. 230). Furthermore, owing to the cognitive miser theory, people are prone to weight a dimension more heavily if it carries salient discriminating differences between items (Ariely & Wallsten, 1995).

The decoy effect has been investigated and applied in different disciplines. For instance, studies have shown its prominence in choice among consumer products (Ariely, 2008; Heath & Chatterjee, 1995; Simonson & Tversky, 1992), supermarket commodities (Doyle, O'Connor, Reynolds, & Bottomley, 1999), gambling (Wedell, 1991), the hiring of job candidates (Highhouse, 1996; Slaughter, Bagger, & Li, 2006; Slaughter, Kausel, & Quinones, 2011), and political elections (Pan, O'Curry & Pitts, 1995). In recent research, the decoy effect was found to gradually develop with age and emerged explicitly at the ages of 5 to 7 (Zhen & Yu, 2016). However, very young children who were not influenced by the decoy effect possibly lacked social experience and the development of cognitive ability (Zhen & Yu, 2016). Furthermore, Hedgcock and Rao (2009) examined magnetic resonance imaging (FMRI) of respondents' cerebral activities when the respondents encountered the choice tasks with a decoy. The researchers found that when respondents face three options (two options with a decoy alternative) compared to two options, the consideration of more options increased activity in the areas of the brain associated with negative emotions.

In the hospitality literature, the decoy effect has been examined in relation to tourism products and restaurant concepts. Decoy anchoring is particularly practicable during the

purchasing of services or intangible products, when customers must generally rely on external cues such as price or similar comparative products to make their buying decisions (Shoemaker, 1994). For instance, Josiam and Hobson (1995) found that customers switched their choices to targeting travel packages after adding a decoy item in the choice set.

In the foodservice context, Cohen, Ghiselli, and Schwartz (2006) pointed out the unrealistic assumption of item independency in the product profile analysis in menu engineering. Customers tend to evaluate relative quality and value based on the prices of the reference items. Thus, incorporating decoy items on the menu can lead customers to choose more profitable items because they act as references (Shoemaker, 1994). Loss leader pricing, in this regard, has been a popular pricing strategy utilized in restaurants. This pricing strategy attempts to lure customers via bargain pricing of some menu items without generating much profit, while assuming the customers will simultaneously purchase other items with higher contribution margins (Lamb, Hair, & McDaniel, 2004). For instance, dollar meals and bar food have relatively low contribution margins compared to other items on the menu at fast food restaurants and bars. The existence of these items on the menu is intended to increase sales of other, more profitable menu items. Therefore, if this price strategy is implemented effectively, these items can create decoy effects to improve the restaurants' profits.

Schwartz and Cohen (1999) found that mixed bundling unintentionally created a decoy price effect when the price of the individual menu item was set appropriately. Customers regarded mixed bundling as more attractive than pure bundling and tended to use the prices of the individual items as reference prices. The results confirmed the notion that customers' willingness to pay for a value meal can be controlled by the prices of individual menu items.

However, only in the condition that restaurants set high-enough prices for individual menu items in the mixed bundling combos can customers' higher reservation prices be induced (Schwartz & Cohen, 1999). Moreover, Carroll and Vallen's (2014) recent study examining consumers' choices of food items revealed significant differences in the choice shares of the target item based on the inclusion or exclusion of a decoy item (attraction effect) and the relative location of the decoy item in the choice set (compromise effect). It was found that the influence of the asymmetric dominance of calorie information and food prices created both compromise and attraction effects in the choice set. People tended to compare the decoy item and the dominating item and to avoid the extreme options. Thus, restauranteurs can manipulate existing attributes of food items to alter customers' decision making with respect to food choice. In addition, a recent study (Monk et al., 2016) found a moderate increase in selecting the target and a decrease in choosing the competitor of beer in a pub setting. The results revealed that consumers in a pub setting are particularly vulnerable to the decoy effect.

Asymmetrically Dominated Versus Not-Asymmetrically Dominated Decoys

Huber, Payne, and Puto (1982) divided decoy alternatives into *asymmetrically dominated decoys* and *non-asymmetrically dominated decoys*. In the marketplace, being dominated refers to "having at least one feature that is clearly worse than those of a competing alternative and no features that are better" (Pettibone & Wedell, 2000; p. 301). Additionally, symmetrical domination refers to a situation in which higher-priced items are perceived to be of higher quality. In contrast, the asymmetrically dominated option is one that is inferior in all respects to one existing option, but inferior in some respects, such as price, and superior in other respects to other items (Sellers-Rubio & Nicolau-Gonzalbez, 2015). Thus, when the asymmetrically

dominated option exists, a higher percentage of customers tends to prefer the dominating option than when the asymmetrically dominated option is not present. The dominating option is referred to as the "target" (T in Figure 1), and the inferior option (not targeted by the decoy) is referred to as an "option" or "competitor" (O in Figure 1) (Highhouse, 1996; Josiam & Hobson, 1995). In Figure 1, the straight line passing through these two points represents an equi-preference contour assuming equal weightings of both dimensions (Pettibone & Wedell, 2007). Given that T and O lie on the same equi-preference contour, each alternative should theoretically have an equal chance of being chosen in a pairwise choice task. The main reason for adding a decoy to the choice set is to shift a customer's relative preference to the target.

However, according to Simonson, the asymmetrically dominated decoy effect can be contrasted with the repulsion effect. In Simonson's (2014; p. 518) recent study, the repulsion effect ensues:

> The AD (asymmetrically dominated) effect occurs when the addition of a third option that is inferior to one of two non-dominated options in a set increases the (absolute) choice share of the 'dominating' option. In contrast, the repulsion effect is said to occur if the addition of the asymmetrically inferior option increases the (absolute) choice share of the other (non-dominating) option (often referred to as "the competitor"). The reason a repulsion effect might be expected is that the added inferior option taints that region of the attribute space, making it repulsive and leading consumers to choose the other extreme. For example, an added cheap option of poor quality may lead consumers to opt for quality over price (e.g., triggering the rule "You get what you pay for").

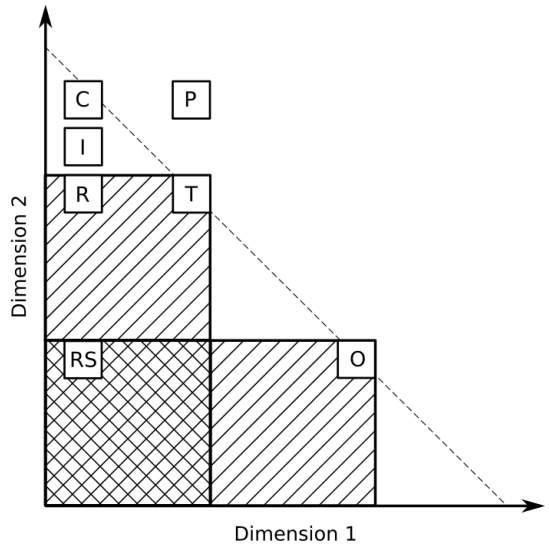


Figure 1. Areas of asymmetrical dominance and symmetrical dominance.

For asymmetrically dominated decoys, range decoys, frequency decoys, and range-frequency decoys are determined based on their relative positions to the target (Huber et al., 1982; Pettibone & Wedell, 2007). Range decoys (R in Figure 1) increase the range of the weak dimension of the target, thus decreasing the importance of the difference in this dimension. Frequency decoys increase the number of alternatives on the superior dimension of the target, thus augmenting the weight of the dimension on which the target is superior by reducing the variance on that dimension. Lastly, range-frequency decoys combine the traits for both R and F by increasing the range on a target's worse dimension and reducing the variance on a target's better dimension. However, RF was found to produce the weakest effect, since it might be challenging for decision-makers to recognize the dominating combination among dimensions (Ahn & Novoa, 2016). Although introducing alternative options into existing options may alter people's preference from their original desired choice (Carroll & Vallen, 2014), Simonson

(2014) suggested that when respondents are distracted by other salient information or do not pay attention to the choice task, the asymmetric dominance effect is unlikely to occur.

For non-asymmetrically dominated decoys, range symmetrical decoys, inferior decoys, compromise decoys, and phantom decoys were also extensively studied (Ahn & Novoa, 2016). This category of decoys increases one's preference for the target without being dominated by it. Therefore, they usually have similar but smaller effects than do asymmetrically dominated decoys (Pettibone & Wedell, 2000). First, range symmetrical decoys (RS in Figure 1) extend a target's weak dimension but are simultaneously symmetrically dominated by both the target and the competitor. Inferior decoys (I in Figure 1) are similar to range decoys but have a higher value than the target on its best dimension. Compromise decoys (C in Figure 1) are located on the indifference line as where the target and the competitor locate. A compromise decoy has the same utility as do target and option, but its existence makes the target a compromise between two extreme choices. Finally, phantom decoys (P in Figure 1) are the alternatives that dominate other options but that are unavailable in the choice set. A detailed discussion of phantom decoys appears in a later section.

According to the above literature, the first study focuses on confirming whether the decoy effect holds on menu item choice in a restaurant scenario. The following hypotheses are subsequently formalized:

H1. A decoy menu item will increase the purchasing percentage of the target.

To further test the decoy effects on two manipulated attributes – portion size and price – in the current study, H1 is broken down into three sub-hypotheses:

H1a. When a small-portion decoy is added to the menu, customers are more likely to choose the small-portion menu item.

H1b. When a large-portion decoy is added to the menu, customers are more likely to choose the large-portion menu item.

H1c. When both a small-portion and a large-portion decoy are added to the menu, customers are not influenced by the decoy effect.

Familiarity

As mentioned previously, although the choice process is individualistic, systematic similarities and differences exist with respect to customers' characteristics and products under consideration (Babutsidze, 2012). In terms of customers' characteristics, previous studies normally dichotomized consumers based on product class knowledge into experts and novices according to their familiarity with products in the choice set (Babutsidze, 2012; Bettman & Zins, 1977; Hansen, 1972; Lussier & Olshavsky, 1979; Mishra, Umesh, & Stem, 1993; Moorthy, Ratchford, & Talukdar, 1997). The construct of familiarity was found to have different effects on the choice task. In the marketing literature, familiarity is typically interpreted as the prior knowledge a consumer has about a product (Park & Lessig, 1981). It was defined as "the number of product-related experiences that have been accumulated by the consumer" (Alba & Hutchinson, 1987, p. 411). They further categorized consumer knowledge into two main components – familiarity and expertise (Alba & Hutchinson, 1987). Familiarity plays a pivotal role in information processing when consumers consume products (Alba & Hutchinson, 1987; Johnson & Russo, 1984); thus, similar to the previous study (Sheng, Parker, & Nakamoto, 2005), familiarity was chosen to reflect a consumer's knowledge in the current study.

Several aspects addressed the notion that consumer familiarity may influence decoy effects. First, familiarity may affect consumers' information processing due to the facilitation of new knowledge based on prior knowledge (Brucks, 1985). Therefore, a consumer with high product familiarity may generate a more comprehensive evaluation of the product with more information involved in the judgment tasks (Sheng et al., 2005). Thus, they are less likely to be influenced by decoy items. Second, Bettman (1979) found that people with higher familiarity tend to use long-term memory about the product to help them make decisions. This reflects the previously mentioned category-based process view, in which individuals tend to categorize a product based on the available cues that might signal a certain category to help them make decisions without detailed evaluations (Fiske & Neuberg, 1990). People with higher familiarity can also process a wider range of product information than can people with lower familiarity. That said, when making choices, experienced customers who have a higher familiarity with the product tend to use information stored in the memory (e.g., stored heuristics), whereas an unexperienced novice relies more on environmental information (e.g., constructive heuristics) on the spot (Hansen, 1972). Consumers with a high level of knowledge normally have strong confidence in their evaluations and have previously formed evaluations of the product. Thus, decisions made by consumers with higher familiarity are assumed to be relatively independent of the external information on the spot. Conversely, consumers with a lower level of familiarity may construct their decisions on the spot with available external information (e.g., the context effect). In addition, people who are less familiar with the choice alternatives are found to be more satisfied when the assortment size is smaller (Mogilner, Rudnick, & Iyengar, 2008). On the

other hand, people with clear prior preferences regarding the choice domain prefer to choose from a larger choice set (Chernev, 2003).

Product characteristics were usually studied based on durability. Normally, durable goods are relatively high-priced items. Consumers tend to collect and analyze more external information before making decisions. They are also more likely to engage in time-consuming and detailed information processing when purchasing durable goods (Hansen, 1972). A prior study confirmed the significant attraction effect for beer consumption when a decoy item is included, but not for car and television consumption (Mishra et al., 1993). However, non-durable products have not been studied extensively. Because menu items are typically lower-priced non-durable goods, the current research expects to find a different effect of the interplay between a customer's familiarity and decoy items on a consumer's menu item choice.

H2. The likelihood of customers being influenced by the decoy effect differs based on their familiarity with the menu item.

To further test the moderating role of familiarity on the decoy effect in the current study, H2 is broken down into three sub-hypotheses:

H2a. A customer's familiarity with food items moderates the decoy effect on the customer's choice of menu item.

H2b. Respondents who are familiar with the menu item are less likely to be influenced by the decoy item(s) on the menu.

H2c. Respondents who are unfamiliar with the menu item are more likely to be influenced by the decoy item(s) on the menu.

The Phantom Decoy Effect

Contrary to the above-mentioned traditional asymmetrically dominated decoys, phantom decoys possess a distinctive trait – unavailability (Pratkanis & Farquhar, 1992). That is, real decoys are available to consumers but are normally inferior to the target product. Phantom decoys, however, being superior to the target product, are attractive and dominating alternatives among the choice set but are unavailable (Scarpi & Pizzi, 2013). The underlying reasons for their lack of availability can range from internal constraints from the decision maker (such as budget limitation or ethical reasons) to external sources (such as time restrictions, market scarcity, technological infeasibility, or legal requirements) (Farquhar & Pratkanis, 1993; Pratkanis & Farquhar, 1992). Early scholars suspected the practicability of incorporating unavailable phantoms within the decision structure (Luce, 1959). However, Farquhar and Pratkanis (1993) pointed out the contextual information incorporated in these phantom items may "facilitate the choice between available alternatives that are less familiar and inherently difficult to compare" (p. 1217). They also suggested that phantom decoys, though unavailable, are not unwelcome in some situations (Farquhar & Pratkanis, 1993). For instance, when considering whether to buy or rent a house in an unfamiliar region, it might be constructive to consider and compare the detailed information about houses that have already been sold (phantom), even though the transaction price/quality might have been better in the past. Also addressed was the notion that phantom options can provide suitable information about the boundaries and limitations of a decision task and further generate new alternatives by restructuring the decision task (Farquhar & Pratkanis, 1993).

In contrast to drawing from the attraction effects of dominated decoys, the presence of non-dominated decoys has the potential to increase the likelihood of customers to choose the target item because a phantom decoy increases the perceived importance of the attribute on which the phantom excels. Scarcity enhancement can be used to explain the increased perceived importance of the attribute (Farquhar & Pratkanis, 1993; Pratkanis & Farquhar, 1992). However, non-dominated decoys, referring those items increase preference for the target item without being dominated, including phantom decoys, inferior decoys, and compromise decoys (Huber & Puto, 1983; Pettibone & Wedell, 2000), were found to have relatively smaller effects than dominated decoys (Highhouse, 1996; Pettibone & Wedell, 2007).

Phantom decoys are classified according to the knowledge and relative location in the choice set. In terms of relative location, “close phantoms” are those options that are slightly more attractive than the target on its superior dimension. “Distant phantoms,” however, are those that are much more attractive than the target on its superior dimension (Pettibone & Wedell, 2000). Regarding knowledge, phantom decoys can also be classified as “known phantoms” or “unknown phantoms.” The distinction derives from the fact that “known phantoms” are labeled as unavailable from the beginning. This unavailability might be internal to decision makers, such as budget limits, or from an external source, such as time restriction or natural scarcity (Farquhar & Pratkanis, 1993). On the other hand, “unknown phantoms” or “unrecognized phantoms” are items that customers are not aware are unavailable until the customers attempt to purchase them (Pratkanis & Farquhar, 1992). An unintended mistake, insignificant relevance, or deliberate deception (Farquhar & Pratkanis, 1993) are possible sources of unknown phantoms.

Traditionally, the structuring of decision problems consists of specifying the decision objectives, generating the set of decision options, and identifying the consequences associated with those options. Followed by this initial problem structuring process, decision analysis involves assessing the uncertain events associated with the options and consequences, eliciting preferences for the consequences and, finally, selecting a particular option (Keeney, 1982). The existence of phantoms can influence these components in decision structure and decision analysis. For instance, according to Farquhar and Pratkanis (1993), a temporarily unavailable phantom (e.g., Apple's preannouncement of a forthcoming new version of the iPhone) can modify customers' objectives in a purchase decision (e.g., not buying a competitor's currently available smartphone). In addition, a decision maker may succumb to self-deception during the process of assessing the uncertain availability of an option. Moreover, phantoms can affect a person's preference by delivering contrast effects in perception, changing motivation, and shifting each alternative's attribute weights (Pratkanis & Farquhar, 1992). Specifically, the contrast effect emerges when a phantom is preferred to other alternatives on one attribute (e.g., a focal attribute) that lowers the attractiveness of other alternatives with respect to such an attribute. This contrast effect is stronger when the alternative is closer to the phantom, and individuals tend to assign more weight to the focal attribute (see the later section on range frequency theory). Possible reasons for this weight shift are the scarcity of the phantom item and the increased salience of the focal attribute (Walster & Festinger, 1964). Lastly, phantoms are also used consistently to manipulate decision strategies. For instance, making a less extreme request followed by a surely rejected extreme request can increase the compliance rate, since the

requester's "retreat" for a smaller request is considered a concession. In this case, the first extreme request is a deceptive phantom (Cialdini et al., 1975).

In traditional economic perspectives, economists emphasized the importance of having more choices in a choice set due to the increasing probability of choosing an alternative to maximize utility (Benartzi & Thaler, 2001), the increase of personal control (Taylor, 1989), and the elated feeling of motivation (Deci & Ryan, 1980). Different theories have been utilized to consolidate various findings in regard to individuals' choices when phantoms are present in the choice set. The hypotheses about customers' choices were based on the distance and relative location of available alternatives and phantom decoys in the choice set. In the current study, the model being examined is shown in Figure 2.

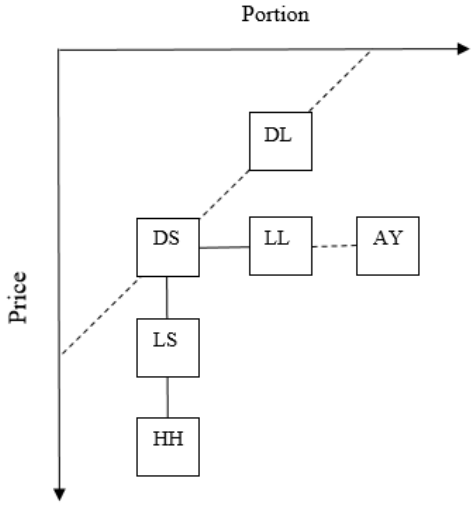


Figure 2. The model of the phantom decoy items and the available options on the menu.

To illustrate the hypotheses applying different theories to the model of the current study, the distances between DS, DL, LL, and AY are demonstrated in Figure 2. The distance between LL and DS is hypothetically the same as the distance between LL and DL. Subsequently, the

focus shifts to the impact of AY. However, we are not able to locate a single perceived position for the all-you-can-eat menu item (AY) in the coordinate since it would vary according to the individual's perception. We can only manipulate the price of AY to be the same as DS and LL. Yet, it is rational to assume that the portion for all-you-can-eat will always be larger than that of the normal large-portion lunch menu item, i.e., AY will always be positioned to the right of LL. Based on Figure 3 and simple geometry, the distance between AY and DS will always be greater than the distance between AY and DL as long as AY remains to the right of LL.

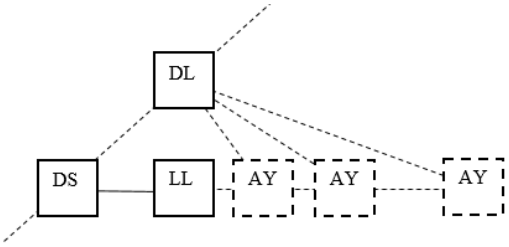


Figure 3. The relative locations of AY and other items in the proposed model.

First, *reactance theory* proposes that people's reactions tend to be affected when they perceive a threat of lost or limited freedom (Brehm, 1989; Scarpi & Pizzi, 2013). This psychological reaction emerges when a person notices that his or her freedom of choice may be restricted or eliminated. Individuals normally derogate the eliminated items in an effort to reduce psychological reactance after perceiving their limited freedom to choose (Pratkanis & Farquhar, 1992). Freeman, Pratkanis, and Farquhar (1990) suggested that, under this circumstance, a decision maker tends to choose an option quite dissimilar to the phantom and will weigh the focal attributes less than they would previously. In this regard, customers' behaviors are likely to be influenced by acting in opposition to rational behaviors. Thus, a distant phantom, (HH) in this respect, should possess a negative and strong effect on DS compared to a close phantom (LS)

because a distant phantom produces an even greater limitation of freedom than does the close phantom (Scarpi & Pizzi, 2013). For example, if a server tells a customer that the lobster entrée for the night is out of stock, this customer may opt for steak or duck instead of ordering any other seafood entrées because they are in the same category of "seafood entrée." In addition, reactance theory assumes that reactance is stronger when a threat to one's freedom to choose is encountered (Brehm, 1989). The frustration-deprivation effect, which one might feel because of the frustration of not obtaining the unavailable phantoms, may ensue after the reactance manifests (Pratkanis & Farquhar, 1992).

Similarly, as explained in the section on decoy effects, allocating different **relative weights to the attributes** can also illustrate the phantom decoy effect. Based on the loss aversion model, *relative advantage theory* (Tversky & Simonson, 1993) assumes losses are valued more than gains.

$$V_i = \text{Gains}_i^{0.5} - 2(\text{Losses}_i^{0.5})$$

in which Gains_i and Losses_i are the sums of gains and losses of alternative *i* over the decoy, and 0.5 is the power exponent. The concavity of gains and convexity of losses in this function capture the curvature of the loss aversion model (Kahneman & Tversky, 1979). Thus, the existence of phantom decoy items should lead to the target item being valued higher than the competitor item (Pettibone & Wedell, 2007).

An alternative explanation of phantom decoys is based on the explanation of the **perceived attractiveness** of different attribute scores. The *range-frequency theory*, proposed by Parducci (1974), predicts the similar results of the phantom decoy effect as reactance theory does. Parducci (1995) explains that adding a decoy to a two-item choice set can extend the range

on the dimension in which the target item scores lower (e.g., so the target's score is less extremely low) and make the target item's better dimension appear more frequent (e.g., it may emphasize the competitive item's weakness on this dimension). The relative weights of frequency and range values were found to be approximately equal. However, these relative weights can vary depending on the presentation of stimuli emphasizing the extreme points of the choice set or the relative frequencies of stimuli (Parducci & Wedell, 1986). Accordingly, a distant phantom produces a larger range extension than does a close phantom, and this range extension of dimension leads to a greater weighting of such a dimension (Wedell & Pettibone, 1996). Pettibone and Wedell (2007) proposed that the weighting value of each dimension is proportional to the individual range relative to both ranges.

$$w1 = \frac{\text{Range1}}{\text{Range1} + \text{Range 2}}$$

$$w2 = 1 - w1$$

where $w1$ and $w2$ represent the weighting values on dimension 1 and dimension 2, and Range 1 and Range 2 are the range of variation values on dimension 1 and dimension 2, accordingly. Thus, according to this model, the range-frequency theory predicts a greater phantom decoy effect with a greater range extension but no decoy effect for the frequency decoy. Subsequently, the contrast effect leads to a lesser likelihood of choosing the target item because the contrast is stronger for the target item than for the rival option (Pratkanis & Farquhar, 1992). This contrast effect diminishes the attractiveness of the other options on such an attribute (focal attribute).

Farquhar and Pratkanis (1993) noted "the possible explanations for the weight shift are the increased salience of the focal attribute and the obvious scarcity of the phantom" (p. 1219).

The scarcity-enhancement explanation mentioned by Farquhar and Pratkanis states an increase in perceived importance of the attribute. Interestingly, the lack of an effect of phantom decoys on overall ratings of attractiveness can also be accounted for by the fact that the greater weight given to a certain dimension is offset by the reduced attractiveness value of that dimension (Pettibine & Wedell, 2000). In summary, range frequency predicts a greater range extension, which creates a greater phantom decoy effect, while frequency per se does not produce decoy effects.

On the other hand, the principle of the similarity hypothesis proposes the idea of similarity substitution, which addresses customers' tendencies to defect to items similar to the original choice (Tversky, 1972). According to this principle, the influence of a decoy increases when it is similar to the target. It tends to take a disproportionately larger share from those similar to it than from dissimilar alternatives (Huber et al., 1982). The relationship between similarity and distance was represented in the form of an exponential decay function (Shepard, 1987).

$$S_{ij} = \exp\left[-(0.5 \left| X_{i1} - X_{j1} \right| + 0.5 \left| X_{i2} - X_{j2} \right|)\right]$$

where X represents the location of the alternative (i or j) on the given dimension in the two-dimensional coordinate. S_{ij} in the function denotes the similarity between alternatives (i and j).

In line with this rationale, the phantom decoy effect should decrease as the phantom decoy's similarity to the target decreases. Thus, the distant phantom should have less impact on the target than the close one does (Pettibone & Wedell, 2007). However, similarity substitution focuses only on the phantom decoy's relative location in the choice set. The relative location of the menu item determines the similarity between the phantom decoy and the available

alternatives. Applying the exponential decay function to calculate the individual similarities between the following two sets of pairs, LL-DS, AY-DS, LL-DL, AY-DL and LS-DS, HH-DS, LS-DL, HH-DS, the relative similarity of each set can be determined as $S_{ij\ AY\text{-}DL} \geq S_{ij\ LL\text{-}DL} > S_{ij\ LL\text{-}DS} > S_{ij\ AY\text{-}DS}$ and $S_{ij\ HH\text{-}DL} > S_{ij\ LS\text{-}DL} > S_{ij\ HH\text{-}DS} > S_{ij\ LS\text{-}DS}$.

According to Pettibone and Wedell (2007), the choice proportions were further assumed as a logistic function as follows.

$$\Pr(\mathrm{T}) = \frac{1}{1 + \exp(-c(VT - VC)}$$

where Pr (T) is the choice proportion of the function predicts the selection of Target. *VT* and *VC* represent the valuations of target and competitor, and *c* is a scaling factor. The relative value of each alternative is further determined by the relative similarity to the phantom. Thus, based on the choice proportion function and similarity substitution, the phantom decoy effects should decrease as similarity to the target decreases. Specifically, the proportion choosing the target is higher when close phantoms are present than when distant phantoms are present on the menu. The perspective of searching for the most similar option to the decoy can be backed up by the comparison-induced distortion theory (Choplin & Hummel, 2005). This theory proposes that the type of comparisons made between alternatives stems from the decision maker's specific goal. In the case of asymmetrically dominated decoys, decision makers are looking for the best option. Thus, they tend to make comparisons that strengthen differences between all the options, leading to perceptual distortions that favor the target in the choice set. However, if a phantom decoy is present and unavailable to choose, decision makers are prone to search for the option most similar to the phantom item in the choice set.

The following hypotheses related to the phantom decoy effect are proposed:

H3. The proportion of people who choose target items differs when the phantom decoy is added to the menu.

Specifically, H3 can be broken down into six sub-hypotheses based on the relative distance and location between different phantom decoys and the target item.

H3a. The number of people who choose DL differs from the number of people who choose DS when HH is shown but unavailable.

H3b. The number of people who choose DL differs from the number of people who choose DS when LS is shown but unavailable.

H3c. The number of people who choose DL differs from the number of people who choose DS when both HH and LS are shown but unavailable.

H3d. The number of people who choose DL differs from the number of people who choose DS when LL is shown but unavailable.

H3e. The number of people who choose DL differs from the number of people who choose DS when AY is shown but unavailable.

H3f. The number of people who choose DL differs from the number of people who choose DS when both LL and AY are shown but unavailable.

To further test the moderating role of familiarity on the decoy effect in the current study, similar to the rationales from Study 1, if a customer is more familiar with a food item, he or she may be less influenced by the phantom decoy effects. Thus, H4 is broken down into three sub-hypotheses:

H4a. A customer's familiarity with food items moderates the phantom decoy effect on the customer's choice of menu item.

H4b. Respondents who are familiar with the menu item are less likely to be influenced by the phantom decoy item(s) on the menu.

H4c. Respondents who are unfamiliar with the menu item are more likely to be influenced by the phantom decoy item(s) on the menu.

Customers' Post-Choice Attitudes, Satisfaction, and Behavioral Intentions

Fisher and Gregoire (2006) propose that decision satisfaction is both a cognitive and an affective state. As mentioned in the reactance theory that people's reactions are affected when they perceive a threat of lost or limited freedom (Brehm, 1989; Scarpi & Pizzi, 2013), previous studies also suggest that restricting people's freedom of choice tends to cause an emotional response, accompanied by negative reactions or perceptions (Fitzsimons, 2000; Scarpi & Pizzi, 2013). Several negative emotional responses, such as anger, dissatisfaction, discomfort, and regret, emerge when an individual's freedom with respect to making a choice is limited (Brehm, 1989). It was also found that discomfort ensues when fairness is taken away from decision makers (Goodwin & Ross, 1990). Thus, it is possible to predict that when the phantom item(s) are displayed on the menu, customers' decision satisfaction will change due to the constraint of making choices. On the other hand, customers' satisfaction should not change if the decoy item(s) are included on the menu, since their purchase decisions are not limited by the unavailable choice options.

Hence, hypotheses regarding customers' satisfaction and attitude after making their choices are formed as follows:

H5a. When phantom decoy items are displayed on the menu, customers encounter negative attitudes after making the choices.

H5b. When decoy items are displayed on the menu, customers' attitudes do not change after making the choices.

H6a. When phantom decoy items are displayed on the menu, customers are less satisfied about their choices.

H6b. When decoy items are displayed on the menu, customers are more satisfied about their choices.

In addition, previous research addressed the importance of behavioral intention in consumer behavior. Behavioral intention is the immediate determinant of an actual behavior (Ajzen, 1985). Baker and Crompton (2000) suggested that behavior is an inadequate measure if measured by itself. Thus, it is necessary to include attitudinal measures to explain future purchase intentions (Baker & Crompton, 2000). If the intention is measured accurately, it will serve as an appropriate predictor of behavior (Ajzen, 1985).

In the marketing literature, behavioral intention was operationalized by Zeithaml, Berry, and Parasuraman (1996). They defined several dimensions of behavioral intention based on the original thirteen-item scale, which includes willingness to pay more, loyalty to business, and propensity to switch. Based on the conceptualization of Oliver's (1980) expectation disconfirmation theory, customers subjectively evaluate their satisfaction levels by comparing their perceptions of the quality of service to their expectations. Thus, when service outperforms the customer's expectations, disconfirmation is positive and, in turn, increases post-purchase satisfaction. Conversely, when the service rendered underperforms in relation to the consumer's

expectations, disconfirmation turns negative and decreases post-purchase satisfaction. In line with the foundation of the model of expectation disconfirmation, several studies suggested that a strong positive correlation exists between customer satisfaction and behavioral intention (Oliver, 1980; Woodside, Frey, & Daly, 1989), including in the foodservice industry (Homburg, Koschate, & Hoyer, 2005). Therefore, since customers' post-choice satisfaction decreases when phantom decoy items are present on the menu, their behavioral intentions when the phantom decoy items are present are likely to turn negative as well. In contrast, since customers' post-choice satisfaction is expected to remain unchanged when the decoy items are present on the menu, their behavioral intentions are likely to remain unchanged as well when the decoy items are present on the menu.

The hypotheses with regards to customers' behavioral intention and the presence of phantom decoy and decoy menu items are developed as follows:

H7a. When phantom decoy items are displayed on the menu, customers' behavioral intentions become negative.

H7b. When decoy items are displayed on the menu, customers' behavioral intentions do not change.

Health Consciousness

Health consciousness is defined as an individual's concern for his or her health and an individual's readiness to act upon healthy behavior (Lee & McCleary, 2013; Shin, Im, Jung, & Severt, 2017). The construct of health consciousness has been comprehensively discussed in previous research on topics such as restaurant selection, menu choice, and senior diners' behavior (Harrington, Ottenbacher, & Kendall, 2011; Lee & McCleary, 2013; Shin et al., 2017).

Other researchers combined unhealthy consciousness and tastiness intuition of a food item to examine customers' choice of specific food items (Raghunathan, Naylor, & Hoyer, 2006). Generally speaking, health-oriented consumers show different behavior in terms of selection of restaurants and price sensitiveness toward food items (Yüksel & Yüksel, 2002). Health-conscious customers actively seek restaurants that provide healthier menu items, but they are not altogether price sensitive as long as the healthy options are provided. Health-conscious customers are also actively engaged in healthy behaviors, including exercising frequently, reducing alcohol consumption, maintaining moderate weight levels, and eating healthily (Grembowski et al., 1993; Lee & McCleary, 2013). In addition, an extant study used social cognition theories to test the relationship between an individual's attitude toward health and the decision to engage in healthy behavior (Glanz, Rimer, & Viswanath, 2008). For example, Glanz, Rimer, and Viswanath (2008) found that health attitude is crucial to influencing an individual's healthy behavior.

Above all, health-conscious individuals – when dining out at restaurants – are generally inclined to specific behavior, such as choosing healthier menu items, being willing to pay a price premium for healthy food, and maintaining a positive attitude toward a restaurant providing healthy products. This construct may influence their purchase decisions and choices of certain food products and portion sizes. In the current dissertation, health consciousness was measured by three items introduced in Chapter 3 and controlled as a covariate. Although it is not a focal attribute of the current research interest, it is still important to consider it a controlled variable since it may influence the final choice decisions caused by decoy effects.

Gaps in the Literature

After a review of the literature, several gaps were addressed as follows. Among the extant literature on decoy effects, such effects were typically studied based on a product's durability. Although the products being tested ranged from durable (e.g., camera, computer hardware) to nondurable (e.g., canned soup, chocolate bars, beers), the author found that several significant gaps remain unaddressed. First, durable goods are typically relatively high-priced items. When purchasing this type of good, before making decisions, consumers tend to collect and analyze more external information and engage in more time-consuming and detailed information processing (Hansen, 1972). However, non-durable products have not been studied extensively. Because menu items are normally lower-priced non-durable goods, these types of products have not received enough attention in the past literature. In addition, with respect to the subject matter, a paucity of research into decoy effects has been published in the hospitality discipline, especially in the context of food and beverage operations. In the few published articles, surprisingly, the portion size and price of the products were not empirically tested although these two characteristics are regarded as the easiest features to quantify in determining the value of individual items.

Second, although the choice process is individualistic, systematic similarities and differences exist with respect to the characteristics of consumers (Babutsidze, 2012). In terms of consumers' characteristics, previous studies normally dichotomized consumers into experts and novices based on their familiarity with the products in the choice set (Babutsidze, 2012; Bettman & Zins, 1977; Hansen, 1972; Lussier & Olshavsky, 1979; Moorthy, Rathford, & Talukdar, 1997). The construct of familiarity was found to produce different effects on the choice task. In

marketing literature, familiarity is typically interpreted as the prior knowledge a consumer has about a product (Park & Lessig, 1981). Bettman (1979) found that people with higher familiarity tend to use long-term memory about the product to help them make decisions. Such people can also process a wider range of product information than can people with lower familiarity. Specifically, when making choices, experienced customers who have higher familiarity with the product tend to use information stored in the memory (e.g., stored heuristics), whereas unexperienced novices rely more on environmental information (e.g., constructive heuristics) on the spot (Hansen, 1972). Thus, "familiarity" with the products should be a highly influential factor moderating people's choice decisions. However, to the author's best knowledge, this factor has been ignored as an effective moderator in the literature investigating decoy effects.

Moreover, most research has emphasized only the analysis of three alternatives in two-dimension scenarios – between one target item, one competitive item, and one decoy item (Carroll & Vallen, 2014; Highhouse, 1996; Monk et al., 2016; Pettibone & Wedell, 2007). Although previous researchers have suggested the increasing complexity of choice tasks may limit the decoy effect because decision makers may not recognize the dominated option (Huber et al., 1982), the interaction between the decoy and the target item has been restricted to a three-alternative assumption. This is normally not the case when customers consider menu items in a restaurant. Therefore, it is imperative to expand the understanding of the decoy effect beyond a three-alternative assumption in the context of restaurant consumption.

In addition, most studies measure the choice only in a binary answer (e.g., whether the subjects choose the target item) or the choice share (e.g., the percentage of subjects who choose the target item). Methodology-wise, the conducting of several pure experimental designs in the

field or lab setting is prevalent, but previous studies have ignored the underlying post hoc choice perception and behavioral intention of subjects, which can be measured on several continuous variables.

Finally, aside from traditional decoy items, phantom decoys have not been studied in the hospitality field even though they are omnipresent in this industry (e.g., lunch or happy hour menu items on the dinner menu, a certain type of room being sold out but still visible on the third-party website). The characteristic of being visible but unavailable to choose upon the time of a purchase decision makes phantom decoys a uniquely interesting topic to investigate. These phantom decoy items can certainly alter, or even completely reverse, customers' purchase decisions even though the items are unavailable. Unfortunately, due to the complexity of the essence of the research design, the lack of previous research investigating interactions between decoy and phantom decoy effects leaves this issue unsolved.

CHAPTER 3

RESEARCH METHODS

Introduction

This chapter covers the research design, data collection, and an overview of data analyses that were used to answer the research questions. Two separate scenario-based experiments were conducted to examine the hypotheses. Study 1 focuses on the decoy effect and its effectiveness in determining consumers' choices of menu items. Study 2 aims to explore the phantom decoy effect and its feasibility when applied to the menu. Familiarity toward food items was examined for its moderating role on menu item choice. Post-choice attitudes, satisfaction, and behavioral intentions were investigated in both studies to understand customers' post-choice assessments after customers made their individual choices.

According to Shadish, Cook, and Campbell (2002), an experiment is defined as "a study in which an intervention is deliberately introduced to observe its effects." By utilizing this method, the experimental design has the advantage of allowing researchers to control extraneous factors and examine the causal effects in interests (Fong, Law, Tang, & Yap, 2016). In the current research, short surveys with similar restaurant scenarios that had different food items were distributed to qualified respondents through an online survey company. Subjects were presented with a scenario in which they imagined they were going to dinner with their friend at 7 p.m. To eliminate the context effects of known restaurant brands (Carroll & Vallen, 2014), the only information provided in the scenario was the focal attributes – portion size and price – on a menu with a picture of the food item.

The following sections present the results of the pretest, participants, research design,

stimuli, procedures, and instruments used for both studies covered by this dissertation, followed by an overview of data analyses for both studies.

Pretesting

The pretest was conducted to ensure that proper manipulations of price and portion size in each treatment were utilized in both Study 1 and Study 2. A general population over 21 years of age, non-vegetarian, who had dined out at least once in the past month were qualified and further recruited for the pretest. Two hundred and eleven samples were originally collected via the online survey and panel company, Qualtrics. After cleaning the data, a total of 198 usable online samples remained.

In the online survey (Appendix B), each respondent was asked to imagine going to a new restaurant with his or her friend. Respondents were asked to read a restaurant scenario, view a photo of a featured food item at the restaurant, and rate their familiarity with this food item on two 7-point Likert scales from 1 (very unfamiliar) to 7 (very familiar) using the questions "The food item is what I usually eat"; "___ is familiar to me" (Prescott et al., 2002; Steptoe, Pollard, & Wardle, 1995). Equal respondents (n = 33) were randomly assigned to six different food items, including chicken wings, pizza, sushi, empanadas, satay, and soup dumplings. These six food items were initially chosen because they are easy to quantify and can easily be categorized into small or large portions. A factorial between-subject design was implemented, so each respondent was exposed to one food item with one accompanying scenario. Respondents were further asked to make one choice from a large portion dinner item (DL) or a small portion dinner item (DS) with different prices manipulated. The intention for the pretest was to confirm no specific preference existed for DL or DS in each pair of food items and to include high-familiarity and

low-familiarity food items among the six food items chosen for the current studies.

The results of the pretest showed that there were no significant differences between the proportions of subjects choosing between DS and DL of each food item (Table 2), including chicken wings (χ^2 = 2.455, *df* = 1, *p* = .117), pizza (χ^2 = 0.758, *df* = 1, *p* = .384), sushi (χ^2 = 1.485, *df* = 1, *p* = .223), empanadas (χ^2 = 0.273, *df* = 1, *p* = .602), satay (χ^2 = 2.455, *df* = 1, *p* = .117), and soup dumplings (χ^2 = 1.485, *df* = 1, *p* = .223). This means that subjects had no obvious preferences toward choosing small-portion (DS) nor large-portion (DL) menu items. Both portion sizes were equally preferred by the subjects. Therefore, a decoy effect is confirmed in the following main studies that if the relative share of the target item in a decoy treatment is significantly higher than that in the control group.

Table 2

Results of the Pretest

Food Items	Large-Portion Dinner (DL)		Small-Portion Dinner (DS)		χ^2	*p*
	n	%	n	%		
Chicken wings	12	36	21	64	2.455	.117
Pizza	19	58	14	42	0.758	.384
Sushi	13	39	20	61	1.485	.223
Empanadas	15	45	18	55	0.273	.602
Satay	12	36	21	64	2.455	.117
Dumplings	13	39	20	61	1.485	.223

The 198 usable online samples were further used to examine the familiarity of the six food items chosen for the current research. Respondents were asked to rate their familiarity with a list of 6 predetermined food items on two 7-point Likert scale (1 = not familiar at all, 7 = very much familiar). Familiarity was measured by calculating the means of these two items (Prescott

et al., 2002; Steptoe, Pollard, & Wardle, 1995). The general mean score for the familiarity of six food items was 5.61, and the standard deviation was .159. The levels of familiarity of food item were determined by calculating 1.5 standard deviations above (high familiarity, M = 5.849) and below (low familiarity, M = 5.372) the general mean scores. The results showed that chicken wings (M = 6.55, SD = .905), pizza (M = 6.76, SD = .663), and sushi (M = 6.09, SD = 2.429) belonged to the high-familiarity food items; empanadas (M = 5.24, SD = 1.768), satay (M = 4.85, SD = 1.970), and soup dumplings (M = 4.15, SD = 2.551) were low-familiarity food items.

Finally, the realism of the restaurant scenario stated in the online survey was also examined by asking respondents "How realistic was the scenario depicting the menu choice condition in the restaurant?" on a 7-point Likert scale from 1 (very unrealistic) to 7 (very realistic). The mean score for realism of the total 198 samples was 5.62, indicating that respondents perceived the scenarios as realistic.

Study 1 – Decoy Effects

Study 1 is separated into three major parts. The first part of Study 1 answers the research question "does the decoy item change the purchase proportion of the target item?" In the second part of Study 1, the moderating role of a customer's familiarity with food items is tested to answer the research question "does customers' familiarity moderate their choices to be influenced by the decoy effect?" Lastly, respondents' post-choice attitudes, satisfaction, and behavioral intentions were sought through responses to the question of "whether there are significant differences in customers' post-choice attitudes, satisfaction, and behavioral intentions among different decoy conditions (e.g. no decoy, small-decoy presence, large-decoy presence, both small-and-large decoy presence)?" Additionally, Study 1 incorporates a limited number of

choice tasks in the online survey to avoid an unrealistic learning effect in repeated choices. The between-subject design was adopted to avoid unnecessary learning effects from the similar and repetitive choice tasks followed by thewithin-subject design (Campbell & Stanley, 1966).

Participants

Participants of Study 1 were online samples collected through Qualtrics, an online survey (Appendix B) and panel portal. Online data collection was chosen because online samples have the following benefits: (1) easier to achieve random assignment of subjects to experimental treatments (Bujisic et al., 2014) (2) no differences exist in the contamination of data between online surveys and paper-based surveys (Dolnicar, Laesser, & Matus, 2009) (3) online subjects have a relatively lower drop-out rate and produce more completed data (Dolnicar et al., 2009). Thus, only completed responses from each treatment group were recorded for further analyses. Each treatment had similar scenarios and question items, non-response rates were similarly low. The data were collected in January and February, 2017. Similar to the criteria in the pretest, subjects who had no prior experience dining out in the past month and who were vegetarian were not qualified to participate. The remaining 492 effective samples were randomly assigned into four treatment groups among six food items with approximately equal sample sizes. According to Cohen (1992), this sample size is more than sufficient for the detection of medium-sized differences with a minimum power of .80 at the .05 significance level. This study obtained an approval from University of Nevada Las Vegas's Institutional Review Board as attached in the Appendix.

Design and Stimuli

Study 1 examines the decoy effect on the menu across different food items and tests the interplay of familiarity and decoy effects toward food items in the restaurant environment and how they change customers' choices and post-choice assessments. Study 1 uses a 4 (decoy conditions: small/large/both/absent) × 2 (familiarity levels: high/low) experiment. Respondents were randomly assigned equally to six food items retrieved from the pretest (e.g., chicken wings, pizza, sushi, empanadas, satay, soup dumplings).

Prior to constructing a scenario for the experiments, it is necessary to define the restaurant setting, which should evoke realistic feelings across respondents. To avoid the possible confounding effects of store brands, the brand images were removed from the picture of each food item. Three different treatments and one control group for each food item in the current design are summarized in Table 3. Each acronym and the quantity and price of each item are specified in Table 4.

Table 3

Experimental Treatments for Decoy Effects

Treatments	Treatment 1	Treatment 2	Treatment 3	Control Group
Contents	DL, DS DSS	DL, DS DLL	DL, DS DSS, DLL	DL, DS

Table 4

Description and Contents of Menu Items and Decoy Items

Acronym	DL	DS	DSS	DLL
Content				
Chicken Wings	8 pc wings $9.95	6 pc wings $7.95	4 pc wings $6.45	10 pc wings $12.45
Pizza	10 inch pizza $9.99	8 inch pizza $8.49	6 inch pizza $6.79	12 inch pizza $11.99
Sushi	10 pc sushi $15.00	8 pc sushi $12.50	6 pc sushi $10.50	12 pc sushi $18.00
Satay	6 pc satay $10.50	4 pc satay $ 7.50	2 pc satay $4.00	8 pc satay $14.00
Empanadas	6 pc empanadas $10.99	4 pc empanadas $7.99	2 pc empanadas $4.59	8 pc empanadas $14.59
Soup Dumplings	10 pc dumplings $10.50	8 pc dumplings $9.00	6 pc dumplings $7.50	12 pc empanadas $12.59

Note. DS and DL are dinner menu items. DSS and DLL are decoy menu items. DS represents "Small-portion dinner", DL represents "Large-portion dinner", DSS represents "Small-portion decoy", and DLL represents "Large-portion decoy".

Prior studies pointed out the unrealistic empirical evidence of consumer decision literature by relying highly on stylized experimental settings instead of considering real-world business environments (Frederick et al., 2014; Gomez et al., 2016; Lichters et al., 2016). Hence, instead of forcing respondents to choose from among options provided, the design and procedure from Gomez et al.'s (2016) study included a "no-buy" option to foster external validity. However, in this case, a group of respondents choosing the "no-buy" option is not relevant for inclusion when the survey's goal is to detect decoy effects and measure post-choice attitudes, satisfaction, and behavioral intentions, thus they were excluded from the main data analyses in Chapter 4.

Procedure

Data for Study 1 were collected through Qualtrics. An email with online survey pages was administered by Qualtrics to its panels. Subjects were first presented with an online consent form (Appendix A) and three screening questions about their qualifications in terms of age, dining experience for the past month, and dietary orientation (e.g., vegetarian or not). Participants who were over 21 years of age, were non-vegetarian, and had dined out at least once in the past month were recruited for the study. To control the level of hunger, respondents were told they were not particularly hungry or full in the scenarios. All the qualified subjects were presented with the following online scenario:

> Imagine that you and your friend are going out to try a new restaurant in town. The restaurant was just opened a month ago, so none of you have visited this restaurant yet. The restaurant is featured by the food displayed below. You are not particularly hungry nor full. Please answer the following questions.

After reading the instructions, subjects were asked to indicate their familiarity with the food item and to make their purchase decisions in the screen that followed.

On the next page, participants were asked to answer questions measuring their post-choice attitudes, satisfaction, and behavioral intentions for the choice they made on the previous page. Specific measures used in Study 1 are detailed in the Instrument section of this chapter. The survey concluded with realism checks and demographic questions. Figure 4 outlines the procedures completed by the subjects for Study 1. The detailed survey contents are attached in Appendix.

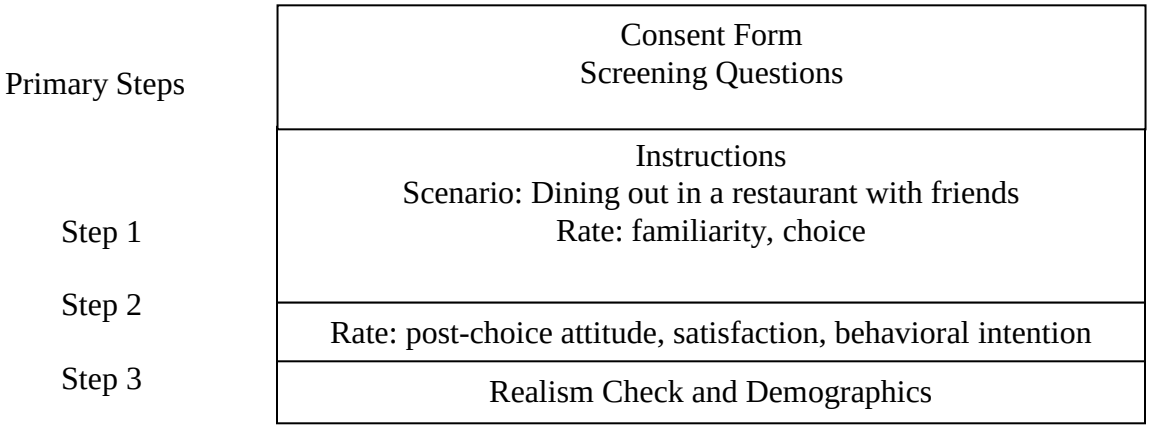


Figure 4. Procedures for Study 1.

Instrument

In the first study, all the subjects were first asked to indicate their *familiarity* to the food item on a two-item, 7-point Likert scale questions ("The food item is what I usually eat"; "__ is familiar to me" [Prescott et al., 2002; Steptoe, Pollard, & Wardle, 1995]). Respondents were then asked to make decisions to choose one option on the menu or "no-buy". Furthermore, subjects indicated their general overall *attitudes* toward the choice ("I like this choice"; "This choice is satisfactory"; "This choice is desirable"; [Cho, Lee, & Tharp, 2001]) and their *satisfaction* regarding their choice ("How satisfied are you with your experience of deciding which menu item to choose?"; "I thought the choice selection was good"; "I would be happy to choose from the same set of product options on my next purchase occasion" [Fitzsimons, 2000]) were measured using a three-item, 7-point Likert-scale question. *Behavioral intentions* were measured on a three-item, 7-point-scale question ("The probability that I will come to this restaurant again is ___"; "The likelihood that I would recommend this restaurant to a friend is ___"; "If I had to come to this restaurant again, I would make the same choice." [Cronin, Brady, & Hult, 2000]).

Subsequently, previous study suggested the positive associations between perceived price fairness and satisfaction (Martín-Consuegra, Molina, & Esteban, 2007; Etemad-Sajadi, Way, & Bohrer, 2016), *perceived price fairness* was assessed with a two-item, 7-point question ("The restaurant's prices were fair"; "The restaurant's prices were reasonable" [Chung & Petrick, 2012; Han & Ryu, 2009]).

Finally, according to the literature from the previous research reviewed in Chapter 2, health consciousness may influence customers' purchase decisions and choices of certain food products as well as portion size. Thus, in the current study, health consciousness was measured by three-item 7-point Likert-scale questions ("I think of myself as a health-conscious consumer"; "I choose restaurant carefully to ensure good health"; "I think often about health issues" [Shin et al., 2017]). This construct is important to determine restaurant customers' purchase decisions but not the focus of the current study. Thus, it was controlled as a covariate in the following hypotheses testing. Table 5 lists all the instrument used to examine the variables of interest. Reliability were also examined on each multi-item construct and presented in Chapter 4.

Table 5

Measures Used in Study 1

Variables	Measurement	Source
Familiarity	___ is familiar to me. The food item is what I usually eat.	Prescott et al. (2002); Steptoe, Pollard & Wardle (1995)
Attitudes	I like this choice. This choice is satisfactory. This choice is desirable.	Cho, Lee, & Tharp (2001)
Satisfaction	How satisfied are you with your experience of deciding which menu item to choose? I thought the choice selection was good. I would be happy to choose from the same set of product options on my next purchase occasion.	Fitzsimons (2000)
Behavioral Intentions	The probability that I will come to this restaurant again is ___. The likelihood that I would recommend this restaurant to a friend is ___. If I had to come to this restaurant again, I would make the same choice.	Cronin, Brady, & Hult (2000)
Perceived Price Fairness	The restaurant's prices were fair. The restaurant's prices were reasonable.	Chung & Petrick (2013); Han & Ryu (2009)
Health Consciousness	I think of myself as a health-conscious consumer. I choose restaurant carefully to ensure good health I think often about health issues.	Shin, Im, Jung, & Severt (2017)

Study 2 – Phantom Decoy Effects

The objective of Study 2 is to shed light on the effectiveness of incorporating phantom decoy items on the menu and the post-choice attitudinal evaluations, satisfaction, and behavioral intentions. Specifically, Study 2 answers the research questions of "do different phantom decoy items change the purchase proportion of the target item?" and "does customers' familiarity moderate their choices to be influenced by the phantom decoy effect?" In addition, Study 2 reflects on the question of "whether there are significant differences in customers' post-choice

attitudes, satisfaction, and behavioral intentions among different decoy conditions (e.g. absence, small-close phantom, small-distant phantom, both small-close and small-distant phantom, large-close phantom, large-distant phantom, both large-close and large-distant phantom)".

Participants

The participants of Study 2 were also online samples collected through the Qualtrics survey portal. Each treatment had a restaurant scenario and question items similar to those in Study 1. However, respondents were told specifically that they were dining out for dinner, and that some options in the choice task were unavailable because they were special menu items for lunch or happy hour. Non-response rates were relatively low. The data for Study 2 were collected in February, 2017. Subjects with no prior experience dining out in the past month, who were vegetarian, or who were under age 21 were not qualified to participate. The remaining 598 effective samples were randomly assigned into different treatment groups.

Design and Stimuli

Study 2 examines the phantom decoy effect on the menu across different food items and tests the interplay of familiarity and phantom decoy effects toward food items in the restaurant environment as well as how they change customers' choices and post-choice assessments. Study 2 uses a 7 (phantom decoy conditions: small lunch/happy hour/small lunch and happy hour/large lunch/all you can eat/large lunch and all you can eat/absent) × 2 (familiarity levels: high/low) experiment. Each experimental treatment includes approximately 35 samples to yield a medium effect size (Hair, Anderson, Babin, & Black, 2010). Similarly, respondents were randomly assigned equally to the same six food items determined in the pretest (e.g., chicken wings, pizza, sushi, empanadas, satay, soup dumplings).

To answer research questions 3 and 4, respondents were randomly assigned to treatment groups and one control group (see Table 6) for one food item, yielding a similar sample size for each treatment. Each treatment group consistsed of two options and at least one phantom option. In the control group (where the phantom decoy items were not included), respondents were presented with only two available dinner items (DL and DS). In the phantom decoy conditions (Treatment 1 to Treatment 6), the phantom decoy items were shown but highlighted as unavailable "Lunch Specials" or "Happy Hour Specials". The descriptions of the options were presented as a form of the menu. To test the phantom decoy effects, the choice share of the target option (i.e. DS – small-portion dinner) was compared when phantom decoy items were present versus absent in the choice set. The magnitudes of the phantom decoy effect were also compared among Treatments 1 to 6 to verify the hypotheses based on the distances between phantom decoys and the target item. Each acronym and the specific quantity and price of all the food items are specified in Table 6 and Table 7.

Table 6

Experimental Treatments for the Phantom Decoy Conditions

Treatments	Treatment 1	Treatment 2	Treatment 3	Treatment 4	Treatment 5	Treatment 6	Control Group
Choices	DL, DS	DL, DS	DL, DS	DL, DS	DL, DS	DL, DS	DL, DS
Phantom(s)	LS	HH	LS, HH	LL	AY	LL, AY	

Table 7

Description and Contents of Menu Items and Phantom Decoy Items

Acronym	DL (Option A)	DS (Option B)	LS	HH	LL	AY
Content						
Chicken Wings	8 pc wings $9.95	6 pc wings $7.95	6 pc wings $6.95	6 pc wings $5.95	8 pc wings $7.95	Unlimited $7.95
Pizza	10 inch pizza $9.99	8 inch pizza $8.49	8 inch pizza $7.49	8 inch pizza $6.49	10 inch pizza $8.49	Unlimited $8.49
Sushi	10 pc sushi $15.00	8 pc sushi $12.50	8 pc sushi $10.50	8 pc sushi $8.50	10 pc sushi $12.50	Unlimited $12.50
Satay	6 pcs satay $10.50	4 pcs satay $7.50	4 pcs satay $6.50	4 pcs satay $5.50	6 pcs satay $7.50	Unlimited $7.50
Empanadas	6 pcs empanadas $10.99	4 pcs empanadas $7.99	4 pcs empanadas $6.99	4 pcs empanadas $5.99	6 pcs empanadas $7.99	Unlimited $7.99
Soup Dumplings	10 pcs dumplings $10.50	8 pcs dumplings $9.00	8 pcs dumplings $8.00	8 pcs dumplings $7.00	10 pcs dumplings $9.00	Unlimited $9.00

Note. DS and DL are available dinner menu items. LS, HH, LL, and AY are unavailable phantom decoy menu items. DS represents "Small-portion dinner", DL represents "Large-portion dinner", LS represents "Small-portion lunch", HH represents "Happy-hour special", LL represents "Large-portion lunch", and AY represents "All-you-can-eat special".

Subjects were presented with a scenario in which they were going to dinner with their friend at 7 p.m. To eliminate the context effects of known restaurant brands, the only information provided in the scenario was the focal attributes – portion size and price. The same six food items – sushi, pizza, chicken wings, empanadas, satay, and soup dumplings – that are easily compared on both dimensions of price and quantifiable portion size, rather than abstractly describing them as a "large portion" or "small portion" were adopted from the pretest. Similar to Study 1, instead of forcing respondents to choose between the options provided, the design and procedure from Gomez et al.'s (2016) study were utilized to include the "no-buy" option to

foster external validity. However, subjects choosing the “no-buy” option were excluded from the main analyses due to their irrelevancy when answering the research questions.

Procedure

Data for Study 2 were collected via Qualtrics. An email with the online survey link was administered by Qualtrics to its panels. Subjects were first presented with an online consent form (Appendix A) and three screening questions about their qualifications in terms of age, dietary orientation, and dining experience for the past month. Participants who are over 21 years of age, were non-vegetarian, and had dined out at least once in the past month were recruited for the study. All the qualified subjects were presented with the following online instructions:

> Imagine that you and your friend are going out for dinner at 7 PM. You decide to try a new restaurant in town. You are not particularly hungry nor full. The restaurant was just opened a month ago, so none of you have visited this restaurant yet. You will see several options in the following page. In order to be qualified to continue the survey, you will be given the chance to **ONLY choose from either of Option A or Option B** displayed in the next page. However, if you do not prefer either option, please choose "No Buy". Please indicate which option you would choose.

On the next screen, subjects were asked to indicate their familiarity with the food item displayed on the screen and to make their individual choice. The difference between the procedures of both studies is that, in Study 2, respondents were not able to select any phantom decoy items displayed on the screen. Respondents were told the phantom decoy items were served only during lunch or/and happy hours. Thus, the respondents could choose only from the small-portion dinner (DS) or large-portion dinner (DL) from the choice set. The detailed contents

of the online questionnaire are attached in Appendix C. After making their choice, participants were asked to answer questions measuring their post-choice attitudes, satisfaction, and behavioral intentions for the choice they made on the previous page. Specific measures used in Study 2 are detailed in the Instrument section of this chapter. The survey concluded with realism checks and demographic questions. Figure 4 outlines the procedures completed by the subjects for Study 2.

Primary Steps	Consent Form Screening Questions
Step 1	Instructions Scenario: Dining out for dinner in a restaurant with friends Rate: familiarity, choice
Step 2	Rate: post-choice attitude, satisfaction, behavioral intention
Step 3	Realism Check and Demographics

Figure 5. Procedures for Study 2.

Instrument

In Study 2, all the subjects were first asked to indicate their *familiarity* toward the food items on a two-item, 7-point Likert scale questions ("The food item is what I usually eat"; "___ is familiar to me" [Prescott et al., 2002; Steptoe, Pollard, & Wardle, 1995]). Respondents were then asked to make decisions to choose one available option on the menu (e.g., DS or DL) or "no-buy". However, different from Study 1, if respondents choose the unavailable phantom decoy item(s) on the screen, they were not able to proceed to the following questions.

Similarly, respondents were asked to indicate their general overall *attitudes* toward their choice ("I like this choice"; "This choice is satisfactory"; "This choice is desirable"; [Cho, Lee, & Tharp, 2001]) and their *satisfaction* regarding their choice ("How satisfied are you with your experience of deciding which menu item to choose?"; "I thought the choice selection was good"; "I would be happy to choose from the same set of product options on my next purchase occasion" [Fitzsimons, 2000]) were then measured using a three-item, 7-point Likert-scale questions. *Behavioral intentions* were measured on three-item, 7-point scale questions ("The probability that I will come to this restaurant again is ___"; "The likelihood that I would recommend this restaurant to a friend is ___"; "If I had to come to this restaurant again, I would make the same choice." [Cronin, Brady, & Hult, 2000]). Lastly, previous study suggested the positive associations between perceived price fairness and satisfaction (Martín-Consuegra, Molina, & Esteban, 2007; Etemad-Sajadi, Way, & Bohrer, 2016), *perceived price fairness* was assessed with two-item questions ("The restaurant's prices were fair"; "The restaurant's prices were reasonable" [Chung & Petrick, 2013; Han & Ryu, 2009]).

Lastly, health consciousness was measured by three-item 7-point questions ("I think of myself as a health-conscious consumer"; "I choose restaurant carefully to ensure good health"; "I think often about health issues" [Shin et al., 2017]). Though this construct is important to determine restaurant customers' purchase decisions, it is not the focus of the current study. Thus, health consciousness was controlled as a covariate in the following hypotheses testing. Since the measures used for constructs are the same from Study 1, a summary table is not repeated. Reliability tests were also examined on each multi-item construct and presented in the next chapter.

Overview of Analysis

Study 1

In Study 1, independent variables are the decoy conditions and familiarity levels, while the dependent variable is a categorical variable – customers' choice, and covariates including perceived price fairness and health consciousness. A familiarity index was determined by the mean scores of the two familiarity questions. The data were analyzed separately based on each food item with low/high familiarity levels.

To test H_{1a}, separate chi-square tests were performed to compare the differences in choice shares (proportions) of the small-portion dinner item (DS) when the small-portion decoy item (DSS) is present or absent. Furthermore, to test $H_{1b,}$ chi-square tests were conducted to compare the differences in choice proportions of the large-portion dinner item (DL) when the large-portion decoy (DLL) is present or absent.

To examine H_{2a} and H_{2b}, subjects were asked to read the scenario and then choose a preferred menu item or "no-buy" for the no-choice option. Subjects choosing "no-buy" option were not relevant to the research objectives, so they were excluded from the main analyses. To test the moderating role of familiarity for H_{2a} and H_{2b}, multinomial logistic regression was performed. Multinomial logistic regression was conducted because of the nominal nature of the dependent variable and the possible violation for the assumption of normal distribution of traditional ordinary least squares regression. One characteristic for logistic regression analysis is that the models estimate the probabilities of events as functions of the independent measures (odds). To conduct multinomial logistic regression, one value must be assigned as a reference category for each categorical independent variable. Normally, the first or the neutral value is

selected as the reference category. Next, the logistic regression model examines the significance of the odds of being in a non-reference group versus in a reference group. In the current study, reference groups for the independent variables chosen are the "control group" for the decoy variable and "high familiarity" for the familiarity variable. The dependent variable was a categorical variable, where 1 = DL selected, 2 = DS selected, and 3 = decoy item(s) selected. Both categorical variables – decoy conditions and familiarity levels – and their interactions were entered in the first block in SPSS. The continuous variables – perceived price fairness and health consciousness – were entered in the second block of the logistic regression analysis as covariates. The moderating role of familiarity on the choice decision is confirmed if a significant interaction effect is present between the independent measures.

Finally, to test H_{5b}, H_{6b}, and H_{7b}, a 4 x 2 factorial between-subject design was implemented, with decoy conditions and familiarity levels as independent measures and customers' post-choice satisfaction, attitudes, and behavioral intentions as dependent measures. Separate ANCOVAs (analyses of covariance) were utilized to analyze the ratings of each metric dependent variable. Both perceived price fairness and health consciousness were set as covariates in ANCOVA tests accordingly. The IBM SPSS 20 Statistics software package was used to conduct the analyses described above.

Study 2

In Study 2, independent variables are the phantom decoy conditions and familiarity levels, the dependent variable is the customer's binary choice of a small-portion dinner (DS) or large-portion dinner (DL), and covariates remain the same – perceived price fairness and health consciousness. Again, the familiarity index was calculated by the mean scores of the two

familiarity questions. The data were analyzed separately based on each food item with low/high familiarity levels.

First, to test H_{3a} to H_{3f}, separate chi-square tests were performed to compare the differences in choice shares (proportions) of DS when the decoy item(s) are present in the different phantom decoy conditions and when the decoy item is absent in the control group. Subjects were further asked to read the scenario and then chose a preferred menu item or "no buy" for the no-choice option. This dependent measure was coded as a binary variable, in which 1 = small-portion dinner item (DS) and 0 = large-portion dinner item (DL). The reason to code Option B as 1 is because DS is the focal target item and DL is the rival option item. To examine H_{3a} to H_{3f}, each subject was randomized to one treatment/control group for one food item and asked to read the scenario, then choose a preferred menu item or "no-buy" for the no-choice option. Subjects choosing the "no-buy" option were excluded from the main analyses.

Binary logistic regression was conducted because of the binary nature of the dependent variable and the possible violation for the assumption of normal distribution of traditional ordinary least squares regression. One characteristic for logistic regression analysis is that the models estimate the probabilities of events as functions of the independent measures (odds). Each individual experimental treatment was regressed by the binary dependent measure – choosing either Option A or Option B. The moderating role of familiarity on the choice decision is further confirmed if a significant interaction effect is present between two categorical variables – phantom decoy conditions and familiarity levels – in the logistic regression model.

Subsequently, the focus of the analysis moves on to testing the effect of phantoms on individuals' decision satisfaction, attitudes, and behavioral intentions. To test H_{5a}, H_{6a}, and H_{7a},

separate analyses of covariance (ANCOVAs) to test interaction and main effects were conducted with perceived price fairness and health consciousness as covariates. Main effects and interaction across experimental conditions were tested.

Limitations and Potential Errors

The major issue being criticized in the conducting of experimental designs in research is the use of hypothetical contextual or pictorial scenarios to replace real-world scenarios and to ask respondents to evaluate different stimuli and further make choices or decisions without real monetary tradeoffs (Fong et al., 2016). In the case of current studies, the results of menu choice decisions may be biased, and so are respondents' post-choice attitudes, behavioral intentions, and satisfaction. Besides, the results of the studies may be restricted to the current experimental settings. The limitation of generalizability is also a potential concern for interpreting the results for experimental research.

Summary

This chapter discussed the research designs and methodology. Both studies' purposes and research designs, participants, stimuli, procedures, measures, and overviews of analysis were comprehensively addressed. Findings based on the methodology in Chapter 3 are discussed in the next chapter.

CHAPTER 4

RESULTS

Introduction

In Chapter 4, the findings of both experiments are presented based on the methodology described in the previous chapter. The chapter is organized according to the studies conducted with a complete review of the results of the analyses. Results of findings are summarized according to the hypotheses listed in Chapter 2.

Demographics

The detailed demographic profiles of this dissertation are presented in Table 8. In Study 1, a total of 531 online subjects were recruited. In Study 2, a total of 619 online subjects were collected. After cleaning the data and eliminating samples with large missing values or selecting the "no-buy" option, 492 usable samples in Study 1 and 598 usable samples in Study 2 with similar gender distributions were retained. Both females and males are approximately equally represented. As for the age groups, the majority of the respondents are between thirty-one and fifty years old. In addition, the respondents in both studies are mainly Caucasians, representing more than 65 % of the total subjects for both, Study 1and Study 2. Among the respondents in Study 1, 32.7 % have high school diploma, while 31.3 % have college and 14.7 % have graduate degrees. In Study 2, 38.5 % have high school diploma, while 29.1 % have college and 8.9 % have graduate degrees. Among all the respondents in both Study 1 and Study 2, about 75 % of the respondents have an income under $75,000. As for dining-out frequency, a large proportion of respondents dine out twice or three times a week. Moreover, the majority of respondents in

both studies have a preference to choose casual dining restaurants, followed by fast-food restaurants when they dine out.

Table 8

Demographic Profile

Characteristic	Study 1 (n = 495)		Study 2 (n = 598)	
	n	%	n	%
Gender				
Male	244	49.7	299	50
Female	248	50.3	299	50
Age				
21 – 30	91	18.4	176	29.4
31 – 40	141	28.5	167	27.9
41 – 50	105	21.4	104	17.4
51 – 60	85	17.1	75	12.5
61 – 70	52	10.5	65	10.9
Above 70	18	4.0	11	1.8
Education Level				
Less than High School	9	1.8	18	3.0
High School Diploma	160	32.7	230	38.5
Associate's Degree	96	19.4	123	20.6
Bachelor's Degree	154	31.3	174	29.1
Graduate Degree	73	14.7	53	8.9
Ethnicity				
African American	36	7.3	66	11
Caucasian	383	78.0	399	66.7
Hispanic	34	6.9	52	8.7
Asian	25	5.1	50	8.4
Other	14	2.8	31	5.2
Household Income				
Less than $39,999	151	30.9	246	41.1
Between $40,000 - $49,999	78	15.8	84	14.0
Between $50,000 - $74,999	139	28.3	133	22.2
Between $75,000 - $99,999	55	11.1	67	11.2
More than $100,000	69	14.0	68	11.4
Weekly Dining-out Frequency				
1	24	4.8	39	6.5
2	181	36.9	225	37.6
3	127	25.8	197	32.9
4	81	16.3	79	13.2
5 or more	79	16.2	58	9.8
Restaurant Type Preference				

Characteristic	Study 1 (n = 495)		Study 2 (n = 598)	
Fast-food	95	19.4	124	20.7
Casual dining	350	71.1	397	66.4
Fine dining	23	4.6	31	5.2
Family style	24	4.8	46	7.7

Validity and Reliability

Between-subject experimental designs were implemented in both studies. Subjects of Study 1 and Study 2 were randomly assigned to different treatment groups. Therefore, issues related to internal reliability, such as sample maturity, learning effects, mortality, and historical effects, were minimized. Ecological and external validity were also controlled for by incorporating a realism check question in the survey. As such, according to Campbell and Stanley (1966), the results of the current two studies delivered appropriate causal effects of the intended stimuli.

As for internal validity, multiple-item measures adopted from previous research were examined by the α level. According to Table 9, all the multi-item constructs have α values greater than the threshold .7 value in both Study 1 and Study 2, representing satisfactory internal validity for each variable of interest (Hair et al., 2010).

Table 9

Internal Validity for Multi-Item Measures Adopted in Study 1 and Study 2

Variables	Measurement	α	
		Study 1	Study 2
Familiarity	___ is familiar to me. The food item is what I usually eat.	.858	.779
Attitude	I like this choice. This choice is satisfactory. This choice is desirable.	.912	.941
Satisfaction	How satisfied are you with your experience of deciding which menu item to choose? I thought the choice selection was good. I would be happy to choose from the same set of product options on my next purchase occasion.	.895	.922
Behavioral Intention	The probability that I will come to this restaurant again is ___. The likelihood that I would recommend this restaurant to a friend is ___. If I had to come to this restaurant again, I would make the same choice.	.881	.895
Perceived Price Fairness	The restaurant's prices were fair. The restaurant's prices were reasonable.	.935	.942
Health Consciousness	I think of myself as a health-conscious consumer. I choose restaurant carefully to ensure good health I think often about health issues.	.845	.863

Study 1: Decoy Effects on Customers' Behavior

The first study examined the influence of decoy effects on customers' menu item choice and post-choice assessment. In addition, the familiarity level toward food items was manipulated to test its moderating role. The decoy options of selected food items were investigated using two different portion sizes (e.g. large-portion decoy [DLL] and small-portion decoy [DSS]). Both decoy items were created and adjusted based on the price and portion size of the original menu

items (e.g. large-portion dinner [DL] and small-portion dinner [DS]). Lastly, health consciousness and perceived price fairness were used as controlled covariates.

The following sections are organized and presented according to the dependent variables of interest.

Choice

492 usable samples were equally distributed to six food items, yielding 82 respondents per food item. First, the familiarity level of each food item was determined by the mean scores of two-item, 7-point Likert scale questions ("The food item is what I usually eat"; "___ is familiar to me" [Prescott et al., 2002; Steptoe, Pollard, & Wardle, 1995]). According to the mean scores of familiarity in Table 10, chicken wings (M = 6.21, SD = 1.184), pizza (M = 6.67, SD = 0.630), and sushi (M = 5.84, SD = 2.208) were categorized as high-familiarity items and satay (M = 4.66, SD = 1.945), empanadas (M = 5.33, SD = 1.806), and soup dumplings (M = 4.24, SD = 2.381) were categorized as low-familiarity items as revealed similarly as in the pretest.

To determine whether decoy effects are present, the proportions of respondents choosing the large-portion dinner (Option A, [DL]) and the small-portion dinner (Option B, [DS]) were compared to the proportions of each in the control group and in the decoy-present groups for each food item. Specifically, chi-square tests were conducted to test the significant differences between the percentage of sample choosing Option A (DL) in the large-portion decoy-present (DLL) treatment and the control group. In the same manner, chi-square tests were performed to test the significant differences between the percentage choosing Option B (DS) in the small-portion decoy-present (DSS) treatment and the control group.

Results of the chi-square tests of the decoy effects are presented in Table 10. Interestingly, for food items with high familiarity – chicken wings, pizza, and sushi, decoy effects were present when small-portion decoy items were presented on the menu. This phenomenon did not occur for the food items with low familiarity – satay, empanadas, and soup dumplings. Chi-square tests revealed the proportions of people choosing small-portion dinner items (DS) for chicken wings ($\chi^2 = 3.933$, $df = 1$, $p = .047$), pizza ($\chi^2 = 3.639$, $df = 1$, $p = .027$), and sushi ($\chi^2 = 4.192$, $df = 1$, $p = .041$) were significantly higher when the small-portion decoy (DSS) was included in the menu than when the small-portion decoy item was absent. However, the proportions of people choosing the large-portion dinner (DL) item were not significantly higher when the large-portion decoy (DLL) was included in the menu than in the control group for both high-familiarity and low-familiarity food items. Besides, the proportions of people choosing either large-portion or small-portion dinner items were not significantly higher when both DSS and DLL were both presented on the menu than when in the control group. Therefore, H_{2b} is partially supported that the decoy effect exists when the small-portion decoy item is included, but not when the large-portion decoy item is included. In addition, H_{2c} is rejected since decoy effects do not manifest in low-familiarity food conditions.

Finally, to answer H_{1a}, H_{1b}, and H_{1c}, when all the six different food items were combined together as a single category, chi-square tests also revealed the proportions of people choosing small-portion dinner (DS) items were significantly higher when the small-portion decoy (DSS) was included in the menu ($\chi^2 = 4.450$, $df = 1$, $p = .035$) than when the small-portion decoy item was not included. Similar to the previous results considering familiarity to food items, the proportions of people choosing large-portion dinner (DL) items were not significantly higher

when the large-portion decoy (DLL) or when both small-portion decoy (DSS) and large-portion decoy (DLL) were both included in the menu. Thus, H_{1a} and H_{1c} are both supported, but not H_{1b}.

Table 10

Results of Choices Shares among Decoy Conditions and Food Items with Low- and High-Familiarity

Food items	Familiarity	Small-portion DS		Large-portion DL		Small decoy DSS		Large decoy DLL		Total	χ^2
	M (SD)	n	%	n	%	n	%	n	%	n	
Wings	6.21 (1.184)										
Control		10	50	10	50					20	
DSS		21	78	4	15	2	7			27	3.933*
DLL		14	61	7	30			2	9	23	1.752
DSS, DLL		5	42	7	58	0	0	0	0	12	0.187
Pizza	6.67 (0.630)										
Control		9	45	11	55					20	
DSS		20	77	4	15	2	8			26	4.863*
DLL		6	30	11	55			3	15	20	1.000
DSS, DLL		6	38	4	24	3	19	3	19	16	3.428
Sushi	5.84 (2.208)										
Control		14	45	17	55					31	
DSS		13	76	3	18	1	6			17	4.192*
DLL		7	39	9	50			2	11	18	0.112
DSS, DLL		3	19	6	38	5	31	2	12	16	1.194
Satay	4.66 (1.945)										
Control		9	45	11	55					20	
DSS		9	47	7	37	3	16			19	0.015
DLL		8	40	11	55			1	5	20	1.000
DSS, DLL		10	44	9	39	3	13	1	4	23	1.075
Empanadas	5.33 (1.806)										
Control		8	40	12	60					20	
DSS		8	36	10	46	4	18			22	0.070
DLL		6	32	10	53			3	15	19	0.189
DSS, DLL		6	29	7	33	5	24	3	14	21	2.931

Food items	Familiarity	Small-portion DS		Large-portion DL		Small decoy DSS		Large decoy DLL		Total	χ^2
Dumplings	4.24 (2.381)										
Control		11	58	8	42					19	
DSS		10	45	5	23	7	32			22	0.673
DLL		8	42	9	47			2	11	19	0.094
DSS, DLL		7	32	6	27	6	27	3	14	22	0.998
Total	5.53 (0.185)										
Control		61	47	69	53					130	
DSS		80	60	33	25	20	15			133	4.450*
DLL		49	41	57	48			13	11	119	0.619
DSS, DLL		37	34	39	35	22	20	12	11	110	0.776

Note. DS and DL are dinner menu items. DSS and DLL are decoy menu items. DS represents "Small-portion dinner", DL represents "Large-portion dinner", DSS represents "Small-portion decoy", and DLL represents "Large-portion decoy".
*$p < .05$

Familiarity

Furthermore, to test the moderating role of customers' familiarity toward food items and the influence of decoy effects on menu item choice, multinomial logistic regression was implemented. Multinomial logistic regression is considered an extension of the conventional binomial logistic regression which only applies to a dichotomous dependent variable. Since the dependent measure, choice, is a nominal/categorical variable (DS, DL, or decoy items), multinomial logistic regression is an appropriate statistic method to estimate the odds of an event. Besides, similar to binary logistic regression, multinomial logistic regression requires relatively lenient assumptions compared to other multivariate techniques and may include both metric and nonmetric independent variables in the analysis (Hosmer & Lemeshow, 2004). The current study used two categorical variables – the decoy conditions and familiarity levels – and two continuous variables – health consciousness and price fairness – to predict the nominal variable – choice. In this section, since the primary goal is to examine the moderating role of familiarity, the data was combined among the scenarios of six food items for the unit analysis of each individual's choice.

To conduct a valid multinomial logistic regression, first, one reference group must be assigned to each categorical variable. The logistic regression model is used to test the significance of the odds of being in the non-reference group compared to the reference group (Hair et al., 2011). Therefore, multinomial logistic regression analyses were conducted separately due to the different reference groups set for the different scenarios. First, to test the odds of choosing DS in the control group compared to choosing DS when DSS is present on the menu, the "control group" condition was assigned as the reference group for the decoy condition variable and the "high familiarity" as the reference group for the familiarity levels variable. The

dependent variable was coded as a categorical variable (1 = DL; 2 = DS, and 3 = DSS). Similarly, to test the odds of choosing DL in the control group compared to choosing DL when DLL is present on the menu, the "control group" condition was assigned as the reference group for the decoy condition variable and the "high familiarity" as the reference group for the familiarity levels variable. The dependent variable was coded as a categorical variable (1 = DL; 2 = DS, and 3 = DLL). Both manipulated variables (decoy conditions and familiarity levels) and their two-way interactions were entered in the first block and two effect variables (health consciousness and price fairness) were entered in the second block of the analyses in SPSS.

The Decoy Effect of Including Small-Portion Decoy Item (DSS)

The results of the multinomial logistic regression of testing the odds of choosing DS in the control group compared to choosing DS when DSS was present on the menu are summarized in Table 11. First, the Pearson chi-square goodness-of-fit test was not significant for the first model (χ^2 = 213.058, *df* = 324, *p* = 1.000), representing a suitable model fit. The -2 log likelihood tests also revealed the appropriate model fit as the observed value 271.228 (χ^2 = 17.318, *df* = 8, *p* = .027) was significant, which means that the full model statistically significantly predicted the dependent variable better than the intercept-only model (Hair et al., 2011). The proportion of variance which can be explained by the model is pseudo R^2. Nagelkerke R^2 showed the model accounted for 31.7 % of the variance.

The classification matrix of Table 11 also showed that 67.4% of choice decisions of food items were accurately classified. According to Hair and co-authors (2011), the acceptable classification rate should be 25% higher than chance. The current logistic regression model classification percentage of 67.4% exceeded the threshold value and was therefore considered acceptable.

Table 11

Multinomial Logistic Regression Analysis Results for DSS Condition and Control Group

	β	SE	Wald	*df*	*p*	Exp (β)
Decoy						
DSS	1.465	.349	17.663	1	.000**	4.327
Control	0[a]					
Familiarity						
Low	-1.095	.495	4.886	1	.027*	.335
High	0[a]					
Decoy × Familiarity	-.943	.636	2.199	1	.138	.389
Health Consciousness	-.124	.114	1.195	1	.274	.883
Price Fairness	-.266	.107	6.140	1	.013*	.767
Constant	1.468	.772	3.614	1	.057	

	Predicted Choice			
Observed Choice	DL	DS	DSS	% Correct
DL	60	42	0	58.8
DS	28	118	0	80.8
DSS	0	16	0	0.0
Overall %	33.3	66.7	0	67.4

Note. [a] The parameter is set to zero because it is redundant. *$p < .05$, ** $p < .01$.

To interpret the results of logistic regression with categorical variables included in the model, the coefficient for a main effect has to be interpreted with relation to the reference group. The change in odds ratio for a comparison group and the odds ratio for the reference group is presented as the exponent of beta, Exp (β). The multinomial logistic regression coefficient, Wald statistics, and the exponent of beta value (odds ratio) were presented in Table 11. According to the results in the table, customers' choices of dinner items were significantly influenced by the decoy conditions at $p < .01$, and by familiarity and perceived price fairness at $p < .05$ in the DSS-present condition. These significant main effects were further discussed. However, no interaction between decoy conditions and familiarity levels was significant, so interaction effect in the DSS-present condition was not discussed further.

The main effect for the decoy conditions was significant and positive, with an exponent beta of 4.327. This number indicated that the odds of choosing the small-portion dinner item

(DS) is 4.3 times more when the small-portion decoy item (DSS) was included in the menu than when DSS was absent (control group). The main effect of familiarity also yielded a significant but negative coefficient, with an exponent of .335. This indicated that the odds for choosing the small-portion dinner item (DS) decreased by 66.5% (1 – .335 = .665) when customers are less familiar with the food items. That is, customers with lower familiarity to the food items are less likely to order small-portion dinner when compared to those who are highly familiar with the food items. Namely, customers with lower familiarity of the food items are more likely to order the large-portion item (DL) or the small-portion decoy item (DSS), which means they were not susceptible to the decoy effect and not chose the targeted small-portion menu item (DS).

The multinomial logistic regression model also included two continuous variables, health consciousness and perceived price fairness. The results revealed the beta coefficient for perceived price fairness was significantly positive, but not for health consciousness. The Wald statistic (Wald = 6.140, p = .013) showed that the effect of perceived price fairness was statistically significant. The findings indicated that a one-unit increase in perceived price fairness caused a 22% (1 - .767 = .223) decrease in choosing the small-portion dinner (DS). That is, customers are less likely to choose a small-portion item when perceived price fairness increases.

The Decoy Effect of Including Large-Portion Decoy Item (DLL)

The results of the multinomial logistic regression of testing the odds of choosing DL in the control group compared to choosing DL when DLL was present on the menu are summarized in Table 12. First, the Nagelkerke R^2 showed the model accounted for 20.8 % of the variance. The Pearson chi-square goodness-of-fit test was not significant for the model (χ^2 = 210.830, df = 316, p = 1.000), representing a suitable model fit. The -2 log likelihood tests also revealed the appropriate model fit as the observed value 293.671 (χ^2 = 45.878, df = 10, p < .001) was

significant. This indicates the full model statistically significantly predicted the dependent variable better than the intercept-only model.

The classification matrix of Table 12 also showed that 62.9% of choice decisions of food items were accurately classified. Hair and co-authors (2011) addressed the acceptable classification rate should be 25% higher than chance. The current logistic regression model classification percentage of 62.9% exceeded the threshold value and was therefore considered acceptable.

Table 12

Multinomial Logistic Regression Analysis Results for DLL Condition and Control Group

	β	SE	Wald	*df*	*p*	Exp (β)
Decoy						
DLL	-.368	.347	1.123	1	.289	.692
Control	0[a]					
Familiarity						
Low	.815	.418	3.791	1	.052	2.258
High	0[a]					
Decoy × Familiarity						
Control × High	1.040	.575	3.268	1	.071	2.828
Health Consciousness	.069	.102	.449	1	.503	1.071
Price Fairness	.103	.107	.936	1	.333	1.109
Constant	-1.348	.752	3.215	1	.073	

Observed Choice	Predicted Choice			
	DL	DS	DSS	% Correct
DL	96	30	0	76.2
DS	53	57	0	51.8
DSS	7	4	0	0.0
Overall %	63.2	36.8	0	62.9

Note. [a] The parameter is set to zero because it is redundant.

Again, the multinomial logistic regression coefficients, Wald statistics, and the exponent of beta values (odds ratio) were presented in Table 12. However, contrary to the results of the DSS-present condition, customers' choices toward dinner items were not significantly influenced by any independent measures and covariates. None of the main effects and interaction effects

between decoy and familiarity was statistically significant at $p < .05$ level. However, the main effect for familiarity was marginally significant and positive ($\beta = .815$, $df = 1$, $p = .052$), with an exponent of 2.258. This number indicated that the odds for choosing the large-portion dinner item (DL) was 2.26 times more when the customers are less familiar with the food items compared to those who are familiar with the food items. Specifically, when combining the DLL-present group and the control group together, customers with lower familiarity to the food items were more likely to order large-portion dinners (DL) when compared to those who were highly familiar with the food items. Generally speaking, people with lower familiarity toward food items are less inclined to order small-portion menu items (DS) on the menu no matter whether small-portion decoy or large-portion decoy items are present or absent on the menu.

Nevertheless, no interaction between decoy and familiarity was significant, so the interaction effect in the DLL-present condition was also not discussed further.

The findings from this section reflected the findings from the previous chi-square tests that customers are more likely to choose the small-portion dinner item (DS) when a small-portion decoy (DSS) is added to the menu, but not the large-portion dinner item (DL) when a large-portion decoy (DLL) is added to the menu. Thus, H_{1a} is confirmed supported again, as revealed by the chi-square tests, but not H_{1b}. Additionally, the results of multinomial logistic regression suggested the main effect of familiarity was significant in the DSS-present condition and marginally significant in the DLL-present condition. Customers who are less familiar with the food items are more likely to order the large–portion dinner item no matter whether there is large-portion decoy or small-portion decoy item present or absent on the menu. Since the interaction effects between the decoy conditions and familiarity levels were not present in both DSS and DLL conditions, the moderating role of familiarity as H_{2a} suggested is not supported.

Post-Choice Attitudes, Satisfaction, and Behavioral Intentions

Post-choice satisfaction, attitudes, and behavioral intentions were analyzed based on the mean scores of these items as described in Chapter 3. Separate ANCOVAs (analyses of covariance) were used to analyze the ratings of customers' satisfaction, attitudes, and behavioral intentions.

To test H_{5b}, H_{6b}, and H_{7b}, a 4 x 2 factorial between-subject design was implemented, with decoy conditions and familiarity levels as independent measures, and customers' post-choice satisfaction, attitudes, and behavioral intentions as dependent measures. Separate ANCOVAs are appropriate methods to use when possible covariates exist and multicollinearity may be present among dependent variables (Hair et al., 2010). According to Hair and co-authors' (2010) *Multivariate Data Analysis*, "an effective covariate is one that is highly correlated with the dependent variable(s) but not correlated with the independent variables (p. 456)." Hence, the potential covariates chosen were two metric variables – perceived price fairness and health consciousness. No significant correlations were found between perceived price fairness and the decoy conditions and familiarity levels, nor were found between health consciousness and the decoy conditions and familiarity levels. Nevertheless, significant correlations were found between perceived price fairness and post-choice satisfaction (Pearson's r = .625, $p < .001$), attitudes (Pearson's r = .497, $p < .001$) and behavioral intentions (Pearson's r = .547, $p < .001$). Similarly, significant correlations were found between health consciousness and post-choice satisfaction (Pearson's r = .338, $p < .001$), attitudes (Pearson's r = .380, $p < .001$) and behavioral intentions (Pearson's r = .379, $p < .001$). Therefore, both perceived price fairness and health consciousness were appropriate covariates to be included in the following ANCOVA tests.

Post-Choice Attitudes

To test customers' post-choice attitudes in H_{5b}, ANCOVA results indicated that the familiarity levels (F = 12.061, *df* = 1, *p* = .001, η^2 = .024) significantly differed among customers' post-choice attitudes, whereas the decoy conditions did not (F = 1.284, *df* = 3, *p* = .279, η^2 = .008). For the main effect of familiarity toward food items, customers with high familiarity had significantly higher post-choice attitude mean scores than customers with low familiarity toward such food items (Table 13). This significant main effect of familiarity is presented in Figure 5. Additionally, both perceived price fairness (F = 106.846, *df* = 1, *p* < .001, η^2 = .181) and health consciousness (F = 30.580, *df* = 1, *p* < .001, η^2 = .060) were also significant according to the ANCOVA results, which meant both covariates were appropriate in the model. However, there was no significant interaction between the decoy conditions and familiarity levels (F = 1.208, *df* = 3, *p* = .306, η^2 = .007). Hence, H_{5b} is supported since customers' post-choice attitudes were only significantly more positive when customers were more familiar with the food item, whereas their post-choice attitudes were not significantly different whether the decoy items were present or absent on the menu.

Table 13

Results of ANCOVA for Post-Choice Attitudes (Decoy Conditions)

	Attitude		
	M	F	η^2
Familiarity		12.061**	.024
Low	5.162 [a]		
High	5.565 [b]		

Note. Means were calculated from a 7-point Likert scale. Mean scores with same superscripts are not significantly different. Different superscripts indicate means are statistically different according to Scheffe post hoc tests.
**$p < .01$.

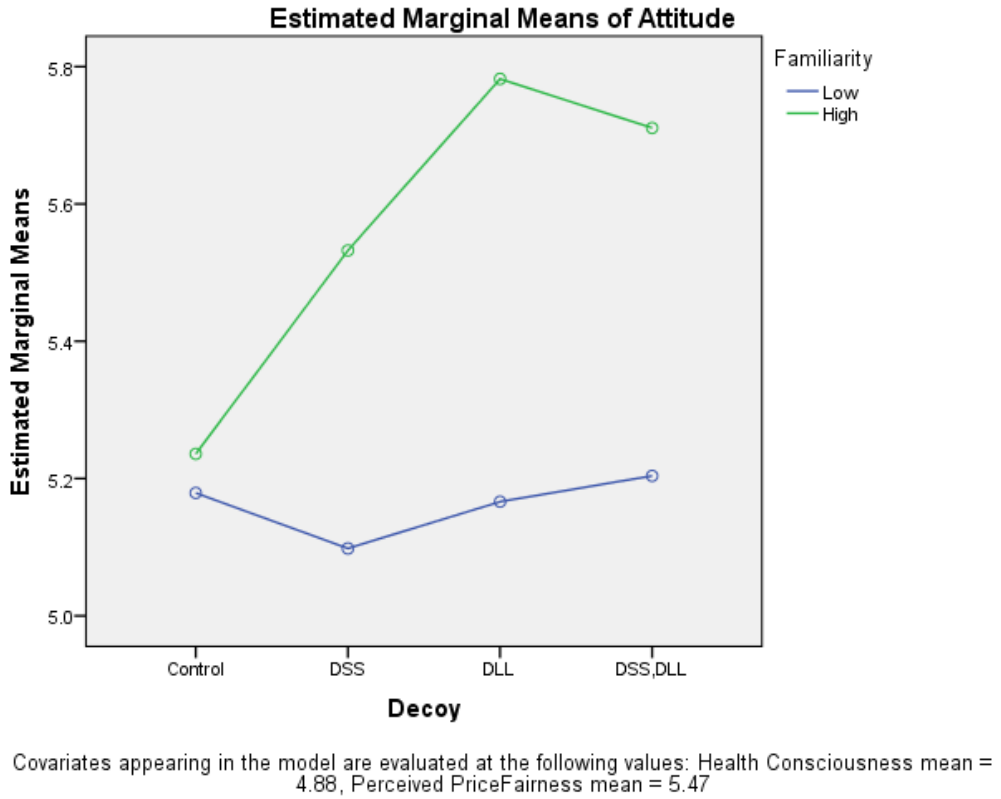


Figure 6. Estimated marginal means of post-choice attitudes based on different levels of familiarity (decoy conditions).

Post-Choice Satisfaction

Subsequently, to test customers' post-choice satisfaction in H_{6b}, ANCOVA results indicated that both decoy conditions (F = 2.872, *df* = 3, *p* = .036, η^2 = .018) and familiarity

levels (F = 8.819, *df* = 1, *p* = .003, η^2 = .018) significantly differed among customers' post-choice satisfaction. Post-hoc Scheffe tests were further conducted to compare the mean scores among different decoy conditions. Among four decoy conditions, customers' post-choice satisfaction was significantly higher when the large-portion decoy (DLL) dinner item was included in the choice set. The similar main effect was not present when the small-portion decoy (DSS) or both small and large-portion decoy (DSS, DLL) were included in the choice set.

As for the familiarity levels to food items, customers with high familiarity had significantly higher post-choice satisfaction than those with low familiarity (Table 14). These patterns of significant relationships were also depicted in Figure 6 and Figure 7. In addition, the results of both perceived price fairness (F = 243.154, *df* = 1, *p* < .001, η^2 = .335) and health consciousness (F = 13.741, *df* = 1, *p* < .001, η^2 = .028) were also significant according to the ANCOVA results, which meant both covariates were appropriate in the current model. However, there was no significant interaction between the decoy conditions and familiarity levels (F = 1.046, *df* = 3, *p* = .372, η^2 = .006). Therefore, H_{6b} is partially supported since customers' post-choice satisfaction was significantly higher only when the large-portion decoy was included in the choice set. However, if the small-portion decoy item or both the small- and large-portion decoy items simultaneously displayed on the menu, customers' post-choice satisfaction did not vary significantly compared to that in the control group.

Table 14

Results of ANCOVA for Post-Choice Satisfaction (Decoy Conditions)

	Satisfaction		
	M	F	η^2
Decoy		2.872*	.018
Control	5.165 [a]		
DSS	5.227 [ab]		
DLL	5.560 [b]		
DSS, DLL	5.240 [ab]		
Familiarity		8.819**	.018
Low	5.139 [a]		
High	5.457 [b]		

Note. Means were calculated from a 7-point Likert scale. Mean scores with same superscripts are not significantly different. Different superscripts indicate means are statistically different according to Scheffe post hoc tests.
*$p < .05$, **$p < .01$.

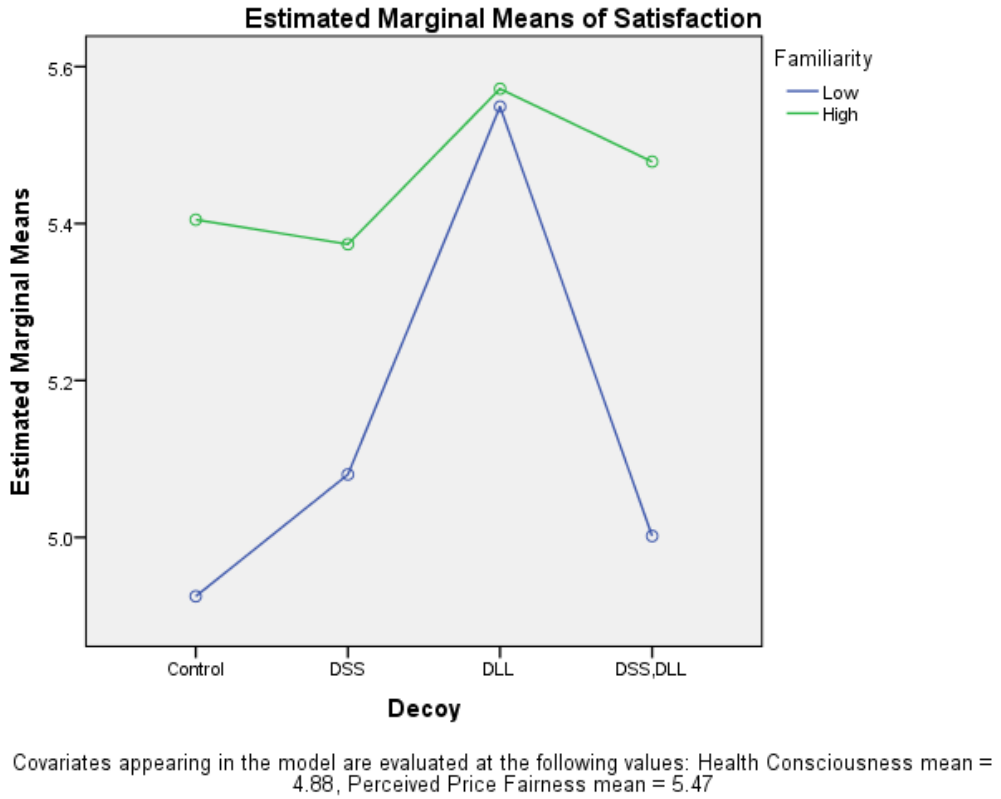


Figure 7. Estimated marginal means of post-choice satisfaction based on different levels of familiarity (decoy conditions).

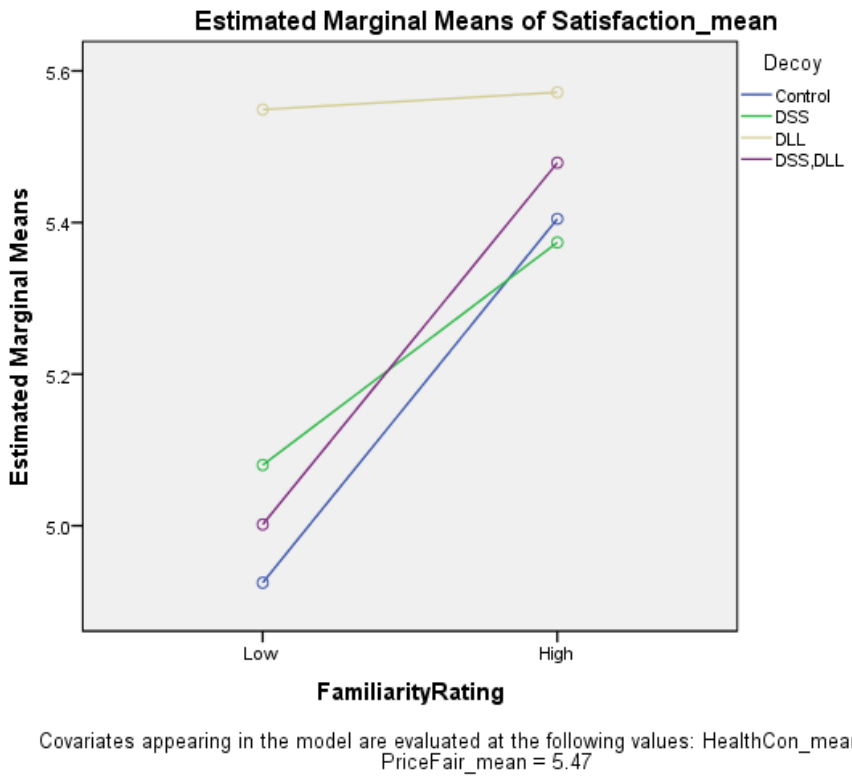


Figure 8. Estimated marginal means of post-choice satisfaction based on different decoy conditions (decoy conditions).

Post-Choice Behavioral Intentions

To test customers' post-choice behavioral intentions in H_{7b}, ANCOVA results revealed that the familiarity levels (F = 22.720, *df* = 1, *p* < .001, η^2 = .045) produced significant differences among customers' post-choice behavioral intentions, whereas the decoy conditions did not (F = 1.583, *df* = 3, *p* = .193, η^2 = .010). For the main effect of familiarity toward food items, customers with high familiarity had significantly higher post-choice behavioral intention mean scores than customers with low familiarity toward such food items (Table 15). This significant main effect of familiarity was present in Figure 8. Additionally, the results of both perceived price fairness (F = 145.474, *df* = 1, *p* < .001, η^2 = .232) and health consciousness (F = 25.197, *df* = 1, *p* < .001, η^2 = .050) were also significant based on the ANCOVA outputs,

meaning both covariates were appropriate to be included in the model. However, there was no significant interaction effect between the decoy conditions and familiarity levels (F = .555, *df* = 3, *p* = .645, η^2 = .003). Hence, H_{7b} is supported since customers' post-choice behavioral intention was significantly more positive only when they were more familiar with the food item. Respondents' post-choice behavioral intention was not significantly different whether the decoy items were present or absent on the menu.

Table 15

Results of ANCOVA for Post-Choice Behavioral Intentions (Decoy Conditions)

	Behavioral Intention		
	M	F	η^2
Familiarity		22.720**	.045
Low	4.700 [a]		
High	5.263 [b]		

Note. Means were calculated from a 7-point Likert scale. Mean scores with same superscripts are not significantly different. Different superscripts indicate means are statistically different according to Scheffe post hoc tests.
**$p < .01$.

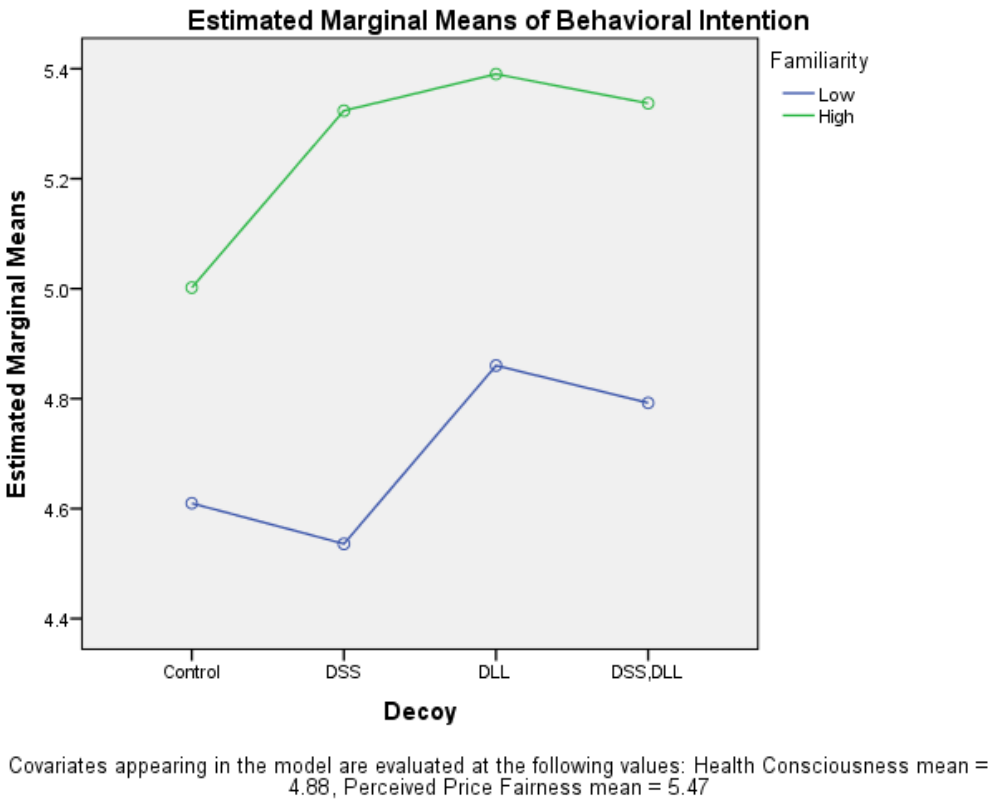


Figure 9. Estimated marginal means of post-choice behavioral intentions based on different levels of familiarity (decoy conditions).

Realism Check

The realism of the restaurant scenario stated in the online survey was also examined by asking respondents "How realistic was the scenario depicting the menu choice condition in the restaurant?" on a 7-point Likert scale from 1 (very unrealistic) to 7 (very realistic). The mean for realism of the total 492 samples was 5.63, with a standard deviation of 1.221, indicating that respondents perceived the scenarios realistic.

Study 2: Phantom Decoy Effects on Customers' Behavior

Study 2 aims to test the effectiveness of including phantom decoy items in restaurant menus and whether these decoy items influence customers' menu item choices. Customers' familiarity of the food items were also examined as a moderator item similar to Study 1.

Moreover, customers' post-choice attitudes, satisfaction, and behavioral intentions were tested. The phantom decoy conditions of each food item were created based on two main dimensions – price and portion size. Along each dimension, two levels of price and portion size were used to create four phantom decoy items, yielding distant and close phantom decoy items for each dimension.

The following sections are organized and presented according to the dependent variables of interest.

Choice

598 usable samples were equally distributed to six food items, yielding approximately 98 to 102 respondents per food item. Again, the familiarity level of each food item was determined by the mean scores of two-item, 7-point Likert scale questions ("The food item is what I usually eat"; "___ is familiar to me" [Prescott et al., 2002; Steptoe, Pollard, & Wardle, 1995]). According to the mean scores of familiarity in Table 16, chicken wings (M = 6.29, SD = 1.309), pizza (M = 6.61, SD = 0.852), and sushi (M = 5.83, SD = 2.113) were categorized as high-familiarity items; satay (M = 4.91, SD = 1.985), empanadas (M = 4.84, SD = 1.957), and soup dumplings (M = 4.13, SD = 2.212) were categorized as low-familiarity items as explained in the pretest.

To determine whether the decoy effect occurred, the proportion of respondents choosing the small-portion dinner (Option B, [DS]), which was the target item in Study 2, in the control group was compared to the choice proportions in the phantom-decoy-present groups for each food item. Chi-square tests were conducted separately to test the significant differences between the percentages of respondents choosing DS from each phantom-decoy-present condition and from the control group.

Results of the chi-square tests of decoy effects were presented in Table 16. For food items with high familiarity, chi-square tests revealed the proportions of people choosing small-portion dinner items (DS) for chicken wings were significantly lower when both the small-lunch and happy-hour items (LS, HH) (χ^2 = 3.991, *df* = 1, *p* = .046) or when both the large-lunch and all-you-can-eat items (LL, AY) (χ^2 = 3.991, *df* = 1, *p* = .046) were included in the menu in contrast to the control group. The results in Table 16 also showed the proportions of people choosing small-portion dinner (DS) items of pizza were significantly lower when both the small-lunch and happy-hour items (LS, HH) (χ^2 = 4.391, *df* = 1, *p* = .036) or when all-you-can-eat item (AY) (χ^2 = 6.910, *df* = 1, *p* = .009) were included in the menu in contrast to the control group. Moreover, the proportions of people choosing small-portion dinner (DS) items for sushi were significantly lower when all-you-can-eat item (AY) (χ^2 = 5.183, *df* = 1, *p* = .023) or when both the large-lunch and all-you-can-eat items (LL, AY) (χ^2 = 3.726, *df* = 1, *p* = .05) were included in the menu than when the small-portion phantom decoy item was absent in the control group. Therefore, H_{4b} is partially rejected since the inclusion of certain phantom decoy items on the menu did influence respondents to avoid choosing the small-portion dinner item and to opt for the large-portion dinner item.

For food items with low-familiarity, chi-square tests revealed the proportions of people choosing small-portion dinner (DS) item for satay were significantly higher when the happy-hour item (HH) (χ^2 = 4.041, *df* = 1, *p* = .044) or when the all-you-can-eat item (AY) (χ^2 = 5.983, *df* = 1, *p* = .014) was included in the menu than when the phantom decoy item was not included in the menu. Similarly, the proportions of people choosing small-portion dinner item (DS) for empanadas were significantly higher when both the small-lunch and happy-hour items (LS, HH) (χ^2 = 4.423, *df* = 1, *p* = .036) were included in the menu than in the control group. Lastly, the

proportions of people choosing small-portion dinner (DS) item for soup dumplings were significantly higher when both the small-lunch and happy-hour items (LS, HH) (χ^2 = 8.974, *df* = 1, *p* = .003) or when both the large-lunch and all-you-can-eat items (LL, AY) (χ^2 = 6.793, *df* = 1, *p* = .009) were included in the menu than in the control group. Hence, H_{4c} is partially supported since the inclusion of certain phantom decoy items on the menu did lure respondents to choose the small-portion dinner item instead of the large-portion dinner item.

Table 16

Results of Choices Shares among Phantom Decoy Conditions and Food Items with Low- and High-Familiarity

Food items	Familiarity	Small-portion DS		Large-portion DL		Total	χ^2
	M (SD)	n	%	n	%	n	
Wings	6.29 (1.309)						
Control		7	47	8	53	15	
LS		7	50	7	50	14	.025
HH		5	36	9	64	14	.348
LS/HH		2	13	13	87	15	3.991*
LL		8	57	6	43	14	.280
AY		3	20	12	80	15	2.372
LL/AY		2	13	13	87	15	3.991*
Pizza	6.61 (0.852)						
Control		9	60	6	40	15	
LS		7	50	7	50	14	.283
HH		5	36	9	64	14	1.613
LS/HH		3	21	11	79	14	4.391*
LL		5	38	8	62	13	1.300
AY		2	13	13	87	15	6.910**
LL/AY		4	27	11	73	15	3.210
Sushi	5.83 (2.113)						
Control		10	63	6	37	16	
LS		8	62	5	38	13	.003
HH		6	46	7	54	13	.810
LS/HH		5	33	10	67	15	2.700
LL		7	58	5	42	12	.069
AY		3	21	11	79	14	5.183*
LL/AY		5	29	12	71	17	3.726*

Food items	Familiarity	Small-portion DS		Large-portion DL		Total	χ^2
Satay	4.91 (1.985)						
Control		5	33	10	67	15	
LS		7	50	7	50	14	.834
HH		10	71	4	29	14	4.041*
LS/HH		9	64	5	36	14	2.692
LL		5	36	9	64	14	.028
AY		11	79	3	21	14	5.983*
LL/AY		9	64	5	36	14	2.692
Empanadas	4.84 (1.957)						
Control		5	36	9	64	14	
LS		5	36	9	64	14	0
HH		9	64	5	36	14	2.117
LS/HH		10	77	3	23	13	4.423*
LL		4	27	11	73	15	.263
AY		10	71	4	29	14	3.324
LL/AY		5	36	9	64	14	0
Dumplings	4.13 (2.212)						
Control		4	29	10	71	14	
LS		4	27	11	73	15	.014
HH		8	57	6	43	14	2.159
LS/HH		12	86	2	14	14	8.974*
LL		6	43	8	57	14	.574
AY		4	29	10	71	14	0
LL/AY		11	79	3	21	14	6.793*

Note. DS and DL are available dinner menu items. LS, HH, LL, and AY are unavailable phantom decoy menu items. DS represents "Small-portion dinner", DL represents "Large-portion dinner", LS represents "Small-portion lunch", HH represents "Happy-hour special", LL represents "Large-portion lunch", and AY represents "All-you-can-eat special".
*$p < .05$, **$p < .01$.

Familiarity

To test the moderating role of familiarity and to compare the likelihood of choosing small-portion dinner over large-portion dinner when the phantom decoy item(s) are available or not, binary logistic regression was implemented to test the influence of phantom decoy effects and familiarity levels on menu item choice. Since the dependent measure, choice of the small-portion dinner item (DS) or the large-portion dinner item (DL), is a binary variable, binary logistic regression is an appropriate statistic method to estimate the odds of an event. Additionally, binary logistic regression requires relatively lenient assumptions compared to other multivariate techniques and may include both metric and nonmetric variables in the analysis (Hosmer and Lemeshow, 1989). Study 2 examined the two categorical variables – the phantom decoy conditions and familiarity levels – and two continuous variables – health consciousness and price fairness – to predict the odds of an event occurred in a dichotomous dependent variable – choice of DS or DL. Again, the data was combined among the scenarios for the unit analysis of each individual's choice.

To conduct a valid logistic regression, similar to multinomial logistic regression analysis, the first step is to assign one reference group to each categorical variable. The binary logistic regression model is used to test the significance of the odds of being in a non-reference group compared to in the reference group. In Study 2, "control group (no phantom decoy items)" was assigned as the reference group for the phantom decoy conditions variable, and "high familiarity" for the familiarity levels variable. Subjects were instructed to select from one of the available options on the dinner menu, either Option A (DL) or Option B (DS), but not from the unavailable phantom decoy items. The dependent variable was coded as a dummy variable (1 = DS, 0 = DL). Both manipulated variables (phantom decoy conditions and familiarity levels) and

their two-way interactions were entered in the first block and two metric variables (health consciousness and price fairness) were entered in the second block of the analysis in SPSS.

The results of the binary logistic regression of testing the odds of choosing DS in the control group compared to choosing DS in the phantom-decoy-present treatment groups were summarized in Table 17. First, the Hosmer and Lemeshow Test was insignificant at .05 level (χ^2 = 4.654, df = 8, p = .794), indicating the model fit well (Hosmer & Lemeshow, 2004). Moreover, the proportion of variance could be explained by Nagelkerke R^2, indicating the model accounted for 21.3% of the variance. The manipulated variables entered in the first block accounted for 18.2% of the variance, and the metric effect variables in the second block increased the general variance explained (3.1%) in the model. Thus, both sets of variables were pivotal in predicting consumers' choices of menu items.

Further, the classification matrix of Table 17 showed that 68.3% of choice decisions of food items were accurately classified. According to *Multivariate Data Analysis* (Hair et al., 2011), the acceptable classification rate should be 25% higher than chance. Since the dependent variable was binary and was tested with no preference between choosing DS and DL in the pretest, the acceptable classification rate should be greater than 62.5% (0.5 × 1.25 = 0.625). The current binary logistic regression model classification percentage of 68.3%, which exceeded the threshold value, was therefore considered an acceptable classification rate. For validation purpose, the data were randomly separately into two groups – analysis sample and hold-out sample (Hair et al., 2011). The classification accuracies were 67.7% for the analysis sample and 69.1% for the hold-out sample. Consequently, the original model was verified to hold appropriate predictive accuracies and was further used for the following analysis.

Table 17

Results of Binary Logistic Regression Analysis for Phantom Decoy Conditions

	β	SE	Wald	*df*	*p*	Exp (β)
Phantom						
LS	-.500	.544	.844	1	.358	.607
HH	-.875	.532	2.702	1	.100	.417
LS, HH	-1.322	.518	6.509	1	.011*	.267
LL	-.506	.524	.934	1	.334	.603
AY	-1.155	.527	4.804	1	.028*	.315
LL, AY	-1.419	.514	7.612	1	.006**	.242
Control	0[a]					
Familiarity						
Low	-1.309	.481	7.397	1	.007**	.270
High	0[a]					
Phantom × Familiarity						
LS × Fam	.823	.669	1.513	1	.219	2.277
HH × Fam	1.332	.661	4.054	1	.044*	3.787
LS, HH × Fam	1.344	.654	4.224	1	.040*	3.835
LL × Fam	.296	.662	.200	1	.655	1.344
AY × Fam	1.449	.659	4.831	1	.028*	4.258
LL, AY × Fam	1.565	.655	5.717	1	.017*	4.784
Health Consciousness	-.020	.063	.095	1	.758	.981
Price Fairness	-.070	.064	1.169	1	.280	.933
Constant	1.501	.539	7.762	1	.005	4.488

Observed Choice	Predicted Choice		
	DL	DS	% Correct
DL	209	92	69.4
DS	97	200	67.2
Overall %	51.2	48.8	68.3

Note. [a] The parameter is set to zero because it is redundant. *$p < .05$, **$p < .01$.

To interpret the results of binary logistic regression with categorical variables included in the model, the coefficient for a main effect has to be interpreted with relation to the reference group. The change in odds ratio for a comparison group and the odds ratio for the reference group is expressed as the exponent of beta, Exp (β). The binary logistic regression coefficients, Wald statistics, and the exponent of beta values (odds ratio) were presented in Table 17.

In addition, two-way interaction terms were also included in the model between the phantom decoy conditions and familiarity levels. According to Jaccard (2001), a significant effect here means that "the effect of an independent variable on a dependent variable differs depending on the value of a third variable (p. 12)." The significant interactions with phantom decoy conditions indicate that familiarity levels were moderating the effect of the phantom decoy items on choosing a menu item. Hence, these interaction effects are discussed first, followed by significant main effects.

Interaction and Main Effects of the Phantom Decoy Conditions and Familiarity Levels

The interaction effects were significant for HH × Familiarity (Wald = 4.054), LS & HH × Familiarity (Wald = 4.224), AY × Familiarity (Wald = 4.831), and LL & AY × Familiarity (Wald = 5.717). The odds of choosing the small-portion dinner item (DS) were increased by 3.79 to 4.78 times more in the low-familiarity condition than in the high-familiarity condition when happy-hour menu item (HH), all-you-can-eat menu item (AY), both small-lunch and happy-hour items together (LS, HH), or both large-lunch and all-you-can-eat items together (LL, AY) were presented on the menu. Since the moderating role of familiarity levels was confirmed by the significant interactions between the phantom decoy conditions and familiarity, H_{4a} suggested the moderating role of familiarity is thus supported. Additionally, this result also supported H_{4c} that people with low-familiarity are more likely to be influenced by the phantom decoy items as long as a distant phantom decoy item is included in the menu.

For the main effects of the phantom decoy conditions, where both small-lunch and happy-hour together (LS, HH) (Wald = 6.509), all-you-can-eat (AY) (Wald = 4.804), and large-lunch and all-you-can-eat together (LL, AY) (Wald = 7.612) were presented on the dinner menu, customers were less likely to choose the small-portion dinner item (DS). The exponent beta

of .315 for the all-you-can-eat lunch item (AY) represented that the odds of choosing the small-portion dinner (DS) decreased by 68.5% (1 - 0.315 = 0.685) when the familiarity was at the high level (reference group). The same rule of interpretation can be applied to both [LS, HH] and [LL, AY] conditions, in which the odds of choosing the small-portion dinner (DS) decreased by 73.3% in [LS, HH] condition and by 75.8% in [LL, AY] condition.

For the main effect of familiarity levels, the low-familiarity produced a significant negative beta coefficient (Wald = 7.397) with an exponent beta of .270. This indicated that the predicted odds of choosing the small-portion dinner item (DS) decreased by 73% (1 – 0.270 = 0.730) when the familiarity is at the low level compared to the high level.

The binary logistic regression model also included two continuous variables, health consciousness and perceived price fairness. However, the results in Study 2 revealed both perceived price fairness and health consciousness were not significant factors in the current model, so these main effects are not discussed further.

The findings from the current binary logistic regression showed that customers were more likely to choose the small-portion dinner item (DS) in the low-familiarity level when happy-hour menu item (HH), all-you-can-eat menu item (AY), both small-lunch and happy-hour items together (LS, HH), or both large-lunch and all-you-can-eat items together (LL, AY) were presented on the menu. This result supports both H_{4c} and H_{4b} that people with less familiarity toward the food item are more likely to be influenced by the phantom decoy effects whenever there is a distant phantom decoy item included in the menu. Additionally, similar to the finding in Study 1, the significant main effect of familiarity indicated that people with low familiarity toward a certain food item were less likely to order the small-portion dinner item (DS) than those with higher familiarity. Finally, for the main effects of the phantom decoy conditions, people

were more likely to be influenced by certain phantom decoy conditions (LS & HH, AY, LL & AY), in which they were more opposed to choose the small-portion (DS) item, namely, more subject to the negative forces created by phantom decoy effects. Thus, H_{3c}, H_{3e}, and H_{3f} are confirmed to be supported according to the results.

Post-Choice Attitudes, Satisfaction, and Behavioral Intentions

Similar to Study 1, post-choice satisfaction, attitudes, and behavioral intentions were analyzed based on the mean scores of these items stated in the section of Instruments in Chapter 3. Separate ANCOVAs (analysis of covariance) were used to analyze the ratings of customers' satisfaction, attitudes, and behavioral intentions.

To test H_{5a}, H_{6a}, and H_{7a}, a 7 x 2 factorial between-subject design was implemented, with the phantom decoy conditions and familiarity levels as independent measures, and customers' post-choice satisfaction, attitudes, and behavioral intentions as dependent measures. Again, to test the appropriateness of including health consciousness and perceived price fairness as covariates, the correlation tests were conducted to test the correlation between these variables with dependent and independent variables chosen. The results revealed that no significant correlations were found between perceived price fairness and phantom decoy conditions and familiarity levels, nor were found between health consciousness and phantom decoy conditions and familiarity levels. However, significant correlations were found between perceived price fairness and post-choice satisfaction (Pearson's r = .653, $p < .001$), attitudes (Pearson's r = .611, $p < .001$) and behavioral intentions (Pearson's r = .624, $p < .001$). Similarly, significant correlations were found between health consciousness and post-choice satisfaction (Pearson's r = .315, $p < .001$), attitudes (Pearson's r = .296, $p < .001$) and behavioral intentions (Pearson's r

= .343, $p < .001$). Once again, both perceived price fairness and health consciousness were considered appropriate covariates to be included in the following ANCOVA tests.

Post-Choice Attitudes

To test customers' post-choice attitudes in H_{5a}, ANCOVA results indicated that familiarity levels (F = 45.612, *df* = 1, $p < .001$, $\eta^2 = .073$) significantly differed among customers' post-choice attitudes, whereas the phantom decoy conditions did not (F = 1.961, *df* = 6, $p = .069$, $\eta^2 = .020$). For the main effect of familiarity toward food items, customers with high familiarity had significantly higher post-choice attitude mean scores than customers with low familiarity toward such food items (Table 18). This significant main effect of familiarity is presented in Figure 9. Additionally, the result of perceived price fairness (F = 259.750, *df* = 1, $p < .001$, $\eta^2 = .309$) was significant but not for health consciousness (F = 2.024, *df* = 1, $p = .155$, $\eta^2 = .003$). Additionally, there was no significant interaction between phantom decoy conditions and familiarity levels (F = .725, *df* = 6, $p = .630$, $\eta^2 = .007$). Hence, H_{5a} is rejected since customers' post-choice attitudes were only significantly more positive when customers are more familiar with the food item, whereas their post-choice attitudes were not significantly different whether phantom decoy items were presented or absent on the menu.

Table 18

Results of ANCOVA for Post-Choice Attitude (Phantom Decoy Conditions)

	Attitude		
	M	F	η^2
Familiarity		45.612**	.073
Low	5.002 [a]		
High	5.660 [b]		

Note. Means were calculated from a 7-point Likert scale. Mean scores with same superscripts are not significantly different. Different superscripts indicate means are statistically different according to Scheffe post hoc tests.
**$p < .01$.

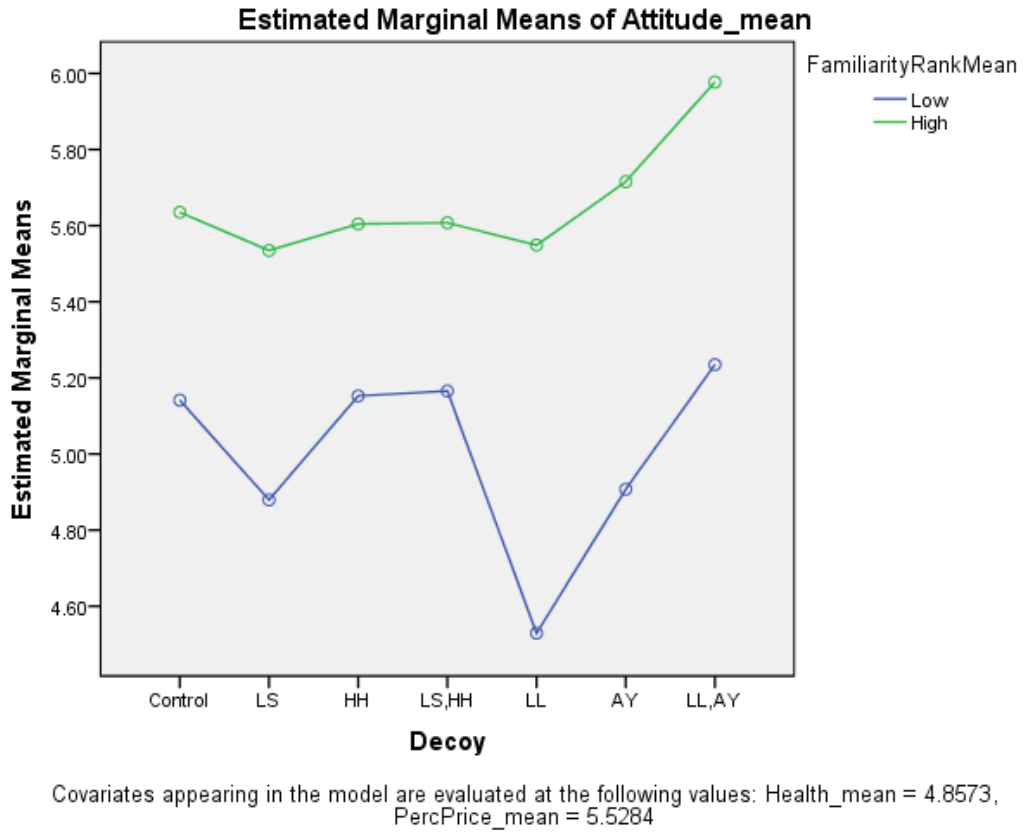


Figure 10. Estimated marginal means of post-choice attitudes based on different levels of familiarity (phantom decoy conditions).

Post-Choice Satisfaction

Subsequently, to test customers' post-choice satisfaction in H_{6a}, ANCOVA results indicated again that only familiarity levels (F = 22.782, *df* = 1, *p* < .001, η^2 = .038) significantly differed among customers' post-choice satisfaction. The phantom decoy conditions, surprisingly, did not show significant results (F = 1.007, *df* = 6, *p* = .420, η^2 = .010) as anticipated.

As for familiarity of food items, customers with high familiarity had significantly higher post-choice satisfaction than customers with low familiarity of such food items (Table 19). These patterns of significant relationships were also depicted in Figure 10. In addition, perceived price fairness (F = 328.401, *df* = 1, *p* < .001, η^2 = .361) was significant in the output, but not health

consciousness (F = 3.007, *df* = 1, *p* = .083, η^2 = .005) according to the ANCOVA results. Similar to the results of post-choice attitudes, no significant interaction between phantom decoy conditions and familiarity levels was found (F = .524, *df* = 6, *p* = .790, η^2 = .005). Therefore, H_{6a} is also rejected since customers' post-choice satisfaction did not vary significantly between the phantom decoy condition groups and the control group.

Table 19

Results of ANCOVA for Post-Choice Satisfaction (Phantom Decoy Conditions)

	Satisfaction		
	M	F	η^2
Familiarity		22.782**	.038
Low	4.936 [a]		
High	5.430 [b]		

Note. Means were calculated from a 7-point Likert scale. Mean scores with same superscripts are not significantly different. Different superscripts indicate means are statistically different according to Scheffe post hoc tests.
**$p < .01$.

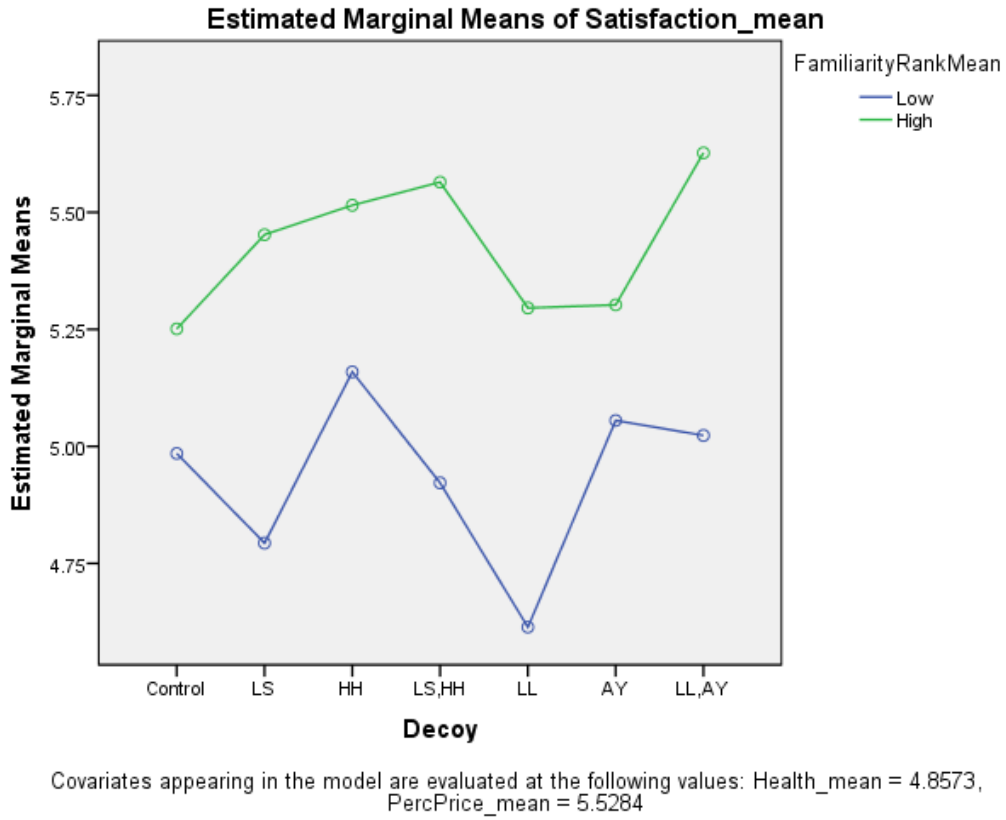


Figure 11. Estimated marginal means of post-choice satisfaction based on different levels of familiarity (phantom decoy conditions).

Post-Choice Behavioral Intentions

To test customers' post-choice behavioral intentions in H_{7a}, ANCOVA results revealed that familiarity levels ($F = 33.540$, $df = 1$, $p < .001$, $\eta^2 = .054$) significantly differed among customers' post-choice behavioral intentions, whereas the phantom decoy conditions did not ($F = 1.172$, $df = 6$, $p = .320$, $\eta^2 = .012$). For the main effect of familiarity of food items, customers with high familiarity had significantly higher post-choice behavioral intention mean scores than customers with low familiarity of such food items (Table 20). This significant main effect of familiarity is presented in Figure 11. Additionally, the outputs of both perceived price fairness ($F = 268.189$, $df = 1$, $p < .001$, $\eta^2 = .315$) and health consciousness ($F = 8.785$, $df = 1$, $p = .003$, η^2

= .015) were also significant according to the ANCOVA results. Nevertheless, no significant interaction between the phantom decoy conditions and familiarity levels (F = .451, *df* = 6, *p* = .844, η^2 = .005) was found. Hence, H_{7a} is also rejected since customers' post-choice behavioral intention was only significantly more positive when they were more familiar with the food item. Respondents' post-choice behavioral intentions were not significantly different whether the phantom decoy items were present or absent on the menu.

Table 20

Results of ANCOVA for Post-Choice Behavioral Intentions (Phantom Decoy Conditions)

	Behavioral Intention		
	M	F	η^2
Familiarity		33.540**	.054
Low	4.767 [a]		
High	5.366 [b]		

Note. Means were calculated from a 7-point Likert scale. Mean scores with same superscripts are not significantly different. Different superscripts indicate means are statistically different according to Scheffe post hoc tests.
**$p < .01$.

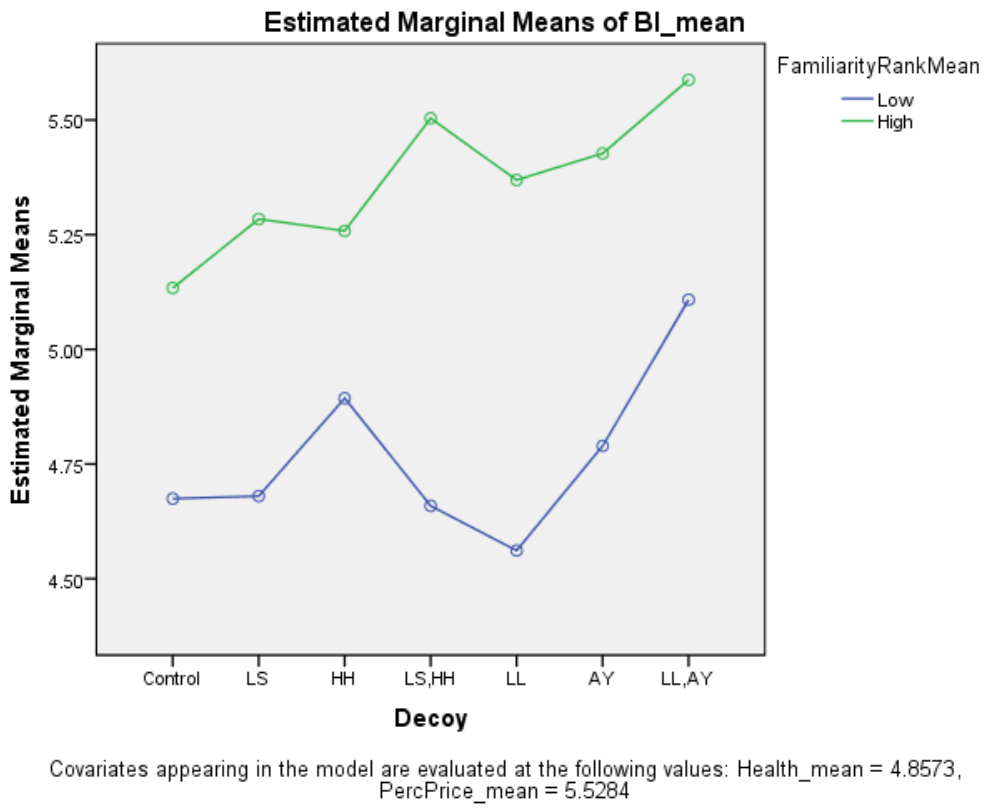


Figure 12. Estimated marginal means of post-choice behavioral intention based on different levels of familiarity (phantom decoy conditions).

Realism Check

Similar to Study 1, the realism of the restaurant scenario stated in the online survey was examined by asking respondents "How realistic was the scenario depicting the menu choice condition in the restaurant?" on a 7-point Likert scale from 1 (very unrealistic) to 7 (very realistic). The mean score for realism of the total 598 samples was 5.41, with a standard deviation of 1.449, indicating that respondents perceived the scenarios realistic.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

This chapter addresses the major findings and implications of this dissertation. The theoretical and practical implications with regards to the findings are discussed further at the end of this chapter. Study 1 and Study 2 combined examined the decoy and phantom decoy effects of different presentations of decoy and phantom decoy menu items and their influence on customers' food choice. The results of this dissertation provide significant insight into the way in which restaurants should focus on the presentation of menu items and each item's interplay of price and portion size. Chapter 5 concludes by discussing the current studies' limitations and suggestions for future research.

Discussion of Findings

Based on the irrational choice behavior of consumers, this dissertation investigates the effectiveness of incorporating decoy and phantom decoy items into the menu and examines the post-choice attitudes, satisfaction, and behavioral intentions of restaurant customers. Two separate between-subject experiments were conducted to test the variables of interest. The research findings of both studies revealed novel insight into the crucial influence of decoy and phantom decoy menu items in the context of restaurant customers' consumption behavior. The results of the testing of each hypothesis proposed in Chapter 2 is summarized in Appendix D.

Decoy Effects

Decoy effects are omnipresent in our daily lives, ranging from macro-scope choice tasks such as political elections and domicile purchases, to micro-scope simple choice tasks such as dining at a restaurant or choosing a menu item from different alternatives on the menu. The findings of Study 1 support the notion that customers' menu item choices are influenced by the

decoy effect to a certain degree – only the addition of a small-portion decoy item lured customers to choose the small-portion menu item – and only when the food items were familiar to customers. The large-portion decoy items did not generate the expected decoy effects to influence customers to choose the large-portion menu item. Additionally, when both large-portion decoy and small-portion decoy items were included in the menu together, the decoy effect, as expected, was not obvious –no significant difference of choice proportions existed between small-portion and large-portion menu items, regardless of whether customers were familiar with the food items. The finding of the increased proportion of subjects choosing a small-portion dinner (DS) by adding a small-portion decoy (DSS) to the choice set provided support for the *compromise effect*, which is the tendency for people to avoid extreme choices and to select the intermediate option (Simonson & Tversky, 1992). In addition to this finding, Study 1 highlighted the *attraction effect*, in which people perceive the attractiveness of the target item as enhanced after an inferior item is added to the original choice set (Dhar & Simonson, 2003; Huber et al., 1982). In this study, this inferior item is the small-portion decoy item (DSS).

As expected, when both a large-portion decoy and a small-portion decoy items are included in the menu, the decoy effect subsides. This finding also provides support for the previous study regarding customers' limited ability with respect to information processing. For instance, people tend to seek ways to reduce their efforts associated with cognitive processes while making decisions (Fiske & Tylor, 2013). These "cognitive misers" are more likely to exert heuristics to help them make decisions. Namely, they are more likely to rely on mental shortcuts to handle easier information as opposed to complicated descriptive information. If too much information exists or if contrasting alternatives coexist, people may use solely the simplifying choice strategy to make their final decisions. On this occasion, individuals may attempt to utilize

the “category-based process view” to categorize an item based on the available cues (Fiske & Neuberg, 1990; Rao & Monroe, 1988). As such, some may focus on comparing the prices of different menu items, while others may compare portion sizes among the available counterpart items. Thus, this may explain why the manipulated decoy effects in Study 1 were attenuated.

However, other findings of Study 1 did not create sufficient evidence to support the conventional doctrines of decoy effects. Previous studies suggested that if the attributes of the choices were presented as perceptual or qualitative stimuli, decoy effects may be attenuated or reversed (e.g., repulsion effect); however, if these attributes were presented as numerical contextual cues, decoy effects should emerge (Frederick, Lee, & Baskin, 2014; Yang & Lynn, 2014). Based on the findings of Study 1, although the prices and portion sizes of food items were presented as numerical stimuli, decoy effects appear only when the small-portion decoy menu item (DSS) is on the menu. This finding is partially in line with Carroll and Vallen’s (2014) findings that when numerical stimuli (e.g., calorie information and food prices) were presented, the influence of asymmetric dominant decoys created compromise and attraction effects in the choice set. However, in the current study, the similar effect did not occur to lure customers to choose the large-portion menu item (DL) when the large-portion decoy item (DLL) was present. Again, this finding may be explained by the cognitive miser theory, in which people are inclined to weigh the importance of a dimension more heavily if it carries obvious discriminating differences between items (Ariely & Wallsten, 1995). Menu price, in our experiments, may carry more weight than portion size. Therefore, when respondents were asked to choose with this information from a set of different items on the menu, the final choices were swayed by the cheaper-price small-portion menu item. At the same time, by simply comparing the choice proportions among the small-portion item (DS), large-portion item (DL), small-portion decoy

(DSS), and large-portion decoy (DLL), most respondents made their final choices between DS and DL whenever DS and DL were presented as an intermediate option. This conforms to the compromise effect that people have a strong tendency to avoid extreme choices in a choice set (Simonson & Tversky, 1992).

The other reason why the large-portion decoy item (DLL) did not provide the anticipated decoy effects to entice respondents to choose the large-portion menu item (DL) may be attributed to the oversized large-portion decoy items in the scenarios. In Study 1, the portion sizes of the large-portion decoy items may be considered too large to be consumed by one individual. As such, these decoys may create the *repulsion effect* instead of the expected decoy effect. According to Simonson's (2014) research, the repulsion effect arises when the addition of an asymmetrically inferior option increases the absolute choice proportion of the rival option in the choice set. Normally, the occurrence of the repulsion effect can be attributed to the added inferior option contaminating that area of the attribute space, and further making it repulsive and leading customers to choose the other extreme option. Therefore, in Study 1, customers may further treat the oversized portion size of DLL as a repulsive attribute, instead opting for the price attribute and choosing the small-portion menu item.

Phantom Decoy Effects

In contrast to the decoy effect, the phantom decoy effect possesses a unique trait – unavailable but superior to all the available options. Phantom decoys are attractive, dominating, and superior to other options in the choice set but are also unavailable for people to choose from (Scarpi & Pizzi, 2013). These phantom decoys are commonly seen in our lives in the form of, for example, the sold condominium on which we were planning to bid on, the sold-out flight ticket we were planning to purchase one month ago at a significantly cheaper price, or the lunch special

menu items we were planning to order but which we cannot purchase because we are dining during dinner hours. It is expected that these non-dominated phantom decoys have the potential to increase the likelihood of people choosing the target item since they can increase the perceived importance of the attribute on which the phantom excels (Farquhar & Pratkanis, 1993). In Study 2, the focus shifts from the decoy to the phantom decoy effects. The findings suggested that phantom decoy effects manifest itself when a distant phantom or at least one distant phantom item is accompanied by a close phantom item in the choice set. However, the phantom decoy effects produced contrasting impacts for items with high-familiarity and those with less familiarity. For the high-familiarity food items, customers were drawn to select an opposite item instead of the item targeted by the phantom decoy(s) whereas with the low-familiarity food items, customers were prone to selecting the item targeted by the phantom decoy(s) instead of the rival item. Thus, the traditional theories used to predict the possible outcomes of phantom decoy effects deserve careful reconsideration with the moderating attribute – customers' familiarity with the purchased items. For high-familiarity, the frustration-deprivation effect from the *reactance theory* (Brehm, 1989; Pratkanis & Farquhar, 1992; Scarpi & Pizzi, 2013) and the contrast effect from the *range-frequency theory* (Pratkanis & Farquhar, 1992) predict the same outcome as that found in our current findings. For low-familiarity, the *principle of similarity substitution* can be used to partially explain our findings since it claims that decision makers tend to seek the available option that is similar to the phantom item to replace its unavailability in the choice set (Pettibone & Wedell, 2007). A detailed discussion is provided in the later section of Theoretical Implications.

Familiarity

The results of Study 1 indicated that a customer's familiarity with food items does not moderate the decoy effect of choosing a specific menu item. No significant interaction effects were found between decoy conditions and familiarity levels in multinomial logistic regression. The lack of interaction effects between these variables represents the notion that the moderating role of familiarity does not exist. However, the main effect of familiarity is significant when comparing the small-portion decoy-present (DSS) condition with the control group. The negative but significant beta coefficient of familiarity in the logistic model indicates that the likelihood of choosing the small-portion dinner (DS) decreases when customers are unfamiliar with the food item. That is, customers who have lower familiarity with the food items are less likely to order the small-portion menu item. In addition, the main effect of familiarity is marginally positively significant when comparing the large-portion decoy-present (DLL) condition with the control group. In line with the findings in the DSS-present condition, customers are more likely to choose the large-portion (DL) menu item when they are unfamiliar with the food being chosen. Combined, these two findings indicate that customers who have lower familiarity with food items are less likely to order the small-portion menu item regardless of whether the small-portion decoy (DSS) or large-portion decoy (DLL) items are present on the menu.

On the other hand, the results of Study 2 lend support to the existence of the moderating role of familiarity between the phantom decoy effects and menu item choices. Significant interactions were found in the binary logistic regression, where both phantom decoy conditions and familiarity levels were set as independent measures, and a respondent's choice of a menu item between small-portion dinner (DS) and large-portion dinner (DL) was set as a dichotomous dependent measure. Significant interactions were found on HH × Familiarity, LS & HH × Familiarity, AY × Familiarity, and LL & AY × Familiarity. Customers are more likely to choose

the small-portion dinner item over the large-portion dinner item in the low-familiarity condition than in the high-familiarity condition when a happy-hour menu item (HH), an all-you-can-eat menu item (AY), both small-lunch and happy-hour items together (LS, HH), or both large-lunch and all-you-can-eat items together (LL, AY) are presented on the menu. Specifically, people who have less familiarity with the food item are more likely to be influenced by the phantom decoy effects whenever a distant phantom decoy item is included on the menu.

For the main effects of phantom decoy conditions, the results revealed significant negative beta coefficients when an all-you-can-eat menu item (AY), both small-lunch and happy-hour items together (LS, HH), or both large-lunch and all-you-can-eat items together (LL, AY) are present on the menu. This means people who have higher familiarity with the food items were less likely to choose the small-portion menu item when any of these phantoms is present on the menu.

Familiarity was defined as the prior knowledge or the product-related experiences a consumer has about or with a product (Park & Lessig, 1981). Researchers also suggested that a consumer with high product familiarity may generate a more comprehensive evaluation of the product with more information involved in the judgment tasks (Sheng, Parker, & Nakamoto, 2005), so they are less likely to be influenced by decoy items. As such, when making choices, experienced customers who have a higher familiarity with the product tend to use stored heuristics to help them make decisions, whereas an unexperienced novice may place more emphasis on environmental information at the point of decision making (Hansen, 1972). Hence, decisions made by consumers with higher familiarity are assumed to be relatively independent from the external information. In contrast, consumers with a lower level of familiarity may rely on available external information at the point of decision making (Hansen, 1972). However, the

findings of both Study 1 and Study 2 revealed that customers who have lower familiarity with food items are more likely to order the large-portion menu item in general. One of the possible reasons for this phenomenon is the positive correlation between expected satiation and familiarity with the food item. Expected satiation is defined as "the extent to which a food is expected to deliver fullness" (Brunstrom, Shakeshaft, & Alexander, 2010, p. 587). These authors (2010) found that expected satiation increased with familiarity with the food item. Specifically, they found that people who had never tried sushi expected it to deliver less satiation than those who had tasted it more than one time. Thus, in the current online experiments, the phenomenon that people tend to order a large-portion item when they are less familiar with the food arises possibly because they underestimated the expected satiation provided by these items with which they are not familiar.

Perceived Price Fairness

Perceived price fairness is an important factor in determining customers' repurchase intentions and future consumption behaviors (Marinkovic et al., 2014). Price fencing has been widely used in the restaurant industry, and it was found that some price discriminating techniques such as coupons, lunch/dinner pricing, and time-of-the-day pricing – are more effective (Kimes & Wirtz, 2003). Other price discriminating practices, such as table location pricing and weekend/weekday pricing, were perceived as unfair and created negative perceived price fairness toward the purchase.

In Study 1, the results of multinomial logistic regression showed that perceived price fairness negatively influenced customers to choose the small-portion menu item (DS). This means that if customers perceive the price of a menu item to be more fair, they are more likely to avoid ordering small-portion menu items. From restaurants' standpoints, it may be more

profitable if customers choose to order more large-portion items in general. Thus, setting a price that customers perceive as fair, especially for large-portion items, is crucial to restaurant operators.

However, in Study 2, the significance of perceived price fairness disappears, proven by an insignificant beta coefficient. As mentioned previously, Kimes and Wirtz (2003) found that customers are more accepting of lunch/dinner pricing or time-of-the-day pricing, which may explain the lack of significance of customers' perceived price fairness because these techniques have already been effectively implemented in the restaurant industry.

Health Consciousness

Health consciousness was defined as an individual's concern for his or her health and an individual's readiness to exhibit healthy behavior (Lee & McCleary, 2013; Shin et al., 2017). Previous studies suggested that health conscious customers should be actively engaged in health-oriented behaviors and are less price sensitive when choosing restaurants (Yüksel & Yüksel, 2002). These health-oriented behaviors include exercising frequently, maintaining a moderate weight by consuming appropriate portion sizes, and practicing healthy eating styles (Grembowski et al., 1993; Lee & McCleary, 2013). For instance, the expected healthfulness of a menu item was found to be positively associated with meal portion size, especially for items with healthier images (Spence et al., 2016). However, the current findings in both studies revealed that health consciousness is not a crucial attribute in determining customers' decisions with respect to ordering small-portion or large-portion menu items. This result is unanticipated since health-conscious customers are expected to be more likely to engage in healthy eating, which includes choosing a lighter portion of offerings on the menu (Young & Nestle, 2002; Yüksel &

Yüksel, 2002). In addition, it was found that the majority of restaurants now offer healthy alternatives on their menus (Clay, Emenheiser, & Bruce, 1995; Papies & Veling, 2013).

The absence of significance of health consciousness may be attributed to three factors. First, the impacts from the decoy and phantom decoy effects overpower the role of health consciousness in customers' decision-making processes when choosing certain menu items. After a comparison of the values of the portion sizes of small-portion and large-portion menu items, individual's health consciousness may be considered a primary factor in determining the final choice. Second, although health-related information is crucial in terms of determining consumers' choices in restaurants, a previous study also suggested that familiarity with a food item is considered a more dominant attribute influencing consumers' attitudes and purchase intentions (Hwang & Lin, 2010). Lastly, Carroll and Vallen's (2014) study found that calorie information on the menu had a significant impact on menu item choices. In these two studies, calorie information did not accompany the portion size information in the experiments. Health-conscious customers may rely heavily on this information to help them make decisions. Future studies may consider adding one more manipulated attribute – calorie information – to monitor the inter-relationships between health consciousness and decoy effects.

Post-Choice Attitudes, Satisfaction, and Behavioral Intentions

Understanding customers' post-choice attitudes, satisfaction, and behavioral intentions is crucial and pivotal for restaurant owners. The positive correlations between customers' post-choice satisfaction/behavioral intentions and their future consumption and repurchase behavior have been well-proven (Law, Hui, & Zhao, 2004; Mittal & Kamakura, 2001; Oh, 1999). The findings of Study 1 supported some of the predictions with respect to post-choice attitudes, satisfaction, and behavioral intentions when decoy menu items are present on the menu.

First, familiarity has positive effects on customers' post-choice attitudes, satisfaction, and behavioral intentions, whereas the decoy conditions create a significant differences only with respect to post-choice satisfaction when different decoy items are present on or absent from the menu. Previous studies suggested that when people's freedom of choice is restricted or when fairness was taken away from the choice process, several negative reactions or perceptions ensued, such as anger, discomfort, regret, or dissatisfaction (Fitzsimons, 2000; Goodwin & Ross, 1990; Scarpi & Pizzi, 2013). In Study 1, decoy items are the major manipulators and were available for selection in the experiments. Thus, the freedom to choose target or decoy items on the menu was not restricted, as was the case in Study 2. As such, post-choice attitudes and behavioral intentions should remain constant. Nevertheless, during the choice task, customers could compare different alternatives in the choice set and choose their optimal item from among the decoy or regular items. Hence, their post-choice satisfaction levels should increase.

In Study 1, the findings basically suggested that customers' familiarity with food items generate significant effects on these three dependent measures. However, the decoy conditions alone produce a salient effect only on customers' post-choice satisfaction. Specifically, when a large-portion decoy item (DLL) was included on the menu, customers' post-choice satisfaction level spiked compared to the other decoy conditions or the control group. This phenomenon can be explained by the fact that people set these large-portion decoy items as anchoring points and use their higher prices as a point of comparison with the normal target items that have lower prices. After a comparison with the higher priced decoy, customers experienced more satisfaction by the higher value of their final choice.

In Study 2, according to the current findings, post-choice attitudes, satisfaction, and behavioral intention did not vary significantly among different phantom decoy conditions or the

control group. This finding is at odds with what was proposed by prior research. For instance, the *frustration-deprivation effect* followed by the reactance theory (Brehm, 1989; Pratkanis & Farquhar, 1992; Scarpi & Pizzi, 2013) and the *contrast effect* followed by the range-frequency theory (Pratkanis & Farquhar, 1992) both suggested that negative perceptive evaluations ensue when respondents are exposed to unavailable phantom conditions. However, the only significant determinant of their post-choice evaluation is customers' familiarity levels with the food items. This phenomenon is straightforward, since when an individual is familiar with the food item, he or she has more confidence about making a proper choice to maximize his or her own interests. Therefore, post-choice satisfaction, behavioral intentions, and attitudes should be more positive for high-familiarity customers.

Theoretical Implications

This dissertation provides meaningful and significant insights into the application of decoy and phantom decoy effects in the hospitality industry, focusing on food choice contexts in the restaurant settings. Previous research proposed that the decoy effect manifests itself when the stimuli are numerical in nature (e.g., price, ratings) but not in inherently qualitative nature (e.g. picture, verbal description) (Frederick, Lee, & Baskin, 2014; Yang & Lynn, 2014). As such, it is anticipated that consumers' choice should be influenced by the decoy effects when the stimuli provided on the menu are numerical in essence. However, this information may be too general to apply to two of the most important attributes on a menu – price and portion size. According to the current findings, decoy effects appear only when the small-portion decoy menu item is present on the menu. This finding partially supports Carroll and Vallen's (2014) findings that when numerical stimuli (e.g., calorie information and food prices) were presented, the influence of asymmetric dominant decoys created compromise and attraction effects in the choice set.

On the other hand, the anticipated similar effect did not replicate itself in the large-portion decoy-present condition. This finding reflects the cognitive miser theory, in which people tend to weigh a dimension more heavily if it carries salient discriminating differences between items (Ariely & Wallsten, 1995). Menu price, in the current experiments, may carry more weight than portion size. Hence, when respondents were asked with only this available information – to choose from a set of different items on the menu, the final choices were swayed by the cheaper-price small-portion menu item. Additionally, the oversized large-portion decoy items in the current scenarios may be considered too large to be consumed and cause the *repulsion effect* (Simonson, 2014) instead of the expected decoy effect.

In terms of customers' familiarity with the food, previous research suggested that experienced customers with high product familiarity utilize a more comprehensive assessment of the product in the decision-making process (Sheng et al, 2005) and tend to use stored heuristics to help them make decisions (Hansen, 1972). Unexperienced customers, on the other hand, are prone to focusing on environmental and contextual information on the spot (Hansen, 1972). The results of the current studies did not lend support to this conventional rule. Customers who had low-familiarity with the food items were found to prefer the large-portion menu item regardless of whether the small-portion or large-portion decoy item was present. The tendency for these customers to choose a large-portion menu item over a small-portion menu item is also at odds with normal conventions. However, Brunstrom et al. (2010) proposed that expected satiation increased with one's familiarity with a food item. Namely, customers expect more satiety from the items with which they are more familiar, and vice versa. Thus, the underestimated expected satiation provided by these unfamiliar items may be used to explain the current finding th11at customers with low-familiarity opt for the large-portion menu item.

However, a customer's familiarity with the food item was found to moderate the phantom decoy effect with respect to their final choice, but not in the case of the decoy effect. Although early research suspected the practicability of including unavailable phantom decoys in the choice set (Luce, 1959) and others found that phantom decoys possess relatively smaller effects than the conventional available decoys (Highhouse, 1996; Pettibone & Wedell, 2007), the current dissertation's findings provided valid arguments fot the reevaluation of the effectiveness of incorporating phantom decoy items on the menu. The results of the current study suggested that customers are more likely to be influenced by a distant phantom item or at least one distant phantom accompanied by a close phantom item in the choice set when they are familiar with the food item – that is, they were drawn to selecting an opposite item instead of the item targeted by the phantom decoy. This finding is in line with the proposition of the *reactance theory* (Brehm, 1989; Freeman, Pratkanis, & Farquhar, 1990) and the *range frequency theory* (Parducci, 1974, 1995). Reactance theory, accompanied by the frustration-deprivation effect, suggested that a decision maker tends to choose an option quite dissimilar to the unavailable phantom and will allocate less weight to the focal attributes than previously done (Freeman, Pratkanis, & Farquhar, 1990). In addition, if this unavailable phantom item is very dissimilar from the available option (e.g., a distant phantom), it produces an even greater restriction of freedom than does the close phantom (Scarpi & Pizzi, 2013). Similarly, range frequency theory, accompanied by the contrast effect, predicted that greater phantom decoy effects emerged by a greater range extension, leading to a greater weighting of this dimension (Wedell & Pettibone, 1996). This greater weighting produces a stronger contrast effect for the target item leading to a lesser likelihood of choosing such an item (Pratkanis & Farquhar, 1992).

Contrary to the findings for the subjects with high-familiarity to the food items, it was found that customers are also more likely to be influenced by a distant phantom item or at least one distant phantom accompanied by a close phantom item in the choice set than by a close phantom item, but this effect manifests in an opposite direction – they were prone to selecting the item targeted by the phantom decoy(s) instead of the rival item. This finding is specifically at odds with previous theories used to predict the phantom decoy effect. Although the *principle of similarity substitution* also claimed that decision makers tend to seek the available option that is similar to the phantom item in response to its unavailability, it also suggested that the phantom decoy effects should decrease as similarity to the target item decreases (Pettibone & Wedell, 2007). Thus, combined with these findings, the current results produce meaningful theoretical insights indicating that the prior theories used to explain the phantom decoy effects should be revisited with careful consideration of the pivotal factor – customers' familiarity levels.

For post-choice attitudes, satisfaction, and behavioral intention, the current findings revealed that customers who have high-familiarity with the purchased item tend to have more positive attitudes, satisfaction levels, and behavioral intentions in both decoy and phantom decoy conditions. Specifically, increasing familiarity typically leads to a more elaborated cognition-related change (Alba & Hutchinson, 1987; Söderlund, 2002). Prior studies suggested that a high level of familiarity with the purchased item is associated with more polarized post-purchase responses in customer satisfaction and behavioral intention (Söderlund, 2002; Söderlund & Gunnarsson, 2000). Namely, when the quality of the product or the service performance is high, customers with high-familiarity should have a higher level of satisfaction and behavioral intention than those with less familiarity, and vice versa.

In the decoy conditions, as anticipated, customers' freedom to choose was not restricted or limited, so the negative emotional reactions or perceptions should not ensue (Fitzsimons, 2000; Goodwin & Ross, 1990; Scarpi & Pizzi, 2013). Nevertheless, in the phantom decoy conditions, the *frustration-deprivation effect* followed by the reactance theory proposed that an individual might feel negative due to the frustration of not obtaining the unavailable phantoms (Brehm, 1989; Pratkanis & Farquhar, 1992; Scarpi & Pizzi, 2013). Likewise, the *contrast effect* followed by the range-frequency theory, suggested that discomforts ensue when the contrasts widen between the available option and the unavailable phantoms (Pratkanis & Farquhar, 1992). Nevertheless, according to the current findings, post-choice attitudes, satisfaction, and behavioral intention did not vary significantly among different phantom decoy conditions and the control group. The only significant determinant of post-choice evaluation is customers' familiarity levels with the food items. When they are familiar with the purchased item, their post-choice attitudes, satisfaction, and behavioral intentions increase regardless of whether the phantom decoy is present or absent.

The findings of this dissertation enable comprehension of the decoy and phantom decoy effects in different degrees in restaurant settings, substantiating the classical irrational choice principles in consumer behavior.

Practical Implications

Including Decoy Items on the Menu?

In pursuit of practical implications, it is not unusual for restauranteurs to incorporate additional items in the same menu due to the costs of reprinting different menus and the opportunity to market price discrimination alternatives to entice customers to visit the restaurants during off-peak dining hours in search of discount-priced items. Several practical implications

emerged from this current study. For instance, according to the findings, customers who are not very familiar with certain food items are more likely to order a large-portion menu item, but their post-choice attitudes, satisfaction levels, and behavioral intentions are generally lower than those with high-familiarity of food items. Therefore, managers should note that customers with low-familiarity with food items are more likely to choose the large-portion menu item when they first visit a new place. Managers can capitalize on this phenomenon when they are planning to introduce new items. On the other hand, managers also need to realize that customers who are willing to try new items may not be necessarily satisfied with their purchase decisions, and it is not guaranteed that they will have positive attitudes and behavioral intentions in their post-choice assessments, which may be lower than customers with high-familiarity. In this regard, restauranteurs are encouraged to carefully evaluate the possible outcomes of incorporating different decoy items on the menu. Specifically, the effect of the decoy conditions showed that people's post-choice satisfaction is much higher when the large-portion decoy item is incorporated on the menu. When designing a menu, restaurant owners may consider including large-portion decoy items to increase customers' post-choice satisfaction level.

In addition, people unfamiliar with the food items are more likely to order the large-portion menu item regardless of whether the small-portion or large-portion decoy items are on the menu. Adding a large-portion decoy to a large-portion item can also create post-choice satisfaction after customers making their choices. For those items that have high familiarity (e.g., chicken wings, pizza), customers are more inclined to be affected by and choose the small-portion decoy items. This is not the case when the large-portion decoy item is displayed on the menu. Therefore, restaurant management should consider avoiding the addition of a small-

portion decoy item to a highly-familiar food item on the menu unless management expects to sell more small-portion menu items.

Management can also use this knowledge to encourage customers to choose healthy menu items. For example, to promote healthy menu items, restaurants should engage in frequently introducing innovative health-oriented options on the menu. According to the results, customers tend to order the larger-portion option when they are unfamiliar with the menu items.

Lastly, perceived price fairness was found to significantly influence customers' decisions with respect to portion size. Therefore, restaurant owners and managers must be aware of the pricing of each menu item and fully utilize the manipulation of the prices of decoy and targeting items. For example, managers should investigate a price range for menu items that customers perceive to be fair. This procedure can create a sense of fairness with respect to customers' perceptions of their choices and therefore increase restaurants' profits.

Including Phantom Decoy Items on the Menu?

The idea of using unavailable items on a menu is not new, but studies focusing on them were primarily in the domain of restaurant revenue management. The current study examined these unavailable phantom items from a different angle to predict customers' choices of menu items.

Based on the findings in this dissertation, customers are more likely to be influenced by at least a distant phantom item included in the choice set. However, the phantom decoy effects produced contrasting impacts for food items with high-familiarity and those with less familiarity. For the high-familiarity food items, customers were drawn to select an opposite item instead of the item targeted by the phantom decoy(s), whereas for the low-familiarity food items, customers were disposed to selecting the item targeted by the phantom decoy(s) instead of the rival item.

According to this study, it can be suggested that restaurants providing common (high-familiarity) food items should include the following phantom decoy items on the menu to reduce customers' likelihood of choosing the small-portion item: all-you-can-eat lunch special (the item emphasizing the unavailable larger portion), both small-portion lunch and happy-hour items together (the items showcasing the unavailable cheaper prices), or both large-portion lunch and all-you-can-eat items together (the items showcasing the unavailable larger portions). Restaurants may also want to consider other phantom decoy items according to their target customers.

In restaurants serving novel items or low-familiarity ethnic foods, management should be cautious when including distant phantom decoy items on the menu since those items may lure customers with low-familiarity to choose the available small-portion item instead of the available larger-portion counterpart. Specifically, restaurants planning to sell low-familiarity menu items should avoid serving happy-hour specials (the item promoting a much cheaper unavailable price), all-you-can-eat lunch specials (the item promoting a much larger unavailable portion size), both small-lunch and happy-hour specials together (the items showcasing the unavailable cheaper prices), and both large-portion lunch and all-you-can-eat items together (the items showcasing the unavailable larger portions).

Lastly, study 2 showed that perceived price fairness is not a significant factor influencing peoples' choices when the phantom decoy(s) are present. This might be the case because price fencing techniques, such as lunch/dinner prices and weekday/weekend prices, have been adopted in the restaurant industry for decades. However, even so perceived price fairness is not a significant factor per se, management should always consider applying appropriate pricing techniques to their menu items to optimize restaurants' profits.

Limitations and Recommendations for Future Research

This dissertation included two scenario-based experiments conducted online, in which respondents made their choices and rated other dependent variables hypothetically. Although experimental methodology has been widely adopted in psychology, marketing, and hospitality literature, the major issue being criticized is the use of online experiments to measure consumers' consumption behavior. The sacrifice of external validity due to the low level of contextual realism in a laboratory experiment has been addressed in marketing research (Dahlstrom, Nygaard, & Crosno, 2008). Although the stimuli and scenarios used for this research were checked for realism, the findings and conclusions for both studies may not be generalized beyond the dissertation's context. Nevertheless, the research objective for this dissertation is to examine both decoy and phantom decoy effects and the relationships among all the variables addressed. Hence, internal validity was confirmed and prioritized over external or ecological validity (Campbell & Stanley, 1973; Fong et al., 2016). In addition, Lynn and Lynn (2003) addressed the importance of controlling the majority of extraneous variables in a laboratory experiment. This characteristic can ensure internal validity and the true effects of causal relationships among variables.

The other limitation is associated with the samples collected in the current research. Respondents in the current studies were recruited from online panels. In the virtual hypothetical experimental scenarios, no monetary tradeoffs were considered when respondents made purchase decisions. This may cause hypothetical bias, which may lead to an overstating of purchase intention compared to respondents' actual behavior in a real restaurant setting (Campbell & Stanley, 1966). Future research may involve field experiments, which are less vulnerable to

external validity problems because the research is conducted in natural settings (Myers & Hansen, 2011).

Aside from health consciousness, "tastiness" is correlated with health concerns and both were found to influence enjoyment and choice of food products (Raghunathan, Naylor, & Hoyer, 2006). In their experiments, the researchers found that when information regarding the healthiness of food items was provided, the less healthy food items were considered better in inferred taste and enjoyment, thus influencing people's choice of such food items. In the current studies, health consciousness was addressed by asking respondents two questions related to their dieting behaviors, but the potential impacts of the taste of foods were ignored. The findings suggested that the decoy effect overpowered health consciousness, but it may be interesting to also examine the impacts of tastiness on the decoy effect. Hence, the tastiness of food should be considered in future research in the context of food choice. Additionally, as mentioned in the previous discussion, calorie information was not provided in these two studies; however, this information may reverse people's decisions in terms of choosing a larger portion or a smaller portion menu item (Carroll & Vallen, 2014). Future studies attempting to investigate food choice in consumer behavior should consider including calorie information in their designs.

Additionally, except for perceived price fairness and health consciousness, food neophobia is an interesting consideration as an effective covariate in the future context. Previous research characterized the differences between neophobics' (people who generally do not prefer to try new foods) and neophilics' (people who are generally willing to try new foods) responses to food and found different results in terms of their willingness to try new foods, expected and actual liking, and behavioral intention (Raudenbush & Frank, 1999). By including the Food

Neophobia Scale (Pliner & Hobden, 1992), future studies can explore its possible relationship to decoy effects.

Finally, in Study 2, different treatments were designed based on two price levels and two portion sizes as LS, HH, LL, and AY. In this dissertation, LS and HH were paired in Treatment 3, LL and AY were paired in Treatment 6 to be considered by respondents. However, the combinations of LS and LL or HH and AY were not included in the current study. Future researchers can consider incorporating these combinations and creating extended treatments to test the influence of the magnitudes between dimensions of price and portion size.

Summary

The final chapter of this dissertation discussed the major findings and both the theoretical and practical implications of decoy and phantom decoy effects. As one of the biggest industries in the world, the foodservice industry should place more emphasis on the pivotal factor of menu item presentations. The findings of this dissertation provide important information to marketing researchers and practitioners and serve as nature segues for expanding understanding in the context of foodservice marketing and consumer behavior.

APPENDIX A

UNLV Social/Behavioral IRB - Exempt Review
Exempt Notice

DATE:	January 25, 2017
TO:	Carola Raab, PhD
FROM:	Office of Research Integrity - Human Subjects
PROTOCOL TITLE:	[1017614-1] Examining the Decoy and the Phantom Decoy Effects in Menu Item Choice (Main Studies)
ACTION:	DETERMINATION OF EXEMPT STATUS
EXEMPT DATE:	January 25, 2017
REVIEW CATEGORY:	Exemption category #2

Thank you for your submission of New Project materials for this protocol. This memorandum is notification that the protocol referenced above has been reviewed as indicated in Federal regulatory statutes 45CFR46.101(b) and deemed exempt.
We will retain a copy of this correspondence with our records.

PLEASE NOTE:
Upon final determination of exempt status, the research team is responsible for conducting the research as stated in the exempt application reviewed by the ORI - HS and/or the IRB which shall include using the most recently submitted Informed Consent/Assent Forms (Information Sheet) and recruitment materials. The official versions of these forms are indicated by footer which contains the date exempted. If your project involves paying research participants, it is recommended to contact Carisa Shaffer, ORI Program Coordinator at (702) 895-2794 to ensure compliance with subject payment policy.

Any changes to the application may cause this protocol to require a different level of IRB review. Should any changes need to be made, please submit a **Modification Form**. When the above-referenced protocol has been completed, please submit a **Continuing Review/Progress Completion report** to notify ORI - HS of its closure.

If you have questions, please contact the Office of Research Integrity - Human Subjects at IRB@unlv.edu or call 702-895-2794. Please include your protocol title and IRBNet ID in all correspondence.

Office of Research Integrity - Human Subjects
4505 Maryland Parkway . Box 451047 . Las Vegas, Nevada 89154-1047 (702) 895-2794 . FAX: (702) 895-0805 . IRB@unlv.edu

APPENDIX B
STUDY 1 QUESTIONNAIRE

A. Informed Consent

Consumer Dining Choice

You are invited to participate in a research study. You must be at least 21 years of age to participate. The purpose of this study is to understand how consumers make decisions in the hospitality setting. If you volunteer to participate in this study, you will complete an experiment in which you will be presented with hotels and a restaurant and their related information. There will be no direct benefits to you as a participant in this study. This study includes only minimal risks. You may choose not to answer any question, and may also discontinue participation at any time. There will not be financial cost to you to participate in this study. Your participation in this study is voluntary anonymous. You may refuse to participate in this study or in any part of this study without any consequences. All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a database at UNLV for 3 years after completion of the study. After the storage time, the information gathered will be completely discarded.

If you have any questions or concerns about the study, you may contact Yang-Su Chen at cheny15@unlv.nevada.edu or Dr. Carola Raab at carola.raab@unlv.edu. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, you may contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794 or toll free at 877-895-2794 or via email at IRB@unlv.edu.
Please indicate your agreement below.

- ❍ I Agree
- ❍ I Do Not Agree

B. Screeners/Instructions

1. Have you dined out in a restaurant in the past month?

❍ Yes

❍ No

2. Are you a vegetarian?

❍ No

❍ Yes

3. Instructions

INSTRUCTIONS: PLEASE READ THIS PARAGRAPH CAREFULLY

Consider the following scenario: Imagine that you and your friend are going out to try a new restaurant in town. The restaurant was just opened a month ago, so none of you have visited this restaurant yet. The restaurant is featured by the food displayed below. You are not particularly hungry nor full. Please answer the following questions.

	Highly Disagree						Highly Agree
This food item is what I usually eat.	❍	❍	❍	❍	❍	❍	❍
This food item is familiar to me.	❍	❍	❍	❍	❍	❍	❍
I think this food item is healthy.	❍	❍	❍	❍	❍	❍	❍

C. Stimuli 1

Decoy (Chicken Wings, Control Group)

Randomly displayed

Now, consider either of Option A or Option B from the following options, which one would you prefer to choose? However, if you decide not to purchase either option, please choose "**No Buy**".

Stimuli 2
Decoy (Chicken Wings, DSS)

Option A. $ 9.95

Please choose any **8** pcs from the following selection

CHICKEN WING FLAVORS

BBQ	**Garlic Herb**
Honey Mustard	**Cajun**
Teriyaki	**Salt & Vinegar**
Thai Curry	**Parmesan Garlic**

☐

Option B. $ 7.95

Please choose any 6 pcs from the following selection.

CHICKEN WING FLAVORS

BBQ	**Garlic Herb**
Honey Mustard	**Cajun**
Teriyaki	**Salt & Vinegar**
Thai Curry	**Parmesan Garlic**

☐

Option C. $ 6.45

Please choose any **4** pcs from the following selection.

CHICKEN WING FLAVORS

BBQ	**Garlic Herb**
Honey Mustard	**Cajun**
Teriyaki	**Salt & Vinegar**
Thai Curry	**Parmesan Garlic**

☐

☐ **NO BUY**

Stimuli 3

Decoy (Chicken wings, DDL)

Option A. $ 9.95

Please choose any **8** pcs from the following selection

CHICKEN WING FLAVORS

BBQ	**Garlic Herb**
Honey Mustard	**Cajun**
Teriyaki	**Salt & Vinegar**
Thai Curry	**Parmesan Garlic**

☐

Option B. $ 7.95

Please choose any 6 pcs from the following selection.

CHICKEN WING FLAVORS

BBQ	**Garlic Herb**
Honey Mustard	**Cajun**
Teriyaki	**Salt & Vinegar**
Thai Curry	**Parmesan Garlic**

☐

Option C. $12.45

Please choose any **10** pcs from the following selection.

CHICKEN WING FLAVORS

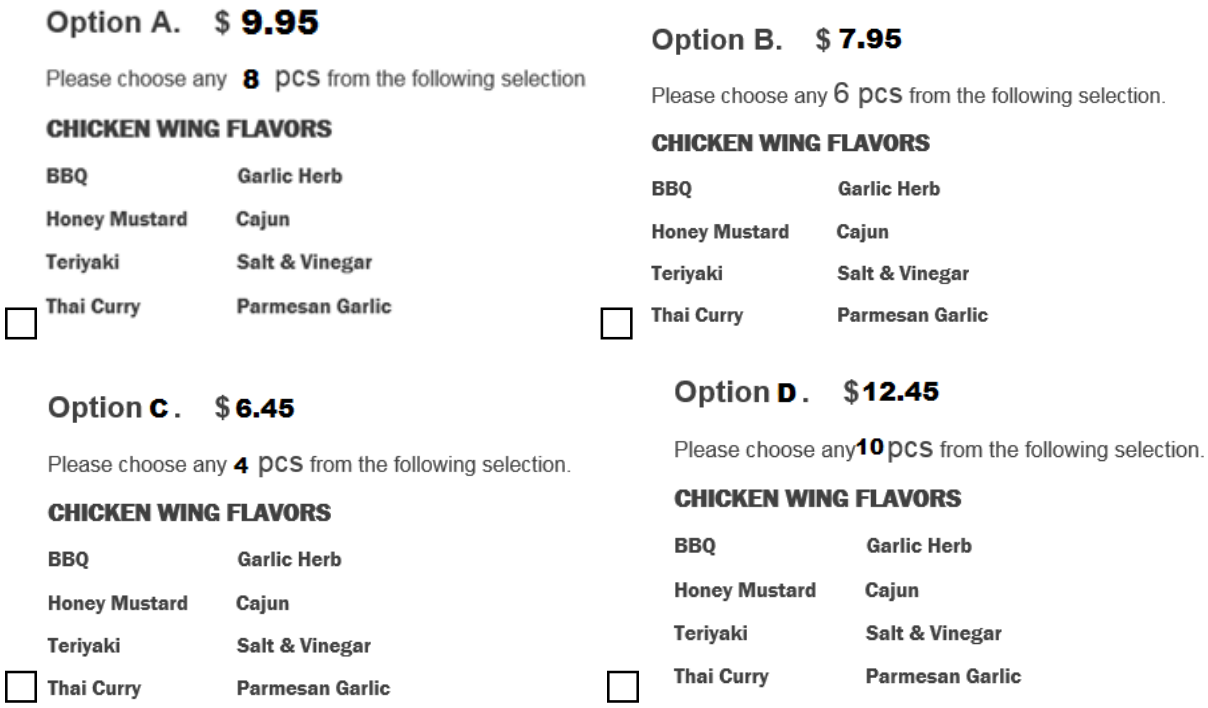
BBQ	**Garlic Herb**
Honey Mustard	**Cajun**
Teriyaki	**Salt & Vinegar**
Thai Curry	**Parmesan Garlic**

☐

☐ **NO BUY**

Stimuli 4

Decoy (Chicken wings, DSS and DLL)



D. Measures

1. Attitude

	Not at all						Very much
I like this choice.							
This choice is satisfactory.							
This choice is desirable.							

2. Satisfaction

	Not at all						Very much
How satisfied are you with your experience of deciding which menu item to choose?							
I thought the choice selection was good.							
I would be happy to choose from the same set of product options on my next purchase occasion.							

3. Behavioral Intention

	Highly Unlikely						Highly Likely
The probability that I will come to this restaurant again is							
The likelihood that I would recommend this restaurant to a friend is							
If I had to come to this restaurant again, I would make the same choice.							

4. Health Consciousness

	Highly Disagree						Highly Agree
I think of myself as a health-conscious consumer.							
I choose restaurant carefully to ensure good health.							
I think often about health issues.							

5. Price Fairness

	Highly Disagree						Highly Agree
The restaurant's prices were fair.							
The restaurant's prices were reasonable.							

6. Realism/Manipulation Check

How realistic were the scenarios depicting the restaurant?

	Very Unrealistic						Very Realistic
The restaurant's prices were fair.							

E. Demographics
Instruction: Please answer the following questions about your demographic information.
1. Gender: What is your gender?
- ❍ Male
- ❍ Female

2. Age: What is your age?
- ❍ 21 - 30
- ❍ 31 - 40
- ❍ 41 - 50
- ❍ 51 - 60
- ❍ 61 - 70
- ❍ 71 and above

3. Ethnicity: What is your race?
- ❍ African American
- ❍ Caucasian
- ❍ Hispanic
- ❍ Asian
- ❍ Other

4. Income: Annual household income
- ❍ Under $39,999
- ❍ $40,000-$49,999
- ❍ $50,000-$74,999
- ❍ $75,000-$99,999
- ❍ $100,000-$125,000
- ❍ Over $125,000

5. Education: Highest completed education level
- ❍ Less than high school
- ❍ High school diploma
- ❍ Associate's degree
- ❍ Bachelor's degree
- ❍ Master's degree or above

6. Which of the following best describes the type of restaurant in which you usually dine out?
- ❍ Fast-food
- ❍ Casual dining
- ❍ Fine dining
- ❍ Family

7. On average, how many times do you dine out in a week?

- ❑ None
- ❑ 1
- ❑ 2
- ❑ 3
- ❑ 4
- ❑ 5
- ❑ 6
- ❑ 7

8. What is your reason for dining-out normally? (Select all that apply)

- ❑ For entertainment
- ❑ To relax
- ❑ As a hobby
- ❑ To get recipe ideas
- ❑ To learn food preparation skills
- ❑ To learn about new ingredients
- ❑ To learn about different cultures
- ❑ To satisfy hunger
- ❑ Others _____

APPENDIX C
STUDY 2 QUESTIONNAIRE

A. Informed Consent

Dinner Choice

You are invited to participate in a research study. You must be at least 21 years of age to participate. The purpose of this study is to understand how consumers make decisions in the hospitality setting. If you volunteer to participate in this study, you will complete an experiment in which you will be presented with hotels and a restaurant and their related information. There will be no direct benefits to you as a participant in this study. This study includes only minimal risks. You may choose not to answer any question, and may also discontinue participation at any time. There will not be financial cost to you to participate in this study. Your participation in this study is voluntary anonymous. You may refuse to participate in this study or in any part of this study without any consequences. All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a database at UNLV for 3 years after completion of the study. After the storage time, the information gathered will be completely discarded. If you have any questions or concerns about the study, you may contact Yang-Su Chen at cheny15@unlv.nevada.edu or Dr. Carola Raab at carola.raab@unlv.edu. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, you may contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794 or toll free at 877-895-2794 or via email at IRB@unlv.edu.
Please indicate your agreement below.

❍ I Agree
❍ I Do Not Agree

B. Screeners/Instructions. Have you dined out in a restaurant in the past month?

❍ Yes
❍ No

2. Are you a vegetarian?

❍ No
❍ Yes

3. Instructions

INSTRUCTIONS: PLEASE READ THIS PARAGRAPH CAREFULLY
Consider the following scenario

Imagine that you and your friend are going out for <u>dinner at 7 PM</u>. You decide to try a new restaurant in town. You are not particularly hungry nor full. The restaurant was just opened a month ago, so none of you have visited this restaurant yet. You will see several options in the following page. In order to be qualified to continue the survey, you will be given the chance to **ONLY choose from either of Option A or Option B** displayed in the next page. However, if

you do not prefer either option, please choose "No Buy". Please indicate which option you would choose.

	Highly Disagree						Highly Agree
This food item is what I usually eat.	❍	❍	❍	❍	❍	❍	❍
This food item is familiar to me.	❍	❍	❍	❍	❍	❍	❍
I think this food item is healthy.	❍	❍	❍	❍	❍	❍	❍

A. Stimuli 1
Decoy (Sushi, Control Group)
Randomly displayed

Option A. $15.00

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option B. $12.50

Please choose any 8 pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

☐ **No Buy**

Stimulus 2
Phantom decoy (Sushi, LS)

Option A. $15.00

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option B. $12.50

Please choose any 8 pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option C is offered during lunch hours between 11 a.m. and 2 p.m.

Option C. $10.50

Please choose any **8** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

☐ **No Buy**

Stimulus 3
Phantom decoy (Sushi, HH)

Option A. $15.00

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option B. $12.50

Please choose any 8 pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option C is offered during Happy Hours between 3 p.m. and 6 p.m.

Option C. $8.50

Please choose any **8** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

☐ **No Buy**

Stimulus 4
Phantom decoy (Sushi, LS and HH)

Option A. $15.00

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option B. $12.50

Please choose any 8 pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option C is offered during lunch hours between 11 a.m. and 2 p.m.

Option D is offered during Happy Hours between 3 p.m. and 6 p.m.

Option C. $10.50

Please choose any **8** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option D. $8.50

Please choose any **8** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

☐ **No Buy**

Stimulus 5
Phantom decoy (Sushi, LL)

Option A. $15.00

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option B. $12.50

Please choose any 8 pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option C is offered during lunch hours between 11 a.m. and 2 p.m.

Option C. $12.50

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

☐ **No Buy**

Stimulus 6
Phantom decoy (Sushi, AY)

Option A. $15.00

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option B. $12.50

Please choose any 8 pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option C is offered during Happy Hours between 3 p.m. and 6 p.m.

Option C. $12.50

All you can eat (Lunch Special)

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

☐ **No Buy**

Stimulus 7
Phantom decoy (Sushi, LL and AY)

Option A. $15.00

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option B. $12.50

Please choose any 8 pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option C is offered during lunch hours between 11 a.m. and 2 p.m.

Option D is offered during Happy Hours between 3 p.m. and 6 p.m.

Option C. $12.50

Please choose any **10** pcs from the following selection.

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

Option D. $12.50

All you can eat (Lunch Special)

SUSHI ROLLS

striped bass	tuna
fluke	medium fatty tuna
yellowtail	fatty tuna
amberjack	fresh water eel
red snapper	sea eel
☐ tilefish	salmon

☐ **No Buy**

D. Measures

1. Attitude

	Not at all						Very much
I like this choice.							
This choice is satisfactory.							
This choice is desirable.							

2. Satisfaction

	Not at all						Very much
How satisfied are you with your experience of deciding which menu item to choose?							
I thought the choice selection was good.							
I would be happy to choose from the same set of product options on my next purchase occasion.							

3. Behavioral Intention

	Highly Unlikely						Highly Likely
The probability that I will come to this restaurant again is							
The likelihood that I would recommend this restaurant to a friend is							
If I had to come to this restaurant again, I would make the same choice.							

4. Health Consciousness

	Highly Disagree						Highly Agree
I think of myself as a health-conscious consumer.							
I choose restaurant carefully to ensure good health.							
I think often about health issues.							

5. Price Fairness

	Highly Disagree						Highly Agree
The restaurant's prices were fair.							
The restaurant's prices were reasonable.							

6. Realism/Manipulation Check

How realistic were the scenarios depicting the restaurant?

	Very Unrealistic						Very Realistic
The restaurant's prices were fair.							

E. Demographics

Instruction: Please answer the following questions about your demographic information.

1. Gender: What is your gender?

- ❍ Male
- ❍ Female

2. Age: What is your age?

- ❍ 21 - 30
- ❍ 31 - 40
- ❍ 41 - 50
- ❍ 51 - 60
- ❍ 61 - 70
- ❍ 71 and above

3. Ethnicity: What is your race?

- ❍ African American
- ❍ Caucasian
- ❍ Hispanic
- ❍ Asian
- ❍ Other

4. Income: Annual household income

- ❍ Under $39,999
- ❍ $40,000-$49,999
- ❍ $50,000-$74,999
- ❍ $75,000-$99,999
- ❍ $100,000-$125,000
- ❍ Over $125,000

5. Education: Highest completed education level

- ❍ Less than high school
- ❍ High school diploma
- ❍ Associate's degree
- ❍ Bachelor's degree
- ❍ Master's degree or above

6. Which of the following best describes the type of restaurant in which you usually dine out?

- ❍ Fast-food
- ❍ Casual dining
- ❍ Fine dining
- ❍ Family

7. On average, how many times do you dine out in a week?

- ❑ None
- ❑ 1
- ❑ 2
- ❑ 3
- ❑ 4
- ❑ 5
- ❑ 6
- ❑ 7

8. What is your reason for dining-out normally? (Select all that apply)

- ❑ For entertainment
- ❑ To relax
- ❑ As a hobby
- ❑ To get recipe ideas
- ❑ To learn food preparation skills
- ❑ To learn about new ingredients
- ❑ To learn about different cultures
- ❑ To satisfy hunger
- ❑ Others _____

APPENDIX D
SUMMARY OF HYPOTHESES

Hypothesis	Dependent Variable	Contents	Supported
		Study 1	
H1a	Choice Proportion	When a small-portion decoy is added to the menu, customers are more likely to choose the small-portion menu item.	Y
H1b	Choice Proportion	When a large-portion decoy is added to the menu, customers are more likely to choose the large-portion menu item.	N
H1c	Choice Proportion	When both a small-portion and a large-portion decoy are added to the menu, customers are not influenced by the decoy effect.	Y
H2a	Choice Proportion	A customer's familiarity with food items moderates the decoy effect on the customer's choice of menu item.	N
H2b	Choice Proportion	Respondents who are familiar with the menu item are less likely to be influenced by the decoy item(s) on the menu.	Partial
H2c	Choice Proportion	Respondents who are unfamiliar with the menu item are more likely to be influenced by the decoy item(s) on the menu.	N
		Study 2	
H3a	Choice Proportion	The number of people who choose DL differs from the number of people who choose DS when HH is shown but unavailable.	N
H3b	Choice Proportion	The number of people who choose DL differs from the number of people who choose DS when LS is shown but unavailable.	N
H3c	Choice Proportion	The number of people who choose DL differs from the number of people who choose DS when both HH and LS are shown but unavailable.	Y
H3d	Choice Proportion	The number of people who choose DL differs from the number of people who choose DS when LL is shown but unavailable.	N
H3e	Choice Proportion	The number of people who choose DL differs from the number of people who choose DS when AY is shown but unavailable.	Y
H3f	Choice Proportion	The number of people who choose DL differs from the number of people who choose DS when both LL and AY are shown but unavailable.	Y

Hypothesis	Dependent Variable	Contents	Supported
H4a	Choice Proportion	A customer's familiarity with food items moderates the phantom decoy effect on the customer's choice of menu item.	Y
H4b	Choice Proportion	Respondents who are familiar with the menu item are less likely to be influenced by the phantom decoy item(s) on the menu.	Partial
H4c	Choice Proportion	Respondents who are unfamiliar with the menu item are more likely to be influenced by the phantom decoy item(s) on the menu.	Partial
H5a	Attitude	When phantom decoy items are displayed on the menu, customers encounter negative attitudes after making their choices.	N
H5b	Attitude	When decoy items are displayed on the menu, customers' attitudes do not change after making their choices.	Y
H6a	Satisfaction	When phantom decoy items are displayed on the menu, customers are less satisfied about their choices.	N
H6b	Satisfaction	When decoy items are displayed on the menu, customers are more satisfied about their choices.	Partial
H7a	Behavioral Intention	When phantom decoy items are displayed on the menu, customers' behavioral intentions become negative.	N
H7b	Behavioral Intention	When decoy items are displayed on the menu, customers' behavioral intentions do not change.	Y

REFERENCES

Ahn, H., & Novoa, N. V. (2016). The decoy effect in relative performance evaluation and the debiasing role of DEA. *European Journal of Operational Research*, *249*(3), 959-967.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. *Action Control*. 11-39.

Alba, J. W., & Hutchinson, J. W. (1987). Dimensions of consumer expertise. *Journal of Consumer Research*, *13*(4), 411-454.

Anderson, N. H. (1981). *Foundations of information integration theory*. New York, NY: Academic Press.

Ariely, D. (2008). *Predictably irrational*. New York, NY: HarperCollins.

Ariely, D., & Wallsten, T. S. (1995). Seeking subjective dominance in multidimensional space: An explanation of the asymmetric dominance effect. *Organizational Behavior and Human Decision Processes*, *63*(3), 223-232.

Arora, R., & Singer, J. (2006). Customer satisfaction and value as drivers of business success for fine dining restaurants. *Services Marketing Quarterly*, *28*(1), 89-102.

Auty, S. (1992). Consumer choice and segmentation in the restaurant industry. *Service Industries Journal*, *12*(3), 324-339.

Babutsidze, Z. (2012). How do consumers make choices? A survey of evidence. *Journal of Economic Surveys*, *26*(4), 752-762.

Back, K. J. (2012). Impact-range performance analysis and asymmetry analysis for improving quality of Korean food attributes. *International Journal of Hospitality Management*, *31*(2), 535-543.

Baker, J. (1986). The role of the environment in marketing services: The consumer perspective. *The Services Challenge: Integrating for Competitive Advantage, 1*(1), 79-84.

Baker, D. A., & Crompton, J. L. (2000). Quality, satisfaction and behavioral intentions. *Annals of Tourism Research, 27*(3), 785-804.

Bauer, R. A. (1960). Consumer behavior as risk taking. *Dynamic Marketing for a Changing World, 398*.

Benartzi, S., & Thaler, R. H. (2001). Naive diversification strategies in defined contribution saving plans. *American Economic Review, 91*(1), 79-98.

Bettman, J. R. (1979). *Information processing theory of consumer choice*. Reading, MA: Addison-Wesley Publishing Company.

Bettman, J. R., Luce, M. F., & Payne, J. W. (1998). Constructive consumer choice processes. *Journal of Consumer Research, 25*(3), 187-217.

Bettman, J. R., & Park, C. W. (1980). Effects of prior knowledge and experience and phase of the choice process on consumer decision processes: A protocol analysis. *Journal of Consumer Research, 7*(3), 234-248.

Bettman, J. R., & Zins, M. A. (1977). Constructive processes in consumer choice. *Journal of Consumer Research, 4*(2), 75-85.

Bown, N. J., Read, D., & Summers, B. (2003). The lure of choice. *Journal of Behavioral Decision Making, 16*(4), 297.

Brehm, J. W. (1989). Psychological reactance: Theory and applications. *Advances in Consumer Research, 16*(1), 72-75.

Brucks, M. (1985). The effects of product class knowledge on information search behavior. *Journal of Consumer Research,* 1-16.

Brunstrom, J. M., Shakeshaft, N. G., & Alexander, E. (2010). Familiarity changes expectations about fullness. *Appetite*, *54*(3), 587-590.

Bujisic, M., Hutchinson, J., & Parsa, H. G. (2014). The effects of restaurant quality attributes on customer behavioral intentions. *International Journal of Contemporary Hospitality Management, 26*(8), 1270-1291.

Campbell, D. T., & Stanley, J. C. (1966). *Experimental and quasi-experimental designs for research.* Chicago, IL: Rand McNally.

Carroll, R., & Vallen, B. (2014). Compromise and attraction effects in food choice. *International Journal of Consumer Studies*, *38*(6), 636-641.

Catania, A. C. (1980). Freedom of choice: A behavioral analysis. *Psychology of Learning and Motivation*, *14*, 97-145.

Chernev, A. (2003). When more is less and less is more: The role of ideal point availability and assortment in consumer choice. *Journal of Consumer Research*, *30*(2), 170-183.

Cho, C. H., Lee, J. G., & Tharp, M. (2001). Different forced-exposure levels to banner advertisements. *Journal of Advertising Research, 41*(4), 45-56.

Choplin, J. M., & Hummel, J. E. (2005). Comparison-induced decoy effects. *Memory & Cognition*, *33*(2), 332-343.

Chung, J. Y., & Petrick, J. F. (2012). Price fairness of airline ancillary fees: An attributional approach. *Journal of Travel Research, 52*(2) 168-181.

Cialdini, R. B., Vincent, J. E., Lewis, S. K., Catalan, J., Wheeler, D., & Darby, B. L. (1975). Reciprocal concessions procedure for inducing compliance: The door-in-the-face technique. *Journal of Personality and Social Psychology, 31*(2), 206-215.

Clay, J., Emenheiser, D. A., & Bruce, A. R. (1995). Healthful menu offerings in restaurants: A survey of major US chains. *Journal of Foodservice, 8*(2), 91-101.

Clemen, R. T., & Reilly, T. (2013). *Making hard decisions with decision tools*. Belmont, MA: Cengage Learning.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155-159.

Cohen, E., Ghiselli, R., & Schwartz, Z. (2007). The effect of loss leader pricing on restaurant menus' product portfolio analysis. *Journal of Foodservice Business Research*, *9*(1), 21-38.

Coleman, J. S., & Fararo, T. J. (1992). *Rational choice theory.* New York, NY: Sage.

Connolly, T., Reb, J., & Kausel, E. E. (2013). Regret salience and accountability in the decoy effect. *Judgment and Decision Making*, *8*(2), 136-149.

Cronin, J. J., Brady, M. K., & Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of retailing*, *76*(2), 193-218.

Dahlstrom, R., Nygaard, A., & Crosno, J. L. (2008). Strategic, metric, and methodological trends in marketing research and their implications for future theory and practice. *Journal of Marketing Theory and Practice*, *16*(2), 139-152.

Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. *Advances in Experimental Social Psychology*, *13*, 39-80.

Dhar, R., & Simonson, I. (2003). The effect of forced choice on choice. *Journal of Marketing Research*, *40*(2), 146-160.

Dolnicar, S., Laesser, C., & Matus, K. (2009). Online versus paper format effects in tourism surveys. *Journal of Travel Research*, *47*(3), 295-316.

Doyle, J. R., O'Connor, D. J., Reynolds, G. M., & Bottomley, P. A. (1999). The robustness of the asymmetrically dominated effect: buying frames, phantom alternatives, and in-store purchases. *Psychology & Marketing*, *16*(3), 225-243.

Engel, J. F., Blackwell, R. D., & Miniard, P. W. (1995). *Consumer behavior* (8th Ed.). New York, NY: Dryder.

Etemad-Sajadi, R., Way, S. A., & Bohrer, L. (2016). Airline passenger loyalty: The distinct effects of airline passenger perceived pre-flight and in-flight service quality. *Cornell Hospitality Quarterly*, *57*(2), 219-225.

Farquhar, P. H., & Pratkanis, A. R. (1993). Decision structuring with phantom alternatives. *Management Science*, *39*(10), 1214-1226.

Fisher, R. J., & Grégoire, Y. (2006). Gender differences in decision satisfaction within established dyads: Effects of competitive and cooperative behaviors. *Psychology and Marketing*, *23*(4), 313-333.

Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. *Advances in Experimental Social Psychology*, *23*, 1-74.

Fiske S. T., & Taylor S. E. (2013). *Social cognition*. Reading, MA: Addison-Wesley.

Fitzsimons, G. J. (2000). Consumer response to stockouts. *Journal of Consumer Research*, *27*(2), 249-266.

Fong, L. H. N., Law, R., Tang, C. M. F., & Yap, M. H. T. (2016). Experimental research in hospitality and tourism: A critical review. *International Journal of Contemporary Hospitality Management*, *28*(2), 246-266.

Frederick, S., Lee, L., & Baskin, E. (2014). The limits of attraction. *Journal of Marketing Research*, *51*(4), 487-507.

Freeman, K. M., Pratkanis, A. R., & Farquhar, P. H. (1990). Phantoms as psychological motivation: Evidence for compliance and reactance processes. *Working paper.* University of California, Santa Cruz, CA.

Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2008). *Health behavior and health education: theory, research, and practice*. John Wiley & Sons.

Gomez, Y., Martínez-Molés, V., Urbano, A., & Vila, J. (2016). The attraction effect in mid-involvement categories: An experimental economics approach. *Journal of Business Research*, *69*(11), 5082-5088.

Goodwin, C., & Ross, I. (1990). Consumer evaluations of responses to complaints: What's fair and why? *Journal of Consumer Marketing*, *7*(2), 39-47.

Gourville, J. T. (1999). The effect of implicit versus explicit comparisons on temporal pricing claims. *Marketing Letters*, *10*(2), 113-124.

Grembowski, D., Patrick, D., Diehr, P., Durham, M., Beresford, S., Kay, E., & Hecht, J. (1993). Self-efficacy and health behavior among older adults. *Journal of Health and Social Behavior*, 89-104.

Ha, J., & Jang, S. S. (2010). Effects of service quality and food quality: The moderating role of atmospherics in an ethnic restaurant segment. *International Journal of Hospitality Management, 29*(3), 520-529.

Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate data analysis: A global perspective* (Vol. 7). Upper Saddle River, NJ: Pearson.

Han, H., & Ryu, K. (2009). The roles of the physical environment, price perception, and customer satisfaction in determining customer loyalty in the restaurant industry. *Journal of Hospitality & Tourism Research, 33*(4), 487-510.

Hansen, F. (1972). *Consumer Choice Behavior: A Cognitive Theory.* New York, NY: The Free Press.

Harrington, R. J., Ottenbacher, M. C., & Kendall, K. W. (2011). Fine-dining restaurant selection: Direct and moderating effects of customer attributes. *Journal of Foodservice Business Research*, *14*(3), 272-289.

Heath, T. B., & Chatterjee, S. (1995). Asymmetric decoy effects on lower-quality versus higher-quality brands: Meta-analytic and experimental evidence. *Journal of Consumer Research*, *22*(3), 268-284.

Hedgcock, W., & Rao, A. R. (2009). Trade-off aversion as an explanation for the attraction effect: A functional magnetic resonance imaging study. *Journal of Marketing Research*, *46*(1), 1-13.

Highhouse, S. (1996). Context-dependent selection: The effects of decoy and phantom job candidates. *Organizational Behavior and Human Decision Processes*, *65*(1), 68-76.

Holbrook, M. B., & Hirschman, E. C. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. *Journal of Consumer Research, 9*(2), 132-140.

Homburg, C., Koschate, N., & Hoyer, W. D. (2005). Do satisfied customers really pay more? A study of the relationship between customer satisfaction and willingness to pay. *Journal of Marketing, 69*(2), 84-96.

Hosmer Jr, D. W., & Lemeshow, S. (2004). *Applied logistic regression*. New York, NY: John Wiley & Sons.

Huber, J., Payne, J. W., & Puto, C. (1982). Adding asymmetrically dominated alternatives: Violations of regularity and the similarity hypothesis. *Journal of Consumer Research,* 90-98.

Huber, J., & Puto, C. (1983). Market boundaries and product choice: Illustrating attraction and substitution effects. *Journal of Consumer Research, 10*(1), 31-44.

Hwang, J., & Lin, T. N. (2010). Effects of food neophobia, familiarity, and nutrition information on consumer acceptance of Asian menu items. *Journal of Hospitality Marketing & Management, 19*(2), 171-187.

Jaccard, J. (2001). *Interaction effects in logistic regression*. Thousand Oaks, CA: SAGE Publications.

Jacoby, J., Speller, D. E., & Berning, C. K. (1974). Brand choice behavior as a function of information load: Replication and extension. *Journal of Consumer Research, 1*(1), 33-42.

Jang, S., Liu, Y., & Namkung, Y. (2011). Effects of authentic atmospherics in ethnic restaurants: Investigating Chinese restaurants. *International Journal of Contemporary Hospitality Management, 23*(5), 662-680.

Jamrisko, M. (2015). Americans' spending on dining out just overtook grocery sales for the first time ever. *Bloomberg Markets.* Retrieved from: https://www.bloomberg.com/news/articles/2015-04-14/americans-spending-on-dining-out-just-overtook-grocery-sales-for-the-first-time-ever

Josiam, B. M., & Hobson, J. P. (1995). Consumer choice in context: The decoy effect in travel and tourism. *Journal of Travel Research, 34*(1), 45-50.

Jang, S., Liu, Y., & Namkung, Y. (2011). Effects of authentic atmospherics in ethnic restaurants: investigating Chinese restaurants. *International Journal of Contemporary Hospitality Management, 23*(5), 662-680.

Johnson, E. J., & Russo, J. E. (1984). Product familiarity and learning new information. *Journal of Consumer Research, 11*(1), 542-550.

Jung, J. M., Sydnor, S., Lee, S. K., & Almanza, B. (2015). A conflict of choice: How consumers choose where to go for dinner. *International Journal of Hospitality Management, 45*, 88-98.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 263-291.

Keeney, R. L. (1982). Decision analysis: An overview. *Operations Research*, *30*(5), 803-838.

Keyt, J. C., Yavas, U., & Riecken, G. (1994). Importance-performance analysis: A case study in restaurant positioning. *International Journal of Retail & Distribution Management, 22*(5), 35-40.

Kim, W. G., Lee, Y. K., & Yoo, Y. J. (2006). Predictors of relationship quality and relationship outcomes in luxury restaurants. *Journal of Hospitality & Tourism Research*, *30*(2), 143-169.

Kim, J., Park, J., & Ryu, G. (2006). Decoy effects and brands. *Advances in Consumer Research 33*, 683-687.

Kimes, S. E., & Wirtz, J. (2003). Has revenue management become acceptable? Findings from an international study on the perceived fairness of rate fences. *Journal of Service Research*, *6*(2), 125-135.

Knutson, B. J., Stevens, P., & Patton, M. (1996). DINESERV: Measuring service quality in quick service, casual/theme, and fine dining restaurants. *Journal of Hospitality & Leisure Marketing*, *3*(2), 35-44.

Lamb, W. C., Hair, J. H., & McDaniel, C. (2004). *Marketing* (7th Ed.). Mason, OH: South-Western.

Lancaster, K. J. (1966). A new approach to consumer theory. *The Journal of Political Economy*, 132-157.

Law, A. K., Hui, Y. V., & Zhao, X. (2004). Modeling repurchase frequency and customer satisfaction for fast food outlets. *International Journal of Quality & Reliability Management*, *21*(5), 545-563.

Lee, S., & McCleary, K. (2013). The relationship between perceived health, health attitude, and healthy offerings for seniors at family restaurants. *Cornell Hospitality Quarterly*, *54*(3), 262-273.

Lewis, R. C. (1981). Restaurant advertising-appeals and consumers intentions. *Journal of advertising research, 21*(5), 69-74.

Lichters, M., Bengart, P., Sarstedt, M., & Vogt, B. (2016). What really matters in attraction effect research: When choices have economic consequences? *Marketing Letters, 28*(1), 127-138.

Liu, Y., & Jang, S. S. (2009). Perceptions of Chinese restaurants in the US: What affects customer satisfaction and behavioral intentions? *International Journal of Hospitality Management, 28*(3), 338-348.

Luce, R. (1959). *Individual choice behavior: A theoretical analysis*. New York, NY: Wiley.

Lussier, D. A., & Olshavsky, R. W. (1979). Task complexity and contingent processing in brand choice. *Journal of Consumer Research, 6*(2), 154-165.

Lynn, A., & Lynn, M. (2003). Experiments and quasi-experiments: Methods for evaluating marketing options. *The Cornell Hotel and Restaurant Administration Quarterly, 44*(2), 75-84.

Marinkovic, V., Senic, V., Ivkov, D., Dimitrovski, D., & Bjelic, M. (2014). The antecedents of satisfaction and revisit intentions for full-service restaurants. *Marketing Intelligence & Planning*, *32*(3), 311-327.

Martín-Consuegra, D., Molina, A., & Esteban, Á. (2007). An integrated model of price, satisfaction and loyalty: An empirical analysis in the service sector. *Journal of Product & Brand Management, 16*(7), 459-468.

Mattila, A. S. (2001). Emotional bonding and restaurant loyalty. *Cornell Hospitality Quarterly, 42*(6), 73-79.

Mishra, S., Umesh, U. N., & Stem Jr, D. E. (1993). Antecedents of the attraction effect: An information-processing approach. *Journal of Marketing Research*, 331-349.

Mittal, V., & Kamakura, W. A. (2001). Satisfaction, repurchase intent, and repurchase behavior: Investigating the moderating effect of customer characteristics. *Journal of Marketing Research*, *38*(1), 131-142.

Mogilner, C., Rudnick, T., & Iyengar, S. S. (2008). The mere categorization effect: How the presence of categories increases choosers' perceptions of assortment variety and outcome satisfaction. *Journal of Consumer Research*, *35*(2), 202-215.

Montgomery, H., & Svenson, O. (1976). On decision rules and information processing strategies for choices among multi-attribute alternatives. *Scandinavian Journal of Psychology*, *17*(1), 283-291.

Monk, R. L., Qureshi, A. W., Leatherbarrow, T., & Hughes, A. (2016). The decoy effect within alcohol purchasing decisions. *Substance Use & Misuse*, *51*(10), 1353-1362.

Monroe, K. B. (1979). *Pricing: Making profitable decisions*. New York, NY: McGraw-Hill.

Moorthy, S., Ratchford, B. T., & Talukdar, D. (1997). Consumer information search revisited: Theory and empirical analysis. *Journal of Consumer Research*, *23*(4), 263-277.

Myers, A., & Hansen, C. H. (2011). *Experimental psychology* (7th Ed.). Belmont, CA Wadsworth.

Myung, E., McCool, A. C., & Feinstein, A. H. (2008). Understanding attributes affecting meal choice decisions in a bundling context. *International Journal of Hospitality Management*, *27*(1), 119-125.

National Restaurant Association (2016). Restaurant industry pocket fact book. Retrieved from: http://www.restaurant.org/News-Research/Research/Forecast-2016

Namkung, Y., & Jang, S. (2007). Does food quality really matter in restaurants? Its impact on customer satisfaction and behavioral intentions. *Journal of Hospitality & Tourism Research*, *31*(3), 387-409.

Namkung, Y., & Jang, S. (2008). Are highly satisfied restaurant customers really different? A quality perception perspective. *International Journal of Contemporary Hospitality Management*, *20*(2), 142-155.

Oh, H. (1999). Service quality, customer satisfaction, and customer value: A holistic perspective. *International Journal of Hospitality Management*, *18*(1), 67-82.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, *17*, 460-469.

Pan, Y., O'Curry, S., & Pitts, R. (1995). The attraction effect and political choice in two elections. *Journal of Consumer Psychology*, *4*(1), 85-101.

Parducci, A. (1974). Contextual effects: A range-frequency analysis. *Handbook of Perception*, *2*, 127-141.

Parducci, A. (1995). *Happiness, pleasure, and judgment: The contextual theory and its applications.* Mahwah, NJ: Erlbaum.

Parducci, A., & Wedell, D. H. (1986). The category effect with rating scales: number of categories, number of stimuli, and method of presentation. *Journal of Experimental Psychology: Human Perception and Performance*, *12*(4), 496.

Park, J. Y., & Jang, S. S. (2013). Confused by too many choices? Choice overload in tourism. *Tourism Management*, *35*, 1-12.

Park, C. W., & Lessig, V. P. (1981). Familiarity and its impact on consumer decision biases and heuristics. *Journal of Consumer Research*, *8*(2), 223-230.

Payne, J. W. (1982). Contingent decision behavior. *Psychological Bulletin*, *92*(2), 382-402.

Payne, J. W., Bettman, J. R., Coupey, E., & Johnson, E. J. (1992). A constructive process view of decision making: Multiple strategies in judgment and choice. *Acta Psychologica*, *80*(1), 107-141.

Payne, J. W., Bettman, J. R., & Johnson, E. J. (1993). *The adaptive decision maker*. New York, NY: Cambridge University Press.

Papies, E. K., & Veling, H. (2013). Healthy dining. Subtle diet reminders at the point of purchase increase low-calorie food choices among both chronic and current dieters. *Appetite, 61*, 1-7.

Pettibone, J. C., & Wedell, D. H. (2000). Examining models of nondominated decoy effects across judgment and choice. *Organizational Behavior and Human Decision Processes, 81*(2), 300-328.

Pettibone, J. C., & Wedell, D. H. (2007). Testing alternative explanations of phantom decoy effects. *Journal of Behavioral Decision Making*, *20*(3), 323-341.

Pliner, P., & Hobden, K. (1992). Development of a scale to measure the trait of food neophobia in humans. *Appetite*, *19*(2), 105-120.

Ponnam, A., & Balaji, M. S. (2014). Matching visitation-motives and restaurant attributes in casual dining restaurants. *International Journal of Hospitality Management, 37*, 47-57.

Pratkanis, A. R., & Farquhar, P. H. (1992). A brief history of research on phantom alternatives: Evidence for seven empirical generalizations about phantoms. *Basic and Applied Social Psychology*, *13*(1), 103-122.

Prescott, J., Young, O., O'neill, L., Yau, N. J. N., & Stevens, R. (2002). Motives for food choice: a comparison of consumers from Japan, Taiwan, Malaysia and New Zealand. *Food Quality and Preference*, *13*(7), 489-495.

Raab, C., Zemke, D. M. V., Hertzman, J. L., & Singh, D. (2013). Restaurant customers' perceptions of noise and their satisfaction and loyalty behaviors. *International Journal of Hospitality & Tourism Administration*, *4*(4), 398-414.

Raghunathan, R., Naylor, R. W., & Hoyer, W. D. (2006). The unhealthy = tasty intuition and its effects on taste inferences, enjoyment, and choice of food products. *Journal of Marketing*, *70*(4), 170-184.

Rao, A. R., & Monroe, K. B. (1988). The moderating effect of prior knowledge on cue utilization in product evaluations. *Journal of Consumer Research*, *15*(2), 253-264.

Ratneshwar, S., Shocker, A. D., & Stewart, D. W. (1987). Toward understanding the attraction effect: The implications of product stimulus meaningfulness and familiarity. *Journal of Consumer Research*, *13*(4), 520-533.

Raudenbush, B., & Frank, R. A. (1999). Assessing food neophobia: The role of stimulus familiarity. *Appetite*, *32*(2), 261-271.

Robertson, T., Zielinski, J., & Ward, S. (1984). *Consumer behavior*. Glenview, IL: Scott, Foresman and Company.

Roe, R. M., Busemeyer, J. R., & Townsend, J. T. (2001). Multialternative decision field theory: A dynamic connectionist model of decision making. *Psychological Review, 108*(2), 370.

Ryu, K., & Han, H. (2010). Influence of the quality of food, service, and physical environment on customer satisfaction and behavioral intention in quick-casual restaurants: Moderating role of perceived price. *Journal of Hospitality & Tourism Research*, *34*(3), 310-329.

Ryu, K., & Jang, S. S. (2007). The effect of environmental perceptions on behavioral intentions through emotions: The case of upscale restaurants. *Journal of Hospitality & Tourism Research*, *31*(1), 56-72.

Ryu, K., Lee, H. R., & Kim, W. G. (2012). The influence of the quality of the physical environment, food, and service on restaurant image, customer perceived value, customer satisfaction, and behavioral intentions. *International Journal of Contemporary Hospitality Management*, *24*(2), 200-223.

Scarpi, D. (2008). The impact of decoys and background information on consumers' preferences and decision making. *The International Review of Retail, Distribution and Consumer Research*, *18*(1), 1-15.

Scarpi, D., & Pizzi, G. (2013). The impact of phantom decoys on choices and perceptions. *Journal of Behavioral Decision Making*, *26*(5), 451-461.

Scheibehenne, B., Greifeneder, R., & Todd, P. M. (2010). Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research*, *37*(3), 409-425.

Schwartz, Z., & Cohen, E. (1999). The perceived value of value meals: An experimental investigation into product bundling and decoy pricing in restaurant menus. *Journal of Restaurant & Foodservice Marketing, 3*(3-4), 19-37.

Sellers-Rubio, R., & Nicolau-Gonzalbez, J. L. (2015). Testing the decoy effect in the presence of store brands. *International Journal of Retail & Distribution Management, 43*(2), 113-125.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin Company.

Sheng, S., Parker, A. M., & Nakamoto, K. (2005). Understanding the mechanism and determinants of compromise effects. *Psychology & Marketing, 22*(7), 591.

Shepard, R. N. (1987). Toward a universal law of generalization for psychological science. *Science, 237*(4820), 1317-1323.

Shin, Y. H., Im, J., Jung, S. E., & Severt, K. (2017). Locally sourced restaurant: Consumers' willingness to pay. *Journal of Foodservice Business Research,* 1-15.

Shoemaker, S. (1994). A proposal to improve the overall price value perception of a product line. *Journal of Restaurant & Foodservice Marketing, 1*(1), 89-101.

Siegel, S. (2001). Pavlovian conditioning and drug overdose: When tolerance fails. *Addiction Research & Theory, 9*(5), 503-513.

Simonson, I. (1989). Choice based on reasons: The case of attraction and compromise effects. *Journal of Consumer Research, 16*(2), 158-174.

Simonson, I. (2014). Vices and virtues of misguided replications: The case of asymmetric dominance. *Journal of Marketing Research, 51*(4), 514-519.

Simonson, I., & Tversky, A. (1992). Choice in context: Tradeoff contrast and extremeness aversion. *Journal of Marketing Research*, *29*(3), 281-295.

Slaughter, J. E., Bagger, J., & Li, A. (2006). Context effects on group-based employee selection decisions. *Organizational Behavior and Human Decision Processes*, *100*(1), 47-59.

Slaughter, J. E., Kausel, E. E., & Quiñones, M. A. (2011). The decoy effect as a covert influence tactic. *Journal of Behavioral Decision Making*, *24*(3), 249-266.

Söderlund, M. (2002). Customer familiarity and its effects on satisfaction and behavioral intentions. *Psychology & Marketing*, *19*(10), 861-879.

Söderlund, M., & Gunnarsson, J. (2000). Customer familiarity and its effects on satisfaction and dissatisfaction. *SSE/EFI Working Paper Series in Business Administration*, (2) 1-7.

Spence, M., Stancu, V., Dean, M., Livingstone, M. B. E., Gibney, E. R., & Lähteenmäki, L. (2016). Are food-related perceptions associated with meal portion size decisions? A cross-sectional study. *Appetite*, *103*, 377-385.

Steptoe, A., Pollard, T. M., & Wardle, J. (1995). Development of a measure of the motives underlying the selection of food: the food choice questionnaire. *Appetite*, *25*(3), 267-284.

Sulek, J. M., & Hensley, R. L. (2004). The relative importance of food, atmosphere, and fairness of wait: The case of a full-service restaurant. *Cornell Hotel and Restaurant Administration Quarterly*, *45*(3), 235-247.

Sullivan, M. (2002). The impact of pitch, volume and tempo on the atmospheric effects of music. *International Journal of Retail & Distribution Management*, *30*(6), 323-330.

Suzuki, S. (2000). Choice between single-response and multichoice tasks in humans. *The Psychological Record*, *50*(1), 105-115.

Swait, J. (2001). A non-compensatory choice model incorporating attribute cutoffs. *Transportation Research Part B: Methodological*, *35*(10), 903-928.

Taylor, C. C. (1989). Bootstrap choice of the smoothing parameter in kernel density estimation. *Biometrika*, *76*(4), 705-712.

Thaler, R. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior & Organization*, *1*(1), 39-60.

Trueblood, J. S., & Pettibone, J. C. (2015). The phantom decoy effect in perceptual decision making. *Journal of Behavioral Decision Making*. Doi: 10.1002/bdm.1930

Tversky, A. (1972). Elimination by aspects: A theory of choice. *Psychological Review*, 79, 281–299.

Tversky, A., & Kahneman, D. (1991). Loss aversion in riskless choice: A reference-dependent model. *The Quarterly Journal of Economics*, 1039-1061.

Tversky, A., & Simonson, I. (1993). Context-dependent preferences. *Management Science*, *39*(10), 1179-1189.

USDA Economic Research Service (2016, December 30). *Food-away-from-home*. Retrieved from:

https://www.ers.usda.gov/topics/food-choices-health/food-consumption-demand/food-away-from-home.aspx

Voss, S. C., & Homzie, M. J. (1970). Choice as a value. *Psychological Reports*, *26*(3), 912-914.

Walster, E., & Festinger, L. (1964). *Decisions among imperfect alternatives*. Stanford, CA: Stanford University Press.

Wedell, D. H. (1991). Distinguishing among models of contextually induced preference reversals. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *17*(4), 767-778.

Wedell, D. H., & Pettibone, J. C. (1996). Using judgments to understand decoy effects in choice. *Organizational Behavior and Human Decision Processes*, *67*(3), 326-344.

Woodside, A., Frey, L., & Daly, R. (1989). Linking Service Quality, Customer Satisfaction and Behavioral Intention, *Journal of Health Care Marketing*, *9*, 5-17.

Wright, P., & Barbour, F. (1977). Phased decision strategies: Sequels to an initial screening. *TIMS Studies in the Management Science,* 6, 91-109.

Yang, S., & Lynn, M. (2014). More evidence challenging the robustness and usefulness of the attraction effect. *Journal of Marketing Research*, *51*(4), 508-513.

Young, L. R., & Nestle, M. (2002). The contribution of expanding portion sizes to the US obesity epidemic. *American Journal of Public Health*, *92*(2), 246-249.

Yüksel, A., & Yüksel, F. (2002). Market segmentation based on tourists' dining preferences. *Journal of Hospitality & Tourism Research*, *26*(4), 315-331.

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, 31-46.

Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2006). *Services Marketing: Integrating Customer Focus across the Firm (4th Ed.).* New York, NY: McGraw-Hill.

Zemke, D. M., & Shoemaker, S. (2008). A sociable atmosphere ambient scent's effect on social interaction. *Cornell Hospitality Quarterly*, *49*(3), 317-329.

Zhen, S., & Yu, R. (2016). The development of the asymmetrically dominated decoy effect in young children. *Scientific Reports, 6,* 1-7.

CURRICULUM VITAE

University of Nevada Las Vegas

Yang-Su Chen, CHE

EDUCATION

Ph.D. in Hospitality Management, University of Nevada Las Vegas, Las Vegas, NV 2017

M.S. in Hospitality and Tourism Management, Purdue University, West Lafayette, IN 2012

B.A. in Business Administration, National Chung Hsing University, Taichung, Taiwan 2009

RESEARCH CONTRIBUTIONS

Award

Best Research Paper Award (2015). Price and prejudice: The impacts of different types of cuisines and restaurants on gratuities. *Revenue Management & Pricing in Service Conference, Paris, France.*

Refereed publications

Chen, Y., Raab, C., and Chen, C. (2017). The influence of celebrity chefs on restaurant customers' behavior. *Journal of Hospitality Marketing & Management*, doi: 10.1080/19368623.2017.1269305.

Chen, C., and ***Chen, Y.*** (2017). Price and prejudice: The impacts of different types of cuisines and restaurants on gratuities. *Journal of Revenue and Pricing Management*, doi: 10.1057/s41272-017-0082-4.

Zemke, D., ***Chen, Y.***, Raab, C., and Zhong, Y. (2017). Hotel design, guest satisfaction, and behavioral intentions: An empirical analysis using PLS-SEM. *Anatolia: An International Journal of Tourism and Hospitality Research*, doi: 10.1080/13032917.2017.1319868.

Chen, Y., Lehto, X., Behnke, C., and Tang, C. (2016). Investigating children's role in family dining-out choices: Evidence from a casual dining restaurant. *Journal of Hospitality Marketing & Management, 25*(6), 706-725.

Book, L., Tanford, S., and ***Chen, Y.*** (2016). Understanding the impact of negative and positive traveler reviews: Social influence and price anchoring effects. *Journal of Travel Research, 55*(8), 993-1007.

Other peer-reviewed publication

Chen, Y. (2017). Case study: Front-desk agents versus flight attendants "Can you just check me in?" In *Advances in Culture, Tourism, and Hospitality Research, Vol. 13, Trade Tales: Decoding customers' stories and assessments of their experiences with sales, service and service associates.* London: Emerald Group Publishing.

Selected work in progress

Raab, C., Baloglu. S., and ***Chen, Y.*** (2016). What makes them engage? The impact of institutional theory and the theory of planned behavior on restaurant managers' participation in sustainable practices. *Journal of Foodservice Business Research* (Under Revision).

Bai, B., Jiang, L., Yoo, M., and ***Chen, Y***. (2016). A comparative review on customer relationship management (CRM) research from hospitality and marketing journals (1990 to 2014). *International Journal of Contemporary Hospitality Management* (Under review).

Conference proceedings - Refereed

Chen, Y., Raab, C., and J. Tang "Investigating credibility and restaurant attributes at celebrity-chef and celebrity-owned restaurants" North East North American (NENA) Federation CHRIE. March 31, April 1 & 2, 2016, Philadelphia, US.

Chen, Y., Tang, J., and C. Raab "What do customers prefer? A pilot study investigating promotions in restaurants" Western Decision Sciences Institute 46th Annual Conference. April 4, 5, 6 & 7, 2017, Vancouver, British Columbia, Canada.

Chen, Y., Raab, C., and S. Joe "Comparing celebrities' credibility and customers' perceived importance of restaurant attributes between celebrity-chef and celebrity-owned restaurants" West Federation CHRIE. February 10 & 11, 2017, San Diego, US.

Chen, Y., Tang, J., and C. Raab "The Power of the Free Drink Effect on the Menu: Investigating Discounts of Zero-Price versus Relative and Referent Thinking" 22th Graduate Education and Graduate Student Research Conference. January 5, 6 & 7, 2017, Houston, US.

Chen, Y., and C. Chen "To Choose or Not to Choose? That Is the Question: The Phantom Decoy Effect in Restaurants" 22th Graduate Education and Graduate Student Research Conference. January 5, 6 & 7, 2017, Houston, US.

Baloglu. S., Raab, C., and ***Y. Chen*** "The Motivations of Restaurants for Engaging in Sustainable Practices." International Council of Hotel, Restaurant, and Institutional Education (ICHRIE). July 20, 21 & 22, 2016, Dallas, US.

Bai, B., Jiang, L., Yoo, M., and ***Y. Chen*** "A Comparative Review on Customer Relationship Management (CRM) Research from Hospitality and Marketing Journals (1990 to 2014)." International Council of Hotel, Restaurant, and Institutional Education (ICHRIE). July 20, 21 & 22, 2016, Dallas, US.

Chen, Y., and C. Chen "The Phantom of the Menu – Investigating the Phantom Decoy Effects on Menu Item Choices." North East North American (NENA) Federation CHRIE. April 1, 2 & 3, 2016, Boston, US.

Chen, Y., and Y. Chen "Investigating the Indirect Decoy Effect on Patronage Intentions via Perceived Expensiveness." West Federation CHRIE. February 5 & 6, 2016, Denver, US.

Nazlan, N., and ***Y. Chen*** "Hedonic and Utilitarian Values on Customer Satisfaction in Upscale Restaurants." West Federation CHRIE. February 5 & 6, 2016, Denver, US.

Chen, Y., and C. Raab "Are They Worth It? The Impact of Celebrity Chefs on Restaurant Pricing." 21th Graduate Education and Graduate Student Research Conference. January 7, 8 & 9, 2016, Philadelphia, US.

Chen, Y., and C. Chen "What's in the Plate? Let the Tips Tell You." 21th Graduate Education and Graduate Student Research Conference. January 7, 8 & 9, 2016, Philadelphia, US.

Chen, C., and ***Y. Chen*** "Price and Prejudice: Tipping Behavior in Restaurants." Revenue Management & Pricing in Services Conference. December 17&18, 2015, Paris, France.

Book, L., S. Tanford, and ***Y. Chen***. "The Effect of Positive Customer Reviews on Types of Social Influence and Willingness-to-pay." International Council of Hotel, Restaurant, and Institutional Education (ICHRIE). July 29, 30 & 31, 2015, Orlando, US.

Chen, Y. "Determinants of Children's Choice on Family Dining-out Decision-makings." West Federation CHRIE. February 6 & 7, 2015, San Francisco, US.

Book, L., ***Y. Chen***, and S. Tanford. "Price versus Reviews: Which Is a Stronger Influence on Traveler Decisions." 20th Graduate Education and Graduate Student Research Conference. Jan 8, 9 & 10, 2015, Tampa, US.

Chen, Y., X. Lehto, C. Tang, and C. Behnke. "Investigating Children's Role in Family Dining-out Choices: A Study of Casual Dining Restaurants in Taiwan." 18th Graduate Education and Graduate Student Research Conference. Jan 3, 4 & 5, 2013, Seattle, US.