PERCEIVED LUCK IN GAMES OF CHANCE:

DETERMINANTS AND EFFECT ON INTENTION TO PLAY

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2014

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A thesis submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

July 2013

CERTIFICATE OF ORIGINALITY

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ABSTRACT

Casino gaming has been recognized as a catalyst of the tourism industry and a major economic pillar of tourist destinations like Macao. Therefore, it is imperative to generate considerable casino gaming revenue, irrespective of the well-being of the casinos or the tourist destination. Owing to the salience of luck in players' minds, casino operators commonly incorporate the concept of luck in their marketing schemes in order to prime players' perceived luck and thus heighten the gaming intention. In this regard, knowledge about how perceived luck can be shaped and how the effect of perceived luck on intention to play can be intensified should benefit casino operators' marketing strategies. However, the existing literature appears insufficient in providing these kinds of implications for casino operators, which leaves voids for this research to fill in.

To understand how perceived luck can be shaped this research identified five determinants of perceived luck and its intensity, namely valence, rarity, importance, exclusivity, and proximity of an outcome. It grounded these determinants on adaptation-level theory and prospect theory. Following the attribution concept called locus of control, this research also proposed a notion, namely locus of control on luck, which distinguishes between attribution of perceived luck to oneself and attribution to external factors as a moderator of the effect of perceived luck on intention to play. Also, it is argued that self-serving bias explains attribution of perceived luck.

This research engaged 640 participants solicited in Macao to play a computerized Wheel of Fortune game in which the determinants of perceived luck were manipulated. The results showed that a winning outcome led to higher

perceived luck than a losing outcome (i.e., valence effect), whilst a losing outcome (i.e., valence effect), an important outcome (i.e., importance effect), and an outcome which was very close to the counterfactual outcome (i.e., proximity effect) strengthened perceived luck. The exclusivity effect was found only when it interacted with valence, importance, and proximity effects. Although the rarity effect was not significant, the design limitations of the current research cast doubt on the wisdom of omitting the rarity effect from future studies.

The results also revealed that participants holding higher perceived luck were more likely to play the Wheel of Fortune again with their own money. This phenomenon was particularly salient when the participants attributed their perceived luck to external factors. Also, coherent with self-serving bias, the results showed that participants tended to attribute their high perceived luck to themselves and their low perceived luck to external factors.

The findings add knowledge to the literature by providing a holistic picture of the determinants of perceived luck, clarifying the role of each determinant, confirming the significance of the new notion of locus of control on luck, and enhancing the robustness of several major theories and notions. The findings provide implications for casino operators on how they may increase players' gaming intention by improving their design of casino games and lucky draw schemes, as well as by providing diversifications of human resources and amenities. Finally, limitations and future studies are discussed.

PUBLICATIONS ARISING FROM THE THESIS

Fong, L. H. N., Law, R. & Lam, D. (in press). An examination of factors driving Chinese gamblers' fallacy bias. *Journal of Gambling Studies*. Retrieved from http://www.springer.com/home?SGWID=0-0-1003-0-0&aqId=2505905&download=1&checkval=5f54795bfd6f4082dda26b5d5241d934

Fong, L. H. N., Leung, D. & Law, R. (in press). Beyond ethical assessment of gambling – Response to "The ethics of gambling: Are we asking the right questions?". *Tourism Recreation Research*.

ACKNOWLEDGEMENTS

I would like to extend my heartfelt gratitude to my supervisors Professor Rob Law (Chief supervisor), Dr. Andy Lee (Co-supervisor), and Professor Adele Ladkin (Co-supervisor) for their relentless support and encouragement throughout my Ph.D. study. From Professor Rob Law I learned how to become a better scholar and what to do in the pursuit of research excellence. His supervision fostered my confidence and passion for doing research. With the guidance of Dr. Andy Lee I improved my critical and conceptual thinking, which is paramount to solidifying my research capacity. From Professor Adele Ladkin I learned how to jump out from and view the big picture of a research. The diverse research background of my supervisors lets me improve various aspects of my research ability. I would consider them the parents of my academic life. Every achievement of mine in the future should give credit to them.

I would also like to extend my special thanks to Professor Haiyan Song, Professor Cathy Hsu, Professor Nan Zhou, Professor Guoxin Li, and Dr. Cindy Heo for their valuable comments which enhanced the comprehensiveness of my research. Also, I would like to emphasize that I am very proud to be a member of the School of Hotel and Tourism Management, The Hong Kong Polytechnic University. The success of the School brightens my future. I would like to express my gratitude to the Dean of School Professor Kaye Chon and his colleagues who contributed to the triumph of the School.

Finally, I would like to dedicate this thesis to my wife Miranda Leong, my daughter Ynez Fong, my mother, and my grandmother. Their support, understanding, and patience aided my completion of this Ph.D. thesis.

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CHAPTER 1 : INTRODUCTION

This chapter aims to provide an overview of and to elaborate the reasons for conducting this research. First, the research background is provided. After that, the research problems are identified, followed by the formulation of research questions and objectives. Then contributions of the study are discussed, followed by the definitions of key terms used in this thesis. Finally, the structure of this thesis is presented.

1.1 Research Background

1.1.1 Significance of Casino Gaming in Tourism

Casino gaming has long been recognized as a catalyst of the tourism industry (Eadington, 1999). Provision of casino gaming is increasingly adopted by policymakers to impel and revitalize the tourism industry in their jurisdictions (Nichols, Giacopassi, & Stitt, 2002). Casino gaming activities vivify tourists' travel experience and contribute to the foreign exchange earnings of the tourist destination (Lee & Kwon, 1997). More importantly, the casino-hotel properties function as major attractions in tourist destinations (McCartney, 2005). The Las Vegas Strip is a typical example in this regard. A number of gigantic casino-hotel complexes along the Strip pull a huge volume of tourists to the destination, making the Strip North America's most favored tourist destination (Douglass & Raento, 2004).

Accompanying its rapid expansion, the Las Vegas Strip's gaming revenue surged over the second half of the last century (Douglass & Raento, 2004). However, recent figures showed a declining trend of gaming revenue, in particular in 2008 and 2009 (see Table 1.1). Although revenue recovered in the last three years (i.e., 2010 to 2012), the amounts were still far below the level in 2007.

In contrast to the Las Vegas Strip, the development of the casino industry has been more remarkable in the Asia Pacific region, in particular Macao, which is currently the largest casino gaming city (in terms of gaming revenue) in the world. Its casino gaming revenue has maintained a high growth rate over the last ten years. Its revenue in 2012 was over six times that of the Las Vegas Strip. A plausible reason is that players in Macao casinos are primarily Chinese. Raylu and Oei (2004) noted that gaming is a way of life of Chinese and Chinese have a more positive attitude towards gaming. In their comprehensive review of empirical studies, Loo, Raylu, and Oei (2008) concluded that prevalence rates of problem and pathological gambling are generally higher among Chinese than other ethnicities. According to a recent study by Oei and Raylu (2010), Chinese is characterized by higher gaming frequency, higher gaming amounts, and higher frequency to manifest problem gambling behavior than Caucasians. Therefore, it is not surprising that a gaming destination dominated by Chinese players has higher gaming revenue than other destinations.

A number of mega-casino resorts have been built in Macao in recent years, offering brand-new attractions and richer entertainment elements to

tourists (McCartney, 2005). All these tourist attractions have required huge investments by the casino operators. Thus, a robust corporate financial condition is paramount. As casino gaming is the major revenue generator of casino resorts in Macao, the financial resources for supporting further investment by the casino operators rely heavily on the performance of casino gaming businesses.

Table 1.1

Casino Gaming Revenue and Growth Rate in Macao and the Las Vegas Strip (2003-2012)

US$1 ≈ 8 Macao Patacas

	Macao		Las Vegas Strip	
Year	Revenue (Million US$)	Growth Rate	Revenue (Million US$)	Growth Rate
2003	3,584	29.27%	4,653	2.08%
2004	5,172	44.31%	5,234	12.49%
2005	5,756	11.29%	5,927	13.24%
2006	7,078	22.97%	6,540	10.34%
2007	10,378	46.62%	6,703	2.49%
2008	13,597	31.02%	6,027	-10.09%
2009	14,921	9.74%	5,463	-9.36%
2010	23,543	57.78%	5,681	3.99%
2011	33,483	42.22%	5,987	5.39%
2012	38,017	13.54%	6,098	1.85%

Sources: Macao Gaming Inspection and Coordination Bureau (2008, 2013); Nevada Gaming Control Board (2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013).

The upsurge of casino gaming revenue also improved the Macao government's financial status, which in turn pushed the growth of the tourism industry. Gaming tax revenue was 80.9% of the Macao government's total revenue in 2012 (see Appendix A). With the plenty of financial resources, the

Macao government has been pursuing more tourism promotional works around the world (Fong, Fong, & Li, 2011). Also, the government initiated a number of projects to improve the tourism-related infrastructure in the city. All these governmental measures were of great importance in maintaining and increasing the competitiveness of the tourist destination. Therefore, growth of casino gaming revenue is not only a business goal, but also a goal of the tourist destination as a whole.

1.1.2 Significance of Perceived Luck in Casino Marketing Strategies

With the objective of increasing their gaming revenue, casino operators strive to improve various aspects of their operations, such as customer service, environmental design, and atmosphere to attract more players to their businesses (Johnson, Mayer, & Champaner, 2004; Liu & Wan, 2011; Mayer & Johnson, 2003; Mayer, Johnson, Hu, & Chen, 1998; Richard & Adrian, 1997). However, a higher volume of players does not guarantee higher gaming revenue. Thus, casino operators endeavor to prolong their customers' gaming time, stimulate more gaming activities, and induce higher betting amounts from their patrons in order to generate the maximum revenue from each player (Jolley, Lee, Mizerski, & Sadeque, 2013; Wohl, Stewart, & Young, 2011; Zangeneh, Griffiths, & Parke, 2008). To achieve this goal, increasing players' winning expectation is essential (Chau & Phillips, 1995; Côté, Caron, Aubert, Desrochers, & Ladouceur, 2003; Kwak, Lim, Lee, & Joseph, 2010).

As it is well established that players are superstitious (Vyse, 1997), a common strategy that casino operators adopt to heighten players' winning expectations and thus intention to play is to shape players' perceived luck. Given the fact that the color red and the number eight indicate good luck in Chinese culture (Bourassa & Peng, 1999; Chou, Kong, Teo, Wang, & Zheng, 2009; Kramer & Block, 2008), casino operators who target Chinese customers will use red as their corporate color and the number eight in the name of their restaurants and will even incorporate as many eights as possible in their hotline numbers (Lam, 2009). In contrast, the number four denotes bad luck in Chinese culture (Bourassa & Peng, 1999; Chou et al., 2009; Kramer & Block, 2008). So, casino operators avoid labeling seats of table games and floors of their hotels with that unlucky number. These practices demonstrate casino operators' concerns about players' perceived luck, which in turn can influence players' expectations to win (Darke & Freedman, 1997b; Keren & Wagenaar, 1985; Philip, 2010; Wiseman, Harris, & Middleton, 1994).

However, these practices may not be as effective as the casino operators expect. The reason is that evocation of perceived luck in these ways is based on the superstitious beliefs acquired from social transmission (e.g., eight denotes good luck in Chinese culture) rather than on self-experience (e.g., gaming outcomes including wins and losses). Scholars have maintained that people are more engaged in self-experienced superstition than in socially transmitted superstition (Burger & Lynn, 2005; Vyse, 1997). Coherent with this argument, self-experience generally has a stronger impact on expectation and behavior than social influence (Bandura, 1977; Josephine & Ritsuko, 2008). Therefore, perceived luck evoked by self-experience should have a more profound effect

on subsequent cognitive and behavioral responses than that evoked by the superstitious beliefs acquired from social transmission. Also, social transmission sometimes contains culture-specific elements that may not be applicable across cultures; for example, seven rather than eight stands for good luck in American culture. Therefore, perceived luck evoked from self-experience (i.e., gaming outcome) should merit more mental effort from casino operators when they formulate their marketing strategies.

1.1.3 Significance of Perceived Luck in Casino Players' Minds

Although the gaming outcome is a crucial stimulus to evoke players' perceived luck, it does not necessarily mean that all casino gaming outcomes can generate equivalent effects on perceived luck, given that some games are primarily driven by chance (i.e., games of chance), whereas others involve more skill elements (i.e., games of skill). For games of skill like Blackjack and Poker (Hannum & Cabot, 2009; Keren & Wagenaar, 1985; Walker, 1992; Xiang & John, 2009), professional players may have a better control over the outcome, as scientific strategies that help to increase the chance to win in these games are available (e.g., basic strategy in Blackjack). However, for games of chance like Baccarat, Sic Bo, Roulette, Wheel of Fortune, Bingo, and slot machines (Griffiths & Bingham, 2005; Turner, 2008; Walker, 1992; Wohl & Enzle, 2003), the possibility of controlling the outcome is minimal for three reasons (Keren & Wagenaar, 1988). First, players cannot make accurate decisions based on their memory or with reference to reliable information (Fong, Law, & Lam, in press). Second, continuous practice cannot improve one's performance. Finally,

randomization procedures like the throwing of dice or the spinning of a wheel are required. Hence, the nature of games of chance contradicts the likelihood of human control over their outcome (Averill, 1973; Burger, 1987; Burger & Vartabedian, 1980; De Charms, 1983; Gebhardt & Brosschot, 2002; Lefcourt, 1973; Leotti, Iyengar, & Ochsner, 2010). To recoup their sense of control, players rest on their perceived luck as a cue of skill to control the outcome of games of chance (Wohl et al., 2011).

Perceived luck is not only salient in games of chance, but also in games of skill. It is possible that a layperson can outperform a professional player in games of skill if the layperson keeps on getting good hands, albeit professional players (e.g., players who have extraordinary memory) generally have a higher (but not a definite) chance to win and a smaller chance to lose than laypersons. Moreover, not every player is aware of the necessary skills (e.g., basic strategy in Blackjack) when he or she is playing games of skill. In such a situation, chance plays a critical role and luck becomes salient. Therefore, Blackjack (a game of skill) players would exhibit a higher tendency to attribute their outcomes to luck than to skill (Keren & Wagenaar, 1985). To sum up, in both games of skill and games of chance, chance is of great importance in determining the gaming outcome, which sheds lights on the salience of perceived luck in casino players' minds (i.e., luck as a cue of skill to control the unpredictable outcomes).

1.1.4 Ethical Concern of this Study

Given the rationale stated in the previous subsections (see sections 1.1.1 to 1.1.3), shaping players' perceived luck should help improve the casino gaming revenue, thus leading to the well-being of a gaming destination. This is the central motivation of the current research. From a business point of view, this study should be welcomed. However, from a social point of view, this study may be considered unethical since the social problems in virtue of gaming may be enhanced (Adaval, 2006) and, thus social costs may be heightened (Collins & Lapsley, 2003; Fong et al., 2011; Ladouceur, Boisvert, Pépin, Loranger, & Sylvain, 1994). This study is definitely not intended to produce such an adversity. The desired outcome is to maximize casino operators' revenue to the point where negative social effects will not be further intensified, which is paramount for the sustainability of gaming destinations (Fong, Leung, & Law, in press). More importantly, the implication of this study is not limited to industrial practitioners. Policymakers should also take the advantages of the study outcomes. If the social costs of shaping players' perceived luck outweigh the benefits, government should set a veto on any potential industrial practices that would heighten perceived luck, especially prior to implementation in the industry. As a result, the ethical concern should be focused on how the government and industrial practitioners make use of the findings rather than on whether this study should be conducted or not.

1.2 Statement of the Problem

While perceived luck is salient in casino players' minds, it is also believed to be an influential factor in the outcomes of a variety of events in people's daily lives (Smith, Wiseman, Harris, & Joiner, 1996). Therefore, the notion of luck has attracted extensive attentions from researchers across disciplines like philosophy, psychology, and marketing. In philosophy, scholars were interested in debating luck with respect to rationality and morality (Barrett, 2006; Latus, 2003; Nagel, 1979; Zimmerman, 1987). In psychology, researchers focused their attention on empirical examinations of luck in relation to individual differences and human behavior (Andre, 2006, 2009; Darke & Freedman, 1997a, 1997b; Maltby, Day, Gill, Colley, & Wood, 2008; Wohl & Enzle, 2003). In the realm of consumer research, researchers were interested in how luck affected consumer judgment and decision making (Block & Kramer, 2009; Jiang, Cho, & Adaval, 2009; Kramer & Block, 2008; Prendergast & Thompson, 2008). Although there is a plethora of literature on luck, a theory and a conceptual framework that can provide a fundamental and comprehensive foundation for interested researchers to apply for or further develop are still lacking. It is important and timely to integrate the essence of prior research on luck so that other researchers can study this significant notion in a more systematic way in the future.

Existing research on luck can be categorized into three major streams (see Table 1.2). The first stream revolves around belief in luck, which is "the view that luck is a somewhat stable characteristic" (Darke & Freedman, 1997a, p. 490), and its relationships with individual differences. The second stream

focuses on the affective, cognitive, and behavioral consequences of perceived luck. The third stream centers on the role of counterfactual thinking (i.e., comparing the factual outcome with an imagined outcome) in perceived luck. Among these three streams of empirical research, the first stream has received most scholarly attention, whereas the third stream appears to be the least researched. Prior studies in the third stream have only stressed one particular determinant of perceived luck: the perceived closeness of the factual outcome to the imagined outcome (the current study calls this perceived proximity of an outcome). Although other determinants of perceived luck have been conceptually suggested and discussed in the past (Barrett, 2006; Darke & Freedman, 1997a; Latus, 2003; Pritchard & Smith, 2004; Rescher, 1995), no empirical work has been pursued yet. Moreover, there is a lack of a study that drew in all identified determinants and empirically examined their effects on perceived luck as well as how they interacted with each other. Thus, the existing literature is insufficient to provide concrete suggestions for casino operators on what they should do if they want to shape players' perceived luck.

Table 1.2

Research Foci of Previous Empirical Studies on Luck

Research Foci	Sources
1st Stream: Belief in Luck and Its Relationship with Individual Differences	
1. Belief in luck and self-esteem	Andre, 2006, 2009; Darke & Freedman, 1997a; Day & Maltby, 2003
2. Belief in luck and achievement motivation	Andre, 2006, 2009; Darke & Freedman, 1997a; Young, Chen, & Morris, 2009

(continued)

Research Foci	Sources
3. Belief in luck and positive thinking like optimism and hope	Darke & Freedman, 1997a; Day & Maltby, 2003, 2005; Maltby et al., 2008; Pulford, 2009
4. Belief in luck and desire for control	Darke & Freedman, 1997a
5. Belief in luck and life satisfaction	Darke & Freedman, 1997a; Maltby et al., 2008
6. Belief in luck and anxiety	Andre, 2006, 2009; Day & Maltby, 2003
7. Belief in luck and depression	Day & Maltby, 2003
8. Belief in luck and attribution style	Andre, 2009; Day & Maltby, 2003; Maltby et al., 2008
9. Belief in luck and agreeableness	Maltby et al., 2008
10. Belief in luck and conscientiousness	Maltby et al., 2008
11. Belief in luck and extraversion	Chotai & Wiseman, 2005
12. Belief in luck and neuroticism	Chotai & Wiseman, 2005; Day & Maltby, 2003
13. Belief in luck and openness	Chotai & Wiseman, 2005
14. Belief in luck and severity of problem and pathological gambling	Chiu & Storm, 2009; Wohl et al., 2011; Wohl, Young, & Hart, 2007
15. Difference of belief in luck by gender	Andre, 2006; Chotai & Wiseman, 2005; Day & Maltby, 2003, 2005; Wohl et al., 2011
16. Difference of belief in luck by age	Andre, 2006; Young et al., 2009
17. Difference of belief in luck by ethnicity	Darke & Freedman, 1997a
2nd Stream: Affective, Cognitive, and Behavioral Consequences of Perceived Luck	
1. Perceived luck and happiness	Jiang et al., 2009
2. Perceived luck and winning expectation in unpredictable events	Jiang et al., 2009; Wohl & Enzle, 2002; Wohl & Enzle, 2009
3. Perceived luck and product evaluation	Block & Kramer, 2009; Jiang et al., 2009

(continued)

Research Foci	Sources
4. Perceived luck and confidence	Bersabe & Arias, 2000; Darke & Freedman, 1997b
5. Perceived luck and desire to play	Young, Wohl, Matheson, Baumann, & Anisman, 2008
6. Perceived luck and risk-taking behavior	Darke & Freedman, 1997b; Friedland, 1998; Jiang et al., 2009; Kramer & Block, 2008; Prendergast & Thompson, 2008; Wohl & Enzle, 2003, 2009; Wohl et al., 2011
3rd stream: The Role of Counterfactual Thinking in Perceived Luck	
The perceived closeness of the factual outcome to the imagined outcome as a determinant of perceived luck	Teigen, 1995, 1996, 1997, 1998a, 1998b, 2005; Teigen, Evensen, Samoilow, & Vatne, 1999; Teigen & Jensen, 2011; Wohl & Enzle, 2003

In the second stream of empirical research on luck (see Table 1.2), most studies showed that people with higher perceived luck exhibited higher winning expectation, confidence, desire to play, and risk-taking propensity. These findings reflected that perceived luck predicts intention to play. However, no study has been found to suggest and investigate the factors that may strengthen the predicting relationship. If the relationship can be strengthened, casino operators can influence players' gaming intention with perceived luck in a more effective manner. Thus, unveiling and examining the factors that intensify the relationship is essential.

In summary, there are two major research voids in the literature of luck. First, there is a lack of an empirical study that integrates various determinants of perceived luck and examines them simultaneously. Second, no study has been found to examine the feasibility of intensifying the relationship between

perceived luck and intention to play. Filling in these two research gaps is a priority for future researchers to be able to extend the research on luck.

1.3 Research Questions and Objectives of the Study

Given the research problems stated above, this study aims to address three research questions:

1. How is perceived luck determined?
2. How do the determinants of perceived luck interact with each other?
3. Is there any factor that intensifies the relationship between perceived luck and intention to play?

Earlier discussions have indicated that the growth of casino gaming revenue is paramount for the competitiveness of a casino gaming destination like Macao. A viable approach that can generate more gaming revenue is to heighten players' gaming intention by shaping their perceived luck. So, the general objective of the current research is to provide implications for casino operators on how to increase players' intention to play by means of influencing players' perceived luck. To achieve this general objective, this study aims to achieve the following four specific objectives which echo the aforementioned research questions:

1. To identify and examine the determinants of perceived luck;
2. To examine interaction among the determinants;

3. To examine the relationship between perceived luck and intention to play; and
4. To explore whether the relationship can be moderated.

1.4 Significance of the Study

The current research is significant in the sense that it aims to establish a theoretically grounded framework encompassing determinants and cognitive consequences of perceived luck so that interested researchers can have a comprehensive knowledge base to rest on in their future studies. Although this empirical study centers on the gaming context, the application of the framework should be beyond that particular context as the framework was constructed by a critical review of existing literature across various disciplines including philosophy, psychology, and marketing. It is expected that this initial piece of research work can arouse the interests of future researchers to build a theory of perceived luck.

This study contributes to the existing literature on perceived luck in three aspects. First, this study attempts to identify the determinants of perceived luck and examine them simultaneously. Although the literature regarding determinants of perceived luck was not scant, most studies remained in conceptual discussions (Barrett, 2006; Darke & Freedman, 1997a; Latus, 2003; Pritchard & Smith, 2004; Rescher, 1995). Moreover, as previously stated, empirical studies tended to focus on one particular determinant. No research has been found to integrate all the determinants of perceived luck into a framework

and to examine the relationships empirically and simultaneously. This research gap has been filled in by the current study, in which five determinants of perceived luck and its intensity, namely valence, rarity, importance, exclusivity, and proximity of an outcome were identified and examined. Also, the interaction effect among these determinants on the intensity of perceived luck was investigated.

The second contribution of this study is the extension of several important theories and concepts including adaptation-level theory (Helson, 1964a), prospect theory (Kahneman & Tversky, 1979), locus of control (Levenson, 1973; Rotter, 1966), and self-serving bias (Bradley, 1978; Miller & Ross, 1975) to explain the phenomena of perceived luck. On the one hand, the robustness of the theories and concepts can be confirmed. On the other hand, the proposed framework can be supported by a solid conceptual foundation.

Finally, this study proposes a new notion namely, locus of control on luck as a potential moderator of the relationship between perceived luck and intention to play. This moderator sets out a new research direction for researchers who are interested in studying perceived luck in the future.

In addition to theoretical contributions, this study aims to provide managerial implications for casino operators to enhance players' intention to play, which as previously argued, can benefit the gaming destination. By examining the effects of determinants on perceived luck simultaneously, findings from this study can help to equip casino operators with better understanding of which determinant(s) they should focus on when shaping players' perceived luck (including its intensity) evoked by gaming outcomes.

Also, the moderating effect of locus of control on luck on the relationship between perceived luck and intention to play provides insights for casino operators on how they can strategically increase players' gaming intention by influencing perceived luck in a more effective way. Based on the findings in this study, it is expected that casino operators can maintain the growth of their gaming revenue, which is a critical contributor to the competitiveness of gaming destinations like Macao.

1.5 Definition of Key Terms

Term	Definition
Belief in luck	"The view that luck is a somewhat stable characteristic" (Darke & Freedman, 1997a, p. 490)
Exclusivity of an outcome	Whether the outcome occurs for very few people
Importance of an outcome	Whether the derivatives of outcome matter
Intention to play	An individual's willingness to play the game with his/her money
Intensity of perceived luck	The degree to which an individual perceives his or her luck
Locus of control on luck	The viewpoint that perceived luck is attached to an individual (i.e., internal locus of control on luck) as opposed to external factors (i.e., external locus of control on luck)
Luck	An unpredictable outcome that happens to a person
Perceived luck	An individual's perception of him or herself as lucky
Proximity of an outcome	Whether the outcome is close to the counterfactual outcome

(continued)

Term	Definition
Rarity of an outcome	Whether the probability of the outcome is low or high
Valence of an outcome	Dichotomous orientations that people hold with respect to the outcome (i.e., positive versus negative outcomes)

1.6 Organization of the Thesis

This thesis is composed of six chapters. Chapter 1 begins with an emphasis on the linkage between casino gaming and tourism as well as the importance of perceived luck from both casino operators' and players' perspectives. Then, the chapter identifies the research problems, the research questions, and the research objectives of this study. After that, the theoretical and practical significance of this study are discussed, followed by definitions of key terms and the structure of this thesis.

Chapter 2 provides a comprehensive review of literature related to luck and the theories in which the conceptual framework is grounded. The chapter starts with a highlight of the importance of luck in daily life and a discussion on the underlying meaning of luck and perceived luck, followed by a critical review of literature pertaining to the relationship between perceived luck and intention to play. Then, a moderator of the relationship called locus of control on luck is proposed while the relation between this new construct and perceived luck is postulated. Following that, determinants of perceived luck and its intensity are identified from the literature. Before the end of this section, a conceptual framework is presented with an explanation of the underlying rationale of the hypotheses.

Chapter 3 details the research methodology deployed in this study, including the research design, sampling method, experimental procedures, measures of the constructs, and pilot study results of this study.

Chapter 4 articulates respondents' characteristics, validity of the experimental manipulations and measures of the constructs, statistical methods used to analyze the data, and findings in virtue of the examination of the nine hypotheses.

Chapter 5 discusses the findings of this study with a special focus on three major aspects, namely the main and interaction effects of determinants of perceived luck, the predicting effects of perceived luck and other covariates on intention to play, and the role of locus of control on luck. Some of the hypotheses were not supported and explanations are detailed in this chapter.

To conclude, Chapter 6 pairs the objectives of this study with the findings. Theoretical contributions and managerial implications are articulated. Finally, limitations of this study are pointed out and how they can be addressed in the future studies is recommended.

CHAPTER 2 : LITERATURE REVIEW

This chapter critically reviews existing literature pertaining to perceived luck and proposes a conceptual framework that guides this study. There are six sections in this chapter. The first section focuses on the importance of luck in daily life as well as the meanings behind luck and perceived luck. The second section discusses the relationship between perceived luck and intention to play. The third section proposes a potential moderator of the relationship between perceived luck and intention to play called locus of control on luck by discussing the underlying theory and the rationale of how the moderator works, followed by how perceived luck is related to locus of control on luck. The fourth section focuses on identifying and discussing the five determinants of perceived luck. Based on the literature review, a conceptual framework and nine hypotheses are presented in section five. Also, other factors that may affect intention to play are elaborated in this section. Finally, a summary of key points in this chapter follows in section six.

2.1 Luck

2.1.1 Significance of Luck in Human Life

Luck plays a paramount role in human life (Darke & Freedman, 1997a; Rescher, 1995; Smith et al., 1996). It does not discriminate for or against any person as it ―touches both the great people of this world and the small" (Rescher, 1995, p. 14). Its importance rests on the magical power that maneuvers outcomes. Wiseman (2003) argued that

—a few seconds of bad fortune can unravel years of striving, while a moment of good luck can lead to success and happiness; luck has the power to transform the improbable into the possible; to make the difference between life and death, reward and ruin, happiness and despair" (p.3).

The power of luck, to a certain extent, mirrors the powerlessness of humans. With limited knowledge about the world, humans have to make decisions based on incomplete information (Rescher, 1995). Therefore, even when a person appears to have a perfect skill to attain a positive outcome, there is still a minor probability of failure, which is in the hand of chance, where people believe that luck plays a part. Given the importance of luck in human life, the notion deserves considerable attention from researchers. In order to pursue a comprehensive study on this important notion, a well-justified definition has to be given.

2.1.2 What are Luck and Perceived Luck?

In the English-speaking world, the word —luck" first appeared in fifteenth century (New Oxford American Dictionary, 2010; Rescher, 1995). Dictionaries refer luck to fortune and vice versa (Collins English Dictionary, 2009; Random House Webster's Unabridged Dictionary, 2001; The American Heritage Dictionary of the English Language, 2006), indicating that luck is tantamount to fortune. In the same vein, studies use luck and fortune interchangeably (Teigen, 1996, 1997). However, luck and fortune are arguably

two different notions. Rescher (1995) defined fortune as the natural course of good or bad things that happen to a person, whereas luck denotes a specific unpredictable situation. For example, a fortunate person can be someone who was born in a wealthy family so that he or she can take a first-class seat on an airliner, whereas a lucky person can be someone who was upgraded to first-class for some reasons of the airline. Pritchard and Smith (2004) distinguished the two notions by arguing that luck is within the context of fortune. In this sense, defining luck in terms of fortune seems to be putting the cart before the horse. Darke and Freedman (1997a) also acknowledged the distinct natures of luck and fortune, but from a different point of view. They noted that fortune only serves to describe past events, whereas luck provides implications for the future in addition to explaining what has happened in the past. Further support on the difference between luck and fortune can be located in empirical studies; for instance, Andre (2006) found that fortune-related measurement items did not load on the luck factor. Although there were scholars who considered luck and fortune synonymous (Sodergren, Hyland, Crawford, & Partridge, 2004; Teigen, 1997), this should be avoided in a rigorous sense. In general, luck should not be defined as fortune.

Various definitions of luck can be found in the literature. Airaksinen and Gasparski (1993) defined luck as ―something that the actor is unable or unwilling to control" (p. 18). Lefranc, Pistolesi, and Trannoy (2009) defined luck as ―situations where individual control, choice or moral responsibility bears no relationship to the occurrence of outcome" (p. 5). Rescher (1995) described luck as an occurrence where the outcome ―lies outside the horizon of effective foreseeability" (p. 28). While these definitions appear to be different, they share

a common thread which can be adopted to describe luck – the chance happening of events and something that cannot be controlled.

Based on its definition, luck can be interpreted as an unpredictable outcome that happens to a person. Thus, any personal outcome that is not chance-driven does not belong to luck. In this sense, perceived luck, which is considered an individual's perception of him or herself as lucky, can be viewed as an evaluation of a personal outcome driven by chance.

2.2 Relation between Perceived Luck and Intention to Play

2.2.1. Luck as an Indicator of the Future

Although luck is uncontrollable in nature, it is not unusual to observe people believing in luck as a stable factor and considering it as giving meaning to the past and being an indicator of the future (Darke & Freedman, 1997a). Those who believe in luck are portrayed as superstitious individuals. Hence, to measure superstition – ~~"~~a belief that events are causally related when objectively they are not" (Hernandez, Wang, Minor, & Liu, 2008, p. 426), much research has incorporated the notion of luck into measurement scales (Carlson, Mowen, & Fang, 2009; Dagnall, Parker, & Munley, 2009; Hernandez et al., 2008; Leonard, Goldberger, Rapoport, Cheslow, & Swedo, 1990). In these scales, luck was treated either as a cause or a consequence of a causal relationship that was contrary to science (Scheibe & Sarbin, 1965). Sample items manifesting luck as a cause in the relationship were that having a lucky charm (cause) in the car would bring a safe driving journey (consequence), and

that kissing the lucky mascot (cause) before a football match would lead the team to win (consequence) (Hernandez et al., 2008). Examples of luck as a consequence include picking up a penny (cause) brings good luck (consequence) (Leonard et al., 1990), touching wood (cause) to promote good luck (consequence) (Dagnall et al., 2009), and sometimes performing little rituals (cause) to bring good luck to oneself (consequence) (Carlson et al., 2009). If luck is considered a factor that can influence an outcome, it is not surprising that people make attempts to predict future outcomes with the luck they perceive at any given time.

2.2.2. How is Perceived Luck Related to Intention to Play?

There is a plethora of studies showing the existence of a relationship between perceived luck and its cognitive and behavioral consequences. The studies revealed that people holding higher perceived luck exhibited more positive attitude toward gaming (Chiu & Storm, 2009), higher expectations of winning (Darke & Freedman, 1997b; Jiang et al., 2009; Wohl & Enzle, 2002), higher propensities to participate in risky activities (Jiang et al., 2009; Prendergast & Thompson, 2008; Sierra & Hyman, 2009; Wohl et al., 2011), and even betting higher amounts when playing games of chance (Jiang et al., 2009; Wohl & Enzle, 2003). Based on these empirical findings, it appears plausible to assume a positive relationship between perceived luck and intention to play (i.e., an individual's willingness to play the games of chance with his/her money).

However, Sundali and Croson (2006) raised a contrasting point of view that the relationship between perceived luck and its consequences may follow negative recency – "a tendency to predict the opposite of the last event" (Ayton & Fischer, 2004, p. 1369). In this regard, people who have experienced good luck may think that their stock of luck has been used up and a negative outcome will follow in the next event. This argument appears reasonable, but may not be as salient as the opposite (i.e., positive recency – "a tendency to predict the same as the last event") (Ayton & Fischer, 2004, p. 1369). Recent studies have indicated that negative recency prevailed when the outcome was concerned with a random process (e.g., heads or tails); whereas positive recency was concerned with personal outcomes (e.g., wins or losses) (Ayton & Fischer, 2004; Croson & Sundali, 2005; Sundali & Croson, 2006). As discussed earlier (see section 2.1.2), perceived luck represents the evaluation of a personal outcome, so positive recency should be more salient. In fact, many studies have shown that people were more likely to expect their future luck to follow their past luck (i.e., good luck in the past leads to good luck in the future) (Keren & Wagenaar, 1985; Sundali & Croson, 2006; Wiseman et al., 1994). As a result, it should be more reasonable to assume a positive relationship between perceived luck and intention to play.

While there are a number of studies regarding the relationship between perceived luck and intention to play, there is a lack of studies discussing the potential factors that could intensify the relationship. The next section will center on this research gap.

2.3 Locus of Control on Luck

2.3.1 Theory Underlying Locus of Control on Luck

In earlier discussions, perceived luck has been contended as the evaluation of an unpredictable outcome that happens to a person (see section 2.1.2). Following this argument, literature pertaining to how evaluation of an outcome affects the prediction of future outcomes should provide some insights to identify the factors that intensify the relationship between perceived luck and intention to play. In this regard, the traditional outcome attribution notion, namely "*locus of control*", renders conceptual support to the proposed intensifier.

Locus of control maintains that attribution of outcome contains two opposing dimensions. In one dimension (called the internal locus of control), people internalize the cause of an outcome by attributing the outcome to their abilities and efforts. In the opposite dimension (called the external locus of control), people attribute their outcomes to external causes like luck, fate, or powerful others (Levenson, 1973; Rotter, 1966). This fundamental categorization of outcome attribution has been extensively examined in various domains like gambling (Clarke, 2004; Hong & Chiu, 2001), health (Levenson, 1973; Marks, Richardson, Graham, & Levine, 1986), education (Findley & Cooper, 1983; Klein & Keller, 1990), consumer behavior (Bradley & Sparks, 2002; Srinivasan & Tikoo, 1992), and management (Judge & Bono, 2001; Spector, 1982).

The traditional argument contended that a major function of locus of control was to differentiate the prediction process for future outcomes inasmuch as the two dimensions of locus of control could lead to contrasting expectations of an outcome (McArthur, 1970; Rotter, 1966). To illustrate, a diligent student would have a high expectation of performing well in the final examination as he or she got an excellent result in the previous test by studying hard. In this scenario, the student attributed his or her academic outcome to his or her effort (i.e., internal locus of control). On the other hand, the same student who thought that his or her excellent result in the mid-term examination was due to a private tuition provided by his or her cousin (i.e., external locus of control) might exhibit a low expectation of performing well in the final examination given that his or her cousin was too busy to provide private tuition before the final examination. In this case, the student attributed his or her academic outcome to his or her powerful cousin (i.e., external locus of control). Following this rationale, this study assumes that attribution of luck (i.e., attribution of an unpredictable outcome that happens to a person) would differentiate the relationship between perceived luck (i.e., evaluation of an unpredictable outcome that happens to a person) and intention to play.

As the theory of locus of control suggests that the human cognitive process dichotomizes the cause of an outcome into internal and external dimensions during the outcome attribution process, the same cognitive process should also be applicable to the attribution of luck, which is actually the attribution of an unpredictable outcome. Based on this rationale, this study proposes a construct called locus of control on luck so as to dichotomize the cause of luck into internal and external dimensions (i.e., internal locus of control

on luck and external locus of control on luck). To provide evidence of the existence of these two dimensions, further literature is provided in the following two subsections.

2.3.2 Internal Locus of Control on Luck

Toneatto's (1999) discussions of the traits of perceived luck shed some light on the internal locus of control on luck. He argued that perceived luck can be contagious across areas of life, for instance, an individual who is lucky in an episode of his or her daily life will generalize his or her good luck to subsequent gaming activity. Conversely, people will be reluctant to participate in gaming activity if they are unlucky in other areas of their life. This argument has been manifested in empirical findings where people believed their perceived luck could be generalized across domains of their life including unpredictable events, personal finance, sports performance, exam performance, health, career, and personal life (Wiseman et al., 1994). Further evidence was raised by Wohl and Enzle (2002), who noted that a player who had a lucky experience in a casino gaming episode declared that he or she should purchase a lottery ticket. The player herein was generalizing his or her perceived luck derived from casino gaming to the lottery draw. All these observations indicated that people believed their perceived luck could be attached to themselves, just like a personal characteristic (Weiner, 1998; Wohl & Enzle, 2002). Thus, perceived luck under this circumstance should be global across situations, or more specifically robust against any influence from external factors. In summary, the internal locus of

control on luck refers to the viewpoint that perceived luck is attached to an individual.

2.3.3 External Locus of Control on Luck

Toneatto (1999) also argued that people attribute their perceived luck to external factors like lucky charms, lucky venues, lucky others, lucky rituals, and so on. Empirical evidence is not scant in this regard. Bersabe and Arias (2000) found that lucky charms heightened players' confidence of winning. A field study demonstrated ~~"a~~ lucky store effect, whereby consumers erroneously increase their estimate of the probability a ticket bought from the winning store itself will be a winner" (Guryan & Kearney, 2008, p. 458). A recent study revealed that people tended to allow lucky others to pick lottery tickets and spin the roulette wheel for them (Wohl & Enzle, 2009). Baseball players eat chicken, use the same shower, and chew three pieces of gum before each game as they believe these are lucky rituals (Burger & Lynn, 2005). Moreover, it is commonly found that players switch between tables, seats, and slot machines to look for lucky fittings (Hayano, 1978; King, 1990). Unlike the internal locus of control on luck, all these findings indicated that people viewed their perceived luck as specific to external factors, which this study calls the external locus of control on luck. If a person is detached from the external factors, his or her perceived luck will change.

2.3.4 The Role of Locus of Control on Luck Between Perceived luck and Intention to Play

In the earlier discussion, it was assumed that the relationship between perceived luck and intention to play would vary with locus of control on luck. The literature on locus of control sheds some light on this matter. Before examining this literature, it is important to clarify whether *locus of control* and *locus of control on luck* resemble each other.

While it appears that the dimensions of "locus of control on luck" (internal versus external) resemble those of "locus of control", they differ from each other in terms of their underlying principles pertaining to the sense of control that a person possesses. The literature on locus of control indicated that internal factors like skill, ability, and effort are controllable, whereas external factors like chance, luck, and fate are not. In contrast, the concept of locus of control on luck was built on the assumption that luck is controllable (Darke & Freedman, 1997a), whether the locus is internal or external. Moreover, unlike the factors in external locus of control, the factors in external locus of control on luck can be under a person's control (e.g., the choice of slot machine). In this regard, it seems unreasonable to draw parallels between external locus of control on luck and external locus of control. However, external locus of control also consists of factors that are controllable. Under external locus of control, there are two sub-dimensions: (a) powerful others and (b) luck, fate, and chance (Levenson, 1973). Undeniably, chance, luck, and fate are uncontrollable. However, control through powerful others is not impossible. If a person can influence the powerful others to achieve a desired outcome for him or her, he or

she can still have a sense of control, but only through a proxy rather than in a direct manner (Namasivayam, 2004). In this situation, the external factor (i.e., the powerful others) becomes controllable. So it should be more reasonable to argue that the internal and external dimensions of locus of control on luck are parallel with the dimensions of internal and powerful others on locus of control respectively.

While previous study has noted that both internal locus of control and control through powerful others help augment positive expectations of the outcome (Skinner, Wellborn, & Connell, 1982), there is a lack of empirical studies comparing their extent of this augmentation. However, implications can be drawn from previous scholarly arguments. Internalizing the cause of an outcome induces stronger emotional and cognitive responses (Alloy, Peterson, Abramson, & Seligman, 1984; Morrow, 1991). According to Abramson, Seligman, and Teasdale (1978), people who internalized the cause of helplessness often expected a grimmer future than when they attributed the cause to external factors, which were considered more volatile. Also, it has been assumed that people generally prefer internal locus of control to control through powerful others as the proxy control of the latter heightens the uncertainty of an outcome (Namasivayam, 2004). In this sense, control through powerful others may not be perceived as being as powerful as internal locus of control in the expectancy process. Following this rationale, the impact of perceived luck on intention to play concerning internal locus of control on luck may be stronger than that concerning external locus of control on luck. If this postulation is confirmed, is there any circumstance that could make internal locus of control

on luck more salient than external locus of control on luck or vice versa? The next subsection focuses on the literature related to this question.

2.3.5 The Effect of Perceived Luck on Locus of Control on Luck

To understand the underlying mechanism that drives people's attributions of outcomes to internal factors or external factors, self-serving bias (Bradley, 1978; Miller & Ross, 1975) is an important concept. Self-serving bias refers to ~~"t~~he tendency for people to take credit for success (i.e., to give internal attributions for their successes, a self-enhancing bias) and deny responsibility for failure (i.e., to blame failure on external causes, a self-protecting bias)" (Bitner, Booms, & Mohr, 1994, p. 96). The bias has been maintained as a basic need of human (Heine, Lehman, Markus, & Kitayama, 1999), especially in that it provides a lot of advantages for mental health. It brings happiness to oneself, motivates one to care about others, strengthens the capacity of creativity, and enhances work productivity (Taylor & Brown, 1988). It is pervasive in the general population and can be observed in various cultures, age groups, and genders, though the extent varies (Mezulis, Abramson, Hyde, & Hankin, 2004). Findings of meta-analysis showed that the extent of self-serving bias increased with age especially among males, and was greater among Westerners than Asians (Mezulis et al., 2004). The theory of self-serving bias has been widely applied to explicate phenomena in various areas like perception of gaming outcomes (Nelson & Beggan, 2004), perceptions of an athletic team's performance (Wann & Schrader, 2000), corporate planning (Larwood & Whittaker, 1977), settlement of legal issues (Babcock & Loewenstein, 1997),

self-evaluation of driving abilities (McPeek, Nichols, Classen, & Breiner, 2011), customers' attributions of service failure (Poon, Hui, & Au, 2004), customers' perceptions of the outcome in virtue of their participation in the delivery of the service (Bendapudi & Leone, 2003), and participants' responses to surveys (Hausdorf, Risavy, & Stanley, 2011).

Given the widespread extent of self-serving bias, it should be expected to be a fundamental cognitive mechanism influencing people's attribution processes. So, it is possible that people follow the same cognitive mechanism when attributing their perceived luck. This assumption can be addressed to the enhancement of self-esteem as a goal of pursuing self-serving bias (Bradley, 1978; Rotter, 1966; Weiner, 1998; Zuckerman, 1979). Empirical findings have revealed a stronger endorsement of the bias among individuals having high self-esteem (Baumeister, Heatherton, & Tice, 1993; Baumeister, Smart, & Boden, 1996; Blaine & Crocker, 1993), while high self-esteem thrived among people who believed themselves lucky (Andre, 2006, 2009). Thus, echoing the purpose of self-serving bias, attributing high perceived luck to oneself may help enhance one's self-esteem. It is therefore likely that people will attribute their high perceived luck (representing a more positive unpredictable outcome) to themselves (i.e., internal locus of control on luck) rather than to external factors (i.e., external locus of control on luck).

2.4 Determinants of Perceived Luck

2.4.1 Theory Underlying Determinants of Perceived Luck

As intention to play is affected by perceived luck, any measures that can shape perceived luck should be welcomed by casino operators. To achieve this goal, determinants of perceived luck have to be identified. Before stepping into discussions about the determinants, it is necessary to build the theoretical ground. Given that perceived luck is a type of perception (Chantal & Vallerand, 1996), the theory of perception should be considered.

With respect to research on perception, Helson's (1964a) adaptation-level theory is highly influential (Hoch & Loewenstein, 1991). In particular, this theory has served as the ground of prominent theories, frameworks, models, and measurement scales like prospect theory (Kahneman & Tversky, 1979), expectancy-disconfirmation theory (Oliver, 1980), the reference price model (Monroe, 1973; Winer, 1986), and measurement scales of job satisfaction (Smith, Kendall, & Hulin, 1969). The adaptation-level theory posits that people perceive stimulus in relation to the adaptation level (i.e., reference point) (Helson, 1948, 1964a). To illustrate, a weight of 50 kilograms can seem very heavy for a person to lift. However, if that person has lifted a weight of 70 kilograms (i.e., the adaptation level) several times in advance, he or she would perceive a weight of 50 kilograms as not very heavy in relation to the adaptation level.

According to Helson (1964a, 1964b), adaptation level is a function of multiple factors. For instance, aside from the aforementioned example wherein

the factor is the lift of a weight of 70 kilograms, other possible factors that can constitute the adaptation level can be the oxygen level in the environment where the lift of weight is conducted and the weight of the person who lifts the weight. If the lift of a weight is conducted in an environment where the oxygen level is low, people may perceive the weight as heavier than when the same lift is conducted in an environment with an appropriate oxygen level. In addition, a person weighing 100 kilograms may have a very different perception of the lift of a weight of 70 kilograms in comparison with a counterpart weighing just 40 kilograms. In general, people's perceptions of a stimulus are in virtue of their evaluations of a stimulus in relation to single or multiple adaptation levels (i.e., reference points) in the situation (Ordóñez, Connolly, & Coughlan, 2000).

If the perception is based on multiple reference points, people evaluate a stimulus (e.g., an outcome) with separated reference points and form general perceptions of the stimulus by aggregating the individual evaluations (Boles & Messick, 1995; Kahneman, 1992). Following this rationale and the adaption-level theory, perceived luck can also be an aggregation of individual evaluations of an unpredictable outcome with various reference points whilst these individual evaluations underpin the relationships between perceived luck and its determinants.

To identify the determinants of perceived luck, literature in various disciplines including psychology, philosophy, and business was reviewed. Based on the literature review, five determinants of perceived luck, namely the valence, rarity, importance, exclusivity, and proximity of an outcome, were identified and are discussed in the following subsections (see sections 2.4.2 to

2.4.6). They are all underpinned by the role of reference points in the formation of perceived luck and intensity of perceived luck (i.e., the degree to which an individual perceives his or her luck). More specifically, winning is the reference point in the predicting effect of valence of an outcome on both perceived luck and intensity of perceived luck. Reference points for rarity, importance, exclusivity, and proximity effects are expectation, personal goal, other people's outcome, and counterfactual outcome respectively. Detailed explanations and discussions are provided in sections 2.4.2 to 2.4.6.

In this study, luck is defined as an unpredictable outcome. Therefore, the determinants of perceived luck should be related to the outcome itself. Although belief in luck has been revealed as a factor that affects perceived luck (Darke & Freedman, 1997b), the construct is a personal trait rather than a characteristic of the outcome.

Although demographic characteristics appear to be invulnerable factors that may affect perceived luck, there is a lack of studies examining the effects. Instead, studies on the effects of demographic characteristics on belief in luck are not scant, like gender effect (Andre, 2006; Chotai & Wiseman, 2005; Day & Maltby, 2003, 2005; Wohl et al., 2011), age effect (Andre, 2006; Young et al., 2009), and ethnicity effect (Darke & Freedman, 1997a). So, belief in luck should have already captured the possible impacts of demographic characteristics on perceived luck and its intensity.

2.4.2 Valence of an Outcome

To formulate the evaluation of an outcome, valence of an outcome (i.e., dichotomous orientations that people hold with respect to the outcome, for example, win and loss) plays a significant role. In the gaming context, winning is commonly desired by players (Ladouceur, Sylvain, Letarte, Giroux, & Jacques, 1998; Vyse, 1997). Also, players are more likely to recall winning than losing outcomes in the past (Lee, 2010; McCusker & Gettings, 1997; Toneatto, 1999, 2002; Toneatto, Blitz-Miller, Calderwood, Dragonetti, & Tsanos, 1997). Therefore, winning is vivid in players' minds and becomes an active reference point to which players compare the valence of their gaming outcomes. According to expectancy-disconfirmation theory (Oliver, 1980), if the valence of outcome confirms the reference point, a positive evaluation of an outcome should result. Otherwise, the opposite would be true. Coherent with this argument, previous studies consistently assumed that high (low) perceived luck results after win (loss) (Friedland, 1998; Jiang et al., 2009; Pritchard & Smith, 2004; Teigen, 2005; Wagenaar & Keren, 1988). While this assumption appears invulnerable, most scholarly attention fell into how perceived luck can be strengthened (Latus, 2003; Pritchard & Smith, 2004; Wohl & Enzle, 2003), or more specifically enhancing the intensity of perceived luck.

Valence of an outcome has also been maintained to affect the intensity of evaluation of an outcome. According to prospect theory (Kahneman & Tversky, 1979), people tend to put more weight on a loss than on a comparable gain. Figure 2.1 illustrates this contention by presenting the psychological value as a function of the monetary gain and loss. The curve is convex in the gain

situation, whereas it is concave in the loss condition. Hence, the extent of increase of psychological value upon a monetary gain of $500 is smaller than that of decrease of psychological value upon a monetary loss of $500. This theory implies that valence of an outcome (e.g., gain and loss) results in different intensities of outcome evaluation. More specifically, the intensity of a negative outcome evaluation in the losing condition should be greater than that of a positive outcome evaluation in the winning condition (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001).

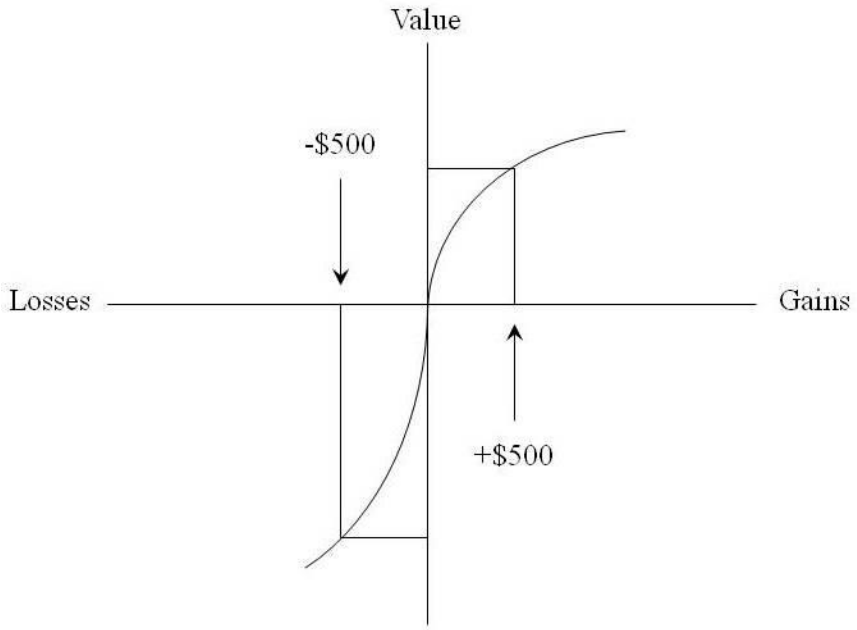


Figure 2.1. A psychological value function in prospect theory

(Plous, 1993)

The cognitive mechanism underlying the asymmetrical effect of positive and negative outcomes can be addressed to the negativity effect, which is defined as ~~a~~ greater impact of evaluatively negative than of equally intense positive stimuli on a subject" (Peeters & Czapinski, 1990, p. 33). Bad events had stronger impacts on human beings across a wide range of domains and

psychological phenomena than good events (Baumeister et al., 2001; Rozin & Royzman, 2001). The reasons are that negative events elicit more information processing, contain higher informational value, and are more impressive than do positive events (Baumeister et al., 2001; Fiske, 1980; Klein, 1991; Skowronski & Carlston, 1989). In other words, negative events are more relevant to personal well-being. According to Peeters and Czapinski (1990), the negativity effect was originated from the positivity bias, which is "a subjective tendency to deal with this world as if proceeding from the a priori hypothesis that this dealing will lead to positive outcomes" (p. 55). In this sense, given the positivity bias, people shift the reference point for evaluation of outcome towards the positive side (e.g., win in gaming). Thus, even if a positive event produces an equally tangible impact to a negative event, the evaluation of the outcome in the former situation is weaker than in the latter.

Perceived luck, as stated earlier (see section 2.1.2), is the evaluation of an unpredictable outcome that happens to a person. In this sense, prospect theory, explaining the difference between how people evaluate positive and negative outcomes, may also account for the intensity of perceived luck. This assumption is not unreasonable given Teigen et al.'s (1999) argument that factual outcomes in high perceived luck situations tend to be considered normal ones, whereas factual outcomes in low perceived luck situations are more readily to be considered exceptionally negative outcomes. In this sense, the intensity of perceived luck (i.e., the intensity of the evaluation of an unpredictable outcome happens to a person) in the losing condition can be stronger than in the winning condition.

2.4.3 Rarity of an Outcome

Pritchard and Smith (2004) argued, from a philosophical point of view, that an event is lucky when the actual world does not occur in most of the nearby possible worlds. For example, a lottery winner holds an extremely high perceived luck because he or she chose the very particular combination of numbers out of numerous possible combinations. Conversely, people who see the sunrise in every morning would not evaluate their luck for seeing the sunrise since it is a common natural phenomenon and also occurs in many other places. In this sense, as noted by Karabenick and Addy (1979), the notion of luck can be captured by the rarity of an event. The lottery winner holds very high perceived luck because there is a very low chance of winning, whereas seeing the sunrise is not a matter of luck because it is not a serendipitous event. In a similar vein, Rescher (1995) noted that the intensity of perceived luck is inversely related to the likelihood of an event. Pritchard and Smith (2004) stated that ―extremely unusual events can be regarded as luckier than just plain unusual events" (p.17). For example, someone who lost a wallet on a street and happened to find it without losing anything inside a year later should have a higher perceived luck than someone who happened to find it the following day (Pritchard & Smith, 2004). These arguments indicated that the intensity of perceived luck is proportional to the rarity of an outcome.

Chance is analogous to probability (Batanero, Henry, & Parzysz, 2005), so a rare outcome is one that has a low probability of occurrence. Probability can be categorized into two types: objective and subjective. Objective probability refers to the value derived from the laws of probability calculus,

whereas subjective probability is an estimation of the probability made by a subject or inferred from his or her behavior (Kahneman & Tversky, 1972). Subjective probabilities rest on people's feelings and the vividness of their imagination (Miller & Taylor, 2002). Thus, the relationship between objective and subjective probabilities is not necessarily linear (Hong, 1983; Machina, 1982; Quiggin, 1982). Some scholars have argued that subjective probability plays a more important role in the gaming context than objective probability, since players tend not to follow probability theory to judge uncertain events (Delfabbro, 2004; Schwarz et al., 1991). To estimate the subjective probability, people rely on their representativeness heuristics (Kahneman & Tversky, 1972). A typical representativeness heuristic is one's belief in the law of small numbers (Tversky & Kahneman, 1971), which refers to a misconception of chance that "random samples of a population will resemble each other and the population more closely than statistical sampling theory would predict" (Plous, 1993, p. 112). With this belief, for instance, when people are asked to produce a series of coin tosses, they are more likely to produce sequences with alternative patterns (e.g., HHT, THH) than homogenous patterns (e.g., HHH, TTT) (Tune, 1964). The law of small numbers implies that people tend to believe homogenous patterns rarer than alternative ones (Kahneman & Tversky, 1972). Wagenaar and Keren (1988) found that homogenous pattern of wins was more readily attributed to good luck than to chance, whereas an alternative pattern was more typically attributed to chance than to luck. Their findings provided further support to the nexus between rarity of an outcome and perceived luck.

In addition to representativeness heuristics, people rely on availability heuristics to estimate subjective probability (Tversky & Kahneman, 1974).

Availability heuristic refers to the estimation of the likelihood of an event ~~b~~by the ease with which instances or associations come to mind" (Tversky & Kahneman, 1973, p. 208). This heuristic is salient when the event (a) occurred more frequently in the past; (b) happened more recently, and (c) was more salient emotionally (Tversky & Kahneman, 1974). For instance, a player will evaluate that losing a thousand dollars is not a rare event if (a) it frequently happened in the past; (b) the most recent gaming experience was also a losing case, and (c) the player had lost a much larger amount in the past. In this sense, previous experiences serve as reference points to evaluate outcomes (Boulding, Kalra, Staelin, & Zeithaml, 1993; Cadotte, Woodruff, & Jenkins, 1987; Woodruff, Cadotte, & Jenkins, 1983). Even if a priori experience does not exist, it is still common for people to form reference point with expectation (McGill & Iacobucci, 1992; Oliver & Bearden, 1985; Shirai & Meyer, 1997; Swan, 1977). Formulation of winning expectation can be based on objective probability. Therefore, the level of rarity of an outcome (e.g., probability to win and lose) dictates the expectation which in turn becomes the reference point for evaluation. The higher is the rarity of occurrence of a winning (losing) outcome (i.e., low expectation to win (lose)), the stronger the perceived luck is.

2.4.4 Importance of an Outcome

Rescher (1995) argued that the importance of an event dictates whether it is a matter of luck. Consistent with this argument, Pritchard and Smith (2004) stated that a lucky outcome is one that is significant to the agent (e.g., the casino player) concerned. These arguments echo Teigen's (1998a) findings that low

perceived luck is stronger in dangerous than in careless incidents since dangerous incident could lead to more serious adversities. In this sense, the more significant is the outcome to an individual's personal well-being, the stronger the perceived luck is. Thus, a player exhibits a higher perceived luck when he or she wins a million dollars than when he or she wins a thousand dollars (Latus, 2003). However, a simple comparison of the amounts fails to capture the subjective aspect of importance (Bloch & Richins, 1983). For instance, from a billionaire's point of view, the subjective difference between a million dollars and a thousand dollars may be so insignificant that a million dollars may not exert a significantly stronger impact on perceived luck than a thousand dollars. In this regard, aside from the monetary amount, there may be some other things underpinning the importance level of an outcome.

According to Rescher (1995), importance refers to the benefits and negativities received. In the gaming context, it seems plausible that the magnitude of monetary gain and loss is the determinant of importance (Teigen, 1983, 2005). However, previous research indicates that importance varies with motives (Andrews, 1988; Howard & Sheth, 1969). Importance in the gaming context can be relevant to players' motives such as winning, amusement, excitement, socialization, and alleviation of negative emotions. Of various motives for gaming, monetary gain has consistently been revealed as the most important one (Lee, Lee, Bernhard, & Yoon, 2006; Lee, Chae, Lee, & Kim, 2007; Neighbors, Lostutter, Cronce, & Larimer, 2002; Platz & Millar, 2001; Walker, 1992). Thus, the amount of monetary gain and loss should be the most crucial determinant of perceived importance, which in turn influences the intensity of perceived luck. However, some researchers found that winning

might not be the most important motive for gaming. For example, Loroz (2004) and Lam (2007) revealed that a hedonic reason like pleasure is perceived as the most prominent motive in gaming. In this sense, for people who merely play for monetary reason (i.e., utilitarian motives), their evaluations of importance only relate to the amount of monetary gain and loss. For others who play for hedonic reason (i.e., hedonic motive), their evaluations of importance are driven by the feeling evoked by the outcome. Therefore, a billionaire who does not perceive a significant difference in importance between winning a thousand dollars and winning a million dollars may be driven more by the hedonic value gained from a win. However, comparatively few players are likely to be driven purely by a single motive. A more realistic assumption is that in general players are motivated by both utilitarian and hedonic reasons, with the proportions varying with individuals.

Bloch and Richins (1983) argued that the rationale underlying perceived importance is whether personal goals are satisfied. They categorized importance into two types: instrumental and enduring. Instrumental importance refers to the perceived importance based on people's desires to attain the extrinsic goals that may obtain from the outcome. In contrast, enduring importance rests on the extent that the outcome is relative to the intrinsic goals. These two types of importance echo with the utilitarian and hedonic motives respectively. As discussed earlier, utilitarian players are concerned about the amount of monetary gain and loss, which in turn determines whether they can attain their extrinsic goals, as instrumental importance posits. For example, some players aim to win a certain amount of money to resolve their financial difficulties (Brenner & Brenner, 1990), whilst other players harness monetary gain to

satisfy their materialistic needs (Lee et al., 2007). On the other hand, hedonic players are concerned about the feelings derived from the outcome, which echoes their intrinsic goals, as enduring importance posits. For instance, some players need to win to feel joyful and to protect their self-esteem (Cotte, 1997). As the earlier discussion indicated that both utilitarian and hedonic motives function together, co-occurrence of instrumental importance and enduring importance is plausible (Bloch & Richins, 1983). For instance, a player winning a huge amount not only satisfies his or her materialistic needs (extrinsic goal), but the win also allows him or her to show off in front of other people (intrinsic goal). So, the goal can be considered the reference point (Heath, Larrick, & Wu, 1999). If the derivatives of an outcome can meet the goal (in other words, the derivative matters to the person), the outcome will be of importance from a person's perspective and thus a stronger perceived luck should result.

2.4.5 Exclusivity of an Outcome

In the literature of philosophy, perceived luck has been advocated as a consequence of social comparison. Barrett (2006) and Latus (2003) argued that good luck to one individual is the bad luck to others. Consistent with this argument, researchers noted that an individual is lucky when an unpredictable outcome favors him or her but not others (Darke & Freedman, 1997a; Smith, Wiseman, Machin, Harris, & Joiner, 1997). Moreover, Teigen (1997) concluded his study with the notion that ~~"~~the term luck typically prompted the idea of self-other comparisons" (p. 322). All these arguments imply that perceived luck is related to the exclusivity of an outcome.

In this study, exclusivity of an outcome is described as whether the outcome occurs for very few people. Exclusivity of an outcome requires a precondition, specifically information availability of other people's outcomes in similar scenarios for social comparison. Festinger (1954) was the first researcher who conceptualized social comparison. Over the years, his framework has remained the most influential in the corresponding domains. Social comparison theory posits that people have a strong drive toward social comparison (Kruglanski & Mayseless, 1990). This postulation is especially legitimate within the domain of social justice where social comparison serves as a means for people to evaluate the fairness of the outcomes, which in turn affects their satisfaction (Messick & Sentis, 1983). In social comparison theory, Festinger posited that people are inclined to appraise their current status with information pertaining to themselves, for instance, their previous experiences with the event. If this information is not available, they will use other people's information (e.g., other people's outcomes) as a reference point for comparison. In this regard, social comparison acts as an auxiliary function in the evaluation process.

The theory of social comparison also maintains that people prefer comparing with others who have similar abilities or opinions in order to make a more stable and accurate evaluation (Festinger, 1954; Radloff, 1966; Wilson, 1973). Goethals and Darley (1977) further argued that people tend to compare with others who have similar attributes such as age and experience (Taylor & Lobel, 1989). These arguments suggest that people form their own pool of comparison targets based on their discretion. Although social comparison theory was originally developed to account for people's ability (i.e., skill), it also has

implications for the study of luck. For instance, to assess his or her luck, a player would compare his or her outcome with several others who fall into his or her own discretion rather than everybody in the casino. Given the availability heuristic (Tversky & Kahneman, 1973), counterparts playing at the same table or playing the same game may be more salient in the player's mind.

In general, other people's outcomes (e.g., wins and losses) serve as the reference point so that an exclusive outcome may evoke stronger perceived luck than a non-exclusive outcome.

2.4.6 Proximity of an Outcome

Before stepping into the perceived proximity of an outcome, its underlying cognitive mechanism, "*counterfactual thinking*" has to be explained. Counterfactual thinking is a pervasive social-cognitive function in human beings (Kray, George, Liljenquist, Galinsky, & Tetlock, 2010; Roese, 1997; Sanna, Stocker, & Clarke, 2003; Sanna & Turley, 1996; Summerville & Roese, 2008). The notion refers to the evaluation of a factual outcome with regard to an imagined outcome (Epstude & Roese, 2008; Roese, 2000; Roese & Olson, 2006). In this regard, the imagined outcome is the reference point with which the factual outcome is compared.

Previous studies have examined counterfactual thinking in terms of structure and direction (Markman, Gavanski, Sherman, & McMullen, 1993; Roese, 1994; Roese & Olson, 1993, 2006). Counterfactual structure has two dimensions: addition and subtraction. An additive structure refers to the addition

of antecedents to reconstruct reality (e.g., if I had) while subtractive structure refers to the removal of antecedents to reconstruct reality (e.g., if I had not). Counterfactual thinking direction also has two dimensions: upward and downward. Upward counterfactuals are comparison to better possible worlds. Conversely, downward counterfactuals are comparison to worse possible worlds. Thus, downward counterfactuals would result in positive evaluations, whereas upward counterfactuals would lead to negative evaluations (Roese, 1994; Sanna & Turley-Ames, 2000; Teigen et al., 1999).

With two dimensional structures and two dimensional directions, counterfactual thinking can form four different combinations: upward addition, downward addition, upward subtraction, and downward subtraction. Table 2.1 illustrates these four situations. Roese and Olson (1993) found that addition was more likely to follow failure (loss), whereas subtraction was more likely to follow success (win). On the other hand, people tend to trigger upward counterfactual thinking after failure and downward counterfactual thinking after success (Markman et al., 1993). As a result, upward addition should be more likely to follow failure and downward subtraction should be more likely to follow success. This may be the underlying reason why upward addition and downward subtraction have attracted more attention from researchers in the domain of counterfactual thinking (Roese, 1994).

Table 2.1

The Four Combinations of the Structural and Directional Dimensions in Counterfactual Thinking

Dimensions	Illustrated counterfactual thinking	Actual situation	Current outcome evaluation
Addition	If I had wagered in the previous game,	I did not wager	
Upward	I would have won a large amount.		Negative
Downward	I would have lost.		Positive
Subtraction	If I had not wagered in the previous game,	I did wager	
Upward	I would not have lost.		Negative
Downward	I would not have won such a large amount.		Positive

Note. Addition and subtraction are structural dimensions; upward and downward are directional dimensions.

While counterfactual thinking affects people's evaluation of outcome, Teigen (1995) argued that counterfactual thinking also plays an important role when people assess their luck. To support his argument, Teigen conducted a series of studies (Teigen, 1995, 1996, 1997, 1998a, 1998b, 2005; Teigen et al., 1999; Teigen & Jensen, 2011). Given that perceived luck arises from counterfactual thinking, Teigen and Jensen (2011) revealed that the intensity of perceived luck depends on whether the outcome is close to the counterfactual outcome, which this study describes as proximity of an outcome. A high proximity of an outcome would lead to stronger perceived luck.

Coherent with this postulation, Wohl and Enzle (2003) revealed that near loss in a gaming context (i.e., almost lost during a play but did not lose at

the end) strengthens perceived luck because such a situation facilitates players in generating counterfactual thinking. Therefore, the perceived proximity of an outcome is related to how easy the counterfactual thinking can be evoked at the post-event stage (Boles & Messick, 1995). This argument indicates that perceived proximity of an outcome may not occur in every evaluation of an outcome, as the evocation of counterfactual thinking is not indispensable. In this regard, previous research has identified a variety of conditions in which counterfactual thinking can easily be evoked (i.e., high proximity of an outcome), which in turn strengthen perceived luck.

Teigen (1996) has identified five conditions. The first condition is physical distance. For example, a player of Wheel of Fortune would be more likely to trigger counterfactual thinking (i.e., a high proximity of an outcome) if the wheel lands on a wedge close to a Bankrupt or Jackpot wedge. Therefore, he or she has a higher perceived luck when the wheel lands on a wedge next to a Bankrupt wedge than when the wheel lands on a wedge farther from the Bankrupt wedge. The second condition is temporal order. For instance, there are two players (player A and player B) who play a game twice. Player A makes a big win amounting to US$1000 at the first try and a loss of US$100 at the second try, which results in a net gain of US$900. In contrast, player B makes a loss of US$100 at the first try but a big win of US$1000 at the second try, which also results in a net gain of US$900. According to Teigen (1996), player B will have a higher perceived luck than player A. The reason is that the outcomes at a later stage are more likely to evoke counterfactual outcomes (i.e., a higher proximity of an outcome) than at an early stage (Kahneman & Tversky, 1982; Miller & Gunasegaram, 1990). Therefore, even if the net gain is the same, the

intensity of the perceived luck can be different if the temporal order is different. The third condition is choice. For instance, assuming that a player had to choose between making one more bet and leaving the casino, he or she decided to make one more bet and got a big win. He or she would have a higher perceived luck than if he or she got the same outcome without thinking about leaving the casino first. The reason is that availability of choice heightens the likelihood of triggering counterfactual outcomes (i.e., heightens the proximity of an outcome). The fourth condition is undeservedness. For instance, a player, who has no intention of playing, but follows a friend, happens to play a slot machine, and wins the jackpot should have higher perceived luck in this situation than when he or she intended to play because an unintended play facilitates evocation of counterfactual thinking (i.e., high proximity of an outcome). The final condition is reality. An underage player who gets a big win but cannot claim the amount lawfully should have a lower perceived luck than the same player who loses his or her money during the play. The reason is that the loss in the former situation is something that was earned in the past (i.e., realized) and, thus heightens the likelihood of triggering counterfactual thinking (i.e., heightens the proximity of an outcome), whereas the loss in the latter situation is not.

Roese (1997) added two other conditions that determine the proximity of an outcome: temporal and numerical distance. Regarding the temporal distance, for instance, a slot machine player who notices that a jackpot is won by other players from the machine that he or she just left would be more likely to trigger counterfactual thinking (i.e., a higher proximity of an outcome) than when the jackpot is won from the same machine a week later. Therefore, the former case would evoke a lower perceived luck than the latter. For numerical distance,

assuming there is an entrance prize dedicated to the 1000th patron, the 1001st patron would be more likely to evoke counterfactual thinking (i.e., a higher proximity of an outcome) than the 1099th patron and, thus the 1001st patron would have a lower perceived luck than the 1099th.

In sum, the counterfactual outcome serves as a reference point so that the closer the factual outcome is to the counterfactual outcome (or the more likely that counterfactual thinking is evoked), the stronger the perceived luck is.

2.5 Conceptual Framework and Research Hypotheses

Based on the literature review, the following conceptual framework (see Figure 2.2) was constructed to guide this study. Following the adaptation-level theory (Helson, 1948, 1964a), perceived luck can be formulated in relation to multiple reference points, which underpin the effects of determinants on perceived luck and its intensity. Valence of an outcome influences perceived luck and its intensity. Rarity, importance, exclusivity, and proximity of an outcome affect the intensity of perceived luck. Accordingly, six initial hypotheses were established for this study (see below). As prior studies revealed a positive belief in luck effect on perceived luck (Darke & Freedman, 1997b), the effect of belief in luck had to be controlled when examining the hypotheses.

Hypothesis 1: A winning outcome evokes higher perceived luck than a losing outcome.

Hypothesis 2: A losing outcome has a stronger effect on perceived luck than a winning outcome.

Hypothesis 3: An outcome of high rarity has a stronger effect on perceived luck than an outcome of low rarity.

Hypothesis 4: An outcome of high importance has a stronger effect on perceived luck than an outcome of low importance.

Hypothesis 5: An exclusive outcome has a stronger effect on perceived luck than a non-exclusive outcome.

Hypothesis 6: An outcome with high proximity has a stronger effect on perceived luck than an outcome with low proximity.

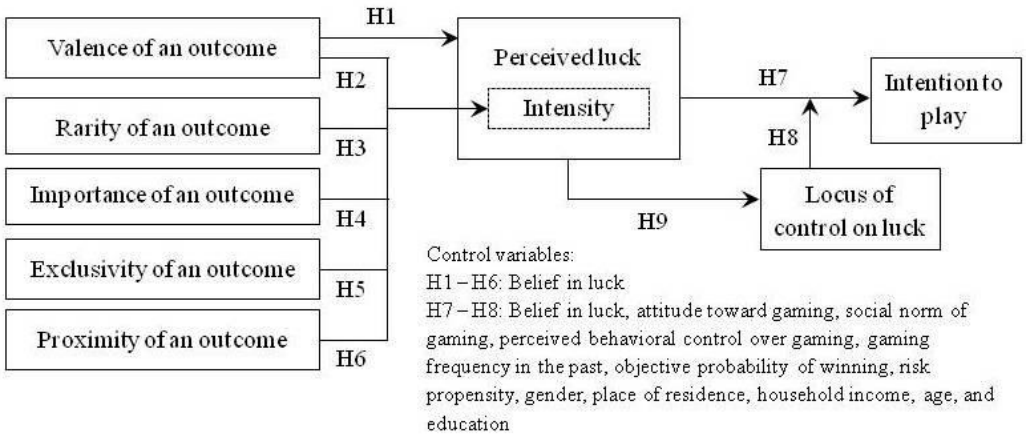


Figure 2.2. Conceptual framework

According to the literature review, empirical findings tended to endorse a positive relationship between perceived luck and intention to play, albeit a

negative relationship is not impossible given the negative recency effect. This study revisited the relationship by testing the following hypothesis.

Hypothesis 7: There is a significant positive relationship between perceived luck and intention to play.

Grounded in the dimensions of internal locus of control and control through powerful others (a form of external locus of control) (Levenson, 1973; Rotter, 1966), this study proposed the notion that locus of control on luck contains two opposing dimensions (internal and external respectively). As discussed in section 2.3.4, literature indicates that internal locus of control, in relative to control through powerful others, induces stronger emotional and cognitive responses and involves less uncertainty of an outcome. The finding sheds light on the moderating role of locus of control on luck between the relationship of perceived luck and intention to play. Specifically, the relationship is stronger when people attribute their perceived luck to themselves (internal locus of control on luck) than when they attribute their perceived luck to external factors (external locus of control on luck). Therefore, the following hypothesis was formulated:

Hypothesis 8: The positive relationship between perceived luck and intention to play is stronger when locus of control on luck is internal than when locus of control on luck is external.

As perceived luck predicts intention to play, it is also important to control the effects of other predictors in the analysis in order to provide a more

concrete conclusion on the relationship between perceived luck and intention to play.

To predict intention to play, two prominent theories, namely the theory of reasoned action and the theory of planned behavior have widely been adopted. The theory of reasoned action postulates that human behavioral intention is jointly predicted by their attitude toward the behavior and social norm and that people who show positive intention are likely to pursue the relevant behavior (Fishbein & Ajzen, 1975). However, the theory fails to capture the situation where people may not have volitional control over their behavior. Therefore, Ajzen (1985) extended the theory of reasoned action by adding perceived behavioral control as a predictor of behavioral intention. The resulting theory is called the theory of planned behavior.

While there were scholars using the theory of reasoned action to predict gaming intention (Moore & Ohtsuka, 1997, 1999), others used the theory of planned behavior (Martin et al., 2010; Oh & Hsu, 2001; Walker, Courneya, & Deng, 2006). Their findings showed that attitude toward gaming and social norm were positively associated with intention to play (Martin et al., 2010; Moore & Ohtsuka, 1997, 1999; Oh & Hsu, 2001; Walker et al., 2006). Perceived behavioral control has been found to be negatively associated with intention to play (Martin et al., 2010; Walker et al., 2006). Oh and Hsu (2001) decomposed perceived behavioral control into four factors and examined their relationships with intention to play. Among these four factors, budgetary affordability was the only non-significant predictor. Perceived gambling skills and time availability were positively associated with intention to play, whereas

self-controllability was negatively associated with intention to play. Moreover, some of these studies incorporated frequency of gaming in the past as an additional predictor and found a significant positive predicting effect on intention to play (Martin et al., 2010; Oh & Hsu, 2001). Similarly, Delfabbro and Thrupp (2003) found that frequent players tended to show higher intention to play.

On the other hand, people were found to be more likely to participate in risky activity when the objective probability of getting a positive outcome and their risk-taking propensity were high (Stewart & Roth, 2001). Belief in luck (i.e., the view that luck is a somewhat stable characteristic) was also found to exert positive impact on willingness to take risk (Wohl & Enzle, 2003). Hence objective probability to win, risk-taking propensity, and belief in luck can also be predictors of intention to play.

Demographic characteristics have also been found to influence intention to play. Most previous research has revealed that males exhibited higher intention to play than females (Delfabbro & Thrupp, 2003; Martin et al., 2010; Moore & Ohtsuka, 1997), except Walker et al. (2006), who did not find any significant difference between genders. On the other hand, prior studies showed that participation in gaming declined with age (Abbott, Volberg, & Rönnberg, 2004; Li & Smith, 1976; Mok & Hraba, 1991), whereas opposite findings were revealed in another study (Shinnar, Young, & Corsun, 2004). Regarding education, its negative relationship with participation in gaming was testified in a previous study (Xiang & John, 2009). In echo with findings that distance from the gaming venues was negatively associated with participation in gaming

activities (Welte, Wieczorek, Barnes, Tidwell, & Hoffman, 2004), Shoemaker and Zemke (2005) noted that the gaming revenue of many casinos in the United States was mainly contributed by the local residents. Hence, place of residence may also predict intention to play. Finally, household income has been found to be positively related to likelihood of gaming (MacDonald, McMullan, & Perrier, 2004), implying that household income may predict intention to play.

In summary, the effects of the factors including attitude toward gaming, social norm of gaming, perceived behavioral control over gaming, gaming frequency in the past, objective probability of winning, risk-taking propensity, belief in luck, gender, age, education, place of residence, and household income have to be controlled when examining the significance of the relationship between perceived luck and intention to play.

With respect to the literature review, as self-serving bias (Bradley, 1978; Miller & Ross, 1975) – the tendency for people to attribute success to themselves and failure to others – was widely found in the general population, this study assumes that self-serving bias also underlined the attribution process of perceived luck and the following hypothesis was formulated:

Hypothesis 9: Higher (lower) perceived luck leads to a higher tendency toward internal (external) locus of control on luck.

2.6 Summary

This chapter provides a critical review of the literature that is related to luck and the psychological theories that support the conceptual framework in

this study. Luck, which should not be used interchangeably with fortune, is argued as an unpredictable outcome that happens to a person. Accordingly, perceived luck can be interpreted as the evaluation of an unpredictable outcome that happens to a person. Luck is generally perceived as an indicator of future outcomes, which in turn supports a positive relationship between perceived luck and intention to play. The relationship may be stronger if a person attributes his or her luck to him or herself (internal locus of control on luck) rather than to external factors (external locus of control on luck). Also, driven by a self-serving bias, an individual with higher perceived luck may be more likely to endorse internal locus of control on luck than external. Grounded in the adaptation-level theory and the literature pertaining to luck, five determinants of perceived luck and its intensity were proposed wherein the valence of an outcome (i.e., win and loss) affects perceived luck (i.e., high and low) and its intensity (i.e., stronger upon losing). Intensity of perceived luck may also be strengthened by higher rarity, importance, exclusivity, and proximity of an outcome. To examine the effects of determinants on perceived luck, the effect of belief in luck has to be controlled. Upon the assessment of the relationship between perceived luck and intention to play, the effects of variables including attitude toward gaming, social norm of gaming, perceived behavioral control over gaming, gaming frequency in the past, objective probability of winning, risk-taking propensity, belief in luck, gender, age, education, place of residence, and household income also need to be controlled.

CHAPTER 3 : METHODOLOGY

This chapter articulates the research design, sampling method, procedures, instruments, and pilot study results of this study. There are five major sections. The first section elucidates the experimental design and recruitment of participants for this study. The second section details the survey flow and explains how the manipulations were conducted. The third section explicates how the measures used in the pilot study were constructed. In the fourth section, the pilot study results including reliability and validity of the measures as well as the validity of the manipulations are presented, in order to derive the instrument for the main study. Finally, a summary of this chapter follows.

3.1 Research Design and Participants

This research followed the positivistic approach wherein an experimental design was used to examine the research questions. An experiment refers to the –study in which an intervention is deliberately introduced to observe its effects" (Shadish, Cook, & Campbell, 2002, p. 12). Experimental design was commonly practiced in marketing and behavioral studies (Louviere, Hensher, & Swat, 2000). It allows investigators to manipulate the cause (i.e., independent variable) and observe the outcome (i.e., dependent variable) in order to examine the causal relationship between the two variables (Shadish et al., 2002). An experimental design is superior to non-experimental designs (e.g.,

surveys) in reducing the effects of the confounding variables on the hypothesized relationships (Calder, Phillips, & Tybout, 1981).

In experimental research, a factorial design should be used if more than one independent variable is involved (Myers & Hansen, 2012). In this study, a 2^5 factorial design was used because the five proposed determinants of perceived luck (i.e., valence, perceived rarity, perceived importance, perceived exclusivity, and perceived proximity of an outcome) were the manipulated variables and each of them contained two levels (i.e., treatment conditions). Therefore, there were 32 conditions in total.

A between-subjects design was deployed so that every participant was assigned to only one condition. As a practical guide, an equivalent number of participants for each condition was recommended (Field, 2009; Goodwin, 1995; Hair, Black, Babin, & Anderson, 2010). Unequal sample sizes perplex the estimation of effect, make the analysis more sensitive to heterogeneity of variance, and threaten statistical power (Shadish et al., 2002). Thus, this study equalized the sample size of each condition. Following Myers and Hansen's (2012) recommendation on the minimum number of participants in each condition, 20 samples were assigned to each condition. Given that there were 32 conditions in this experiment, 640 participants were required (see Table 3.1).

Table 3.1

Treatment Conditions and Sample Size

		High rarity				Low rarity				Total
		High importance		Low importance		High importance		Low importance		
		High excl.	Low excl.	High excl.	Low excl.	High excl.	Low excl.	High excl.	Low excl.	
Win	High prox.	20 *C1*	20 *C2*	20 *C3*	20 *C4*	20 *C5*	20 *C6*	20 *C7*	20 *C8*	160
	Low prox.	20 *C9*	20 *C10*	20 *C11*	20 *C12*	20 *C13*	20 *C14*	20 *C15*	20 *C16*	160
Loss	High prox.	20 *C17*	20 *C18*	20 *C19*	20 *C20*	20 *C21*	20 *C22*	20 *C23*	20 *C24*	160
	Low prox.	20 *C25*	20 *C26*	20 *C27*	20 *C28*	20 *C29*	20 *C30*	20 *C31*	20 *C32*	160
Total		80	80	80	80	80	80	80	80	640

Note. The values in the cells are sample size*; C1* = condition 1, *C2* = condition 2 …*C32* = condition 32

As the research context of this study is gaming, the external validity of the findings would be threatened if a majority of the participants did not have gaming experience. Following this rationale, a location where gaming products are available should provide a higher chance to access participants with gaming experience. Macao, which is the biggest casino gaming destination (in terms of revenue) in the world, was chosen for this study (both the pilot study and the main study).

Convenience sampling was applied to recruit the participants. They were informed that the study purpose was to examine casino player's perception of casino gaming and they were required to complete a questionnaire after playing

a Wheel of Fortune game on a computer. The interviewers also told the participants that the outcome was randomized by the computer and that a prize would be given to the winner. Among plenty of casino games, Wheel of Fortune was selected for two major reasons. First, the game is generally considered a game of chance, which is paramount in a study about perceived luck. Second, the game has been used in previous experimental studies to examine perceived luck (Teigen, 1996; Wohl & Enzle, 2002).

To qualify for this study, participants were required to fulfill three criteria, which were used to set the three screening questions (see Appendix B1 for the pilot study and Appendix E1 for the main study). First, the respondents were asked whether they had participated in the study before. Only those who had never participated were qualified for the study. Second, as the participants were asked about their intention to play the Wheel of Fortune with their own money, for ethical reasons, a threshold was set on the participants' age. Only individuals aged 18 (i.e., the legal casino gaming age in Macao at the time of data collection) or above were allowed to proceed to the next question. Third, as participants' gaming experience prior to the study (e.g., experiencing a big loss or a big win in the casino) might bias their responses to perceived luck and intention to play, only individuals who had not had gaming experience in the past 24 hours could proceed to the game. Unqualified respondents were thanked for their time and interest.

The online survey instrument Qualtrics was used to create the Wheel of Fortune and questionnaire. The interviewers approached the participants with personal computers connected to the Internet so as to connect to Qualtrics. With

the built-in function of Qualtrics, participants were randomly assigned to the treatment conditions. Random assignment offers the advantage of minimizing the effect from confounding variables (Goodwin, 1995; Shadish et al., 2002; Wilkinson & The Task Force on Statistical Inference, 1999). This approach is particularly important in between-subjects design as in the current study, because the threats to validity caused by the individual differences of participants can be reduced (Myers & Hansen, 2012).

3.2 Procedures

Before they played the Wheel of Fortune, qualified participants were shown the prize. A $30 McDonald's cash coupon was shown to the participants in the high importance condition, whereas a $10 McDonald's cash coupon was shown in the low importance condition. Then the participants were asked their perceived importance of the outcome for manipulation check purposes (see Appendix B2 for the pilot study and Appendix E2 for the main study).

After that, a Wheel of Fortune characterized by eight wedges was displayed. Four of them were equally smaller than the other four. The wedges of the same size were labeled with "Winning" or "Losing". If the wheel stopped at a "Winning" wedge, the participant would get the prize. Otherwise, he or she would receive nothing. The size of the wedges was used to manipulate the rarity of an outcome. Smaller winning wedges were shown in the high rarity of winning and low rarity of losing conditions (see Figure 3.1), whereas bigger

winning wedges were exhibited in the low rarity of winning and high rarity of losing conditions (see Figure 3.2).

Figure 3.1. High rarity of winning / low rarity of losing

Figure 3.2. Low rarity of winning / high rarity of losing

To spin the wheel, participants clicked the button at the center. Then, the wheel rotated clockwise and gradually slowed down until it stopped. This was the moment where the valence of an outcome (winning/losing) and the proximity of an outcome were manipulated. As discussed above (see section 2.4.6), counterfactual thinking is more likely to be evoked in the upward addition (e.g., if I had…I would have had a positive outcome) and downward subtraction (e.g., if I had not…I would not have had a positive outcome) conditions. Therefore, in this experiment, coherent with the upward addition condition, the high proximity to win condition was manipulated by stopping the wheel just before the wedge of winning (i.e., if the wheel had moved further, I would have won). Likewise, coherent with the downward subtraction condition, high proximity to loss was manipulated by stopping the wheel just after the wedge of losing (i.e., if the wheel had not moved further, I would not have won).

For the low proximity conditions, the wheel stopped at midpoint of the wedge. This is illustrated by Figure 3.3 and Figure 3.4 for a high proximity condition and a low proximity condition respectively.

Figure 3.3. High proximity of a losing outcome

Figure 3.4. Low proximity of a losing outcome

Once the wheel stopped, a winning (―You Win") or losing (―You Lose") message zoomed out from the center of the Wheel of Fortune (see Figure 3.5 and Figure 3.6).

Figure 3.5. Message displayed in the winning condition

Figure 3.6. Message displayed in the losing condition

Following that, a picture of the prize that the participants won (or missed out on) along with the message "The Prize You Won" ("The Prize You Missed Out On") popped up over the wheel. In the meantime, a column containing the participants' outcomes (i.e., win/loss) followed by the last three players' outcomes were displayed (for example, see Figure 3.7 and Figure 3.8). The column containing players' records was used to manipulate the exclusivity of an outcome. In the high exclusivity condition, the participant would find that he or she was the only one who got the outcome (i.e., win or loss) relative to the three previous players (for example, see Figure 3.7). In contrast, the participant would be aware that two out of the previous three players also got the same outcome as him or her (for example, see Figure 3.8). To view the manipulations of all the treatment conditions in this experiment, please refer to Appendix H.

Figure 3.7. Treatment condition with high rarity, high importance, high exclusivity, and high proximity of a winning outcome

Figure 3.8. Treatment condition with high rarity, high importance, low exclusivity, and high proximity of a winning outcome

As per the interviewers' promises at the inception of the experiment, the winner was given the cash coupon, whereas the loser received nothing and the interviewers withdrew the coupon. Then the participants proceeded to fill in the questionnaire (see Appendices B3 to B14 for the pilot study and Appendices E3

to E14 for the main study). Finally, all participants, whether or not they had just won $10 McDonald's cash coupon or were losers, received the same amount (i.e., a $30 McDonald's cash coupon) as an incentive for participating in the study. This was to comply with the ethical principle of justice (Myers & Hansen, 2012).

3.3 Measures

In this study, the measures were either seven-point bipolar scales or seven-point Likert-type scales anchored with strongly disagree (1) and strongly agree (7). Measures of perceived rarity of an outcome and three measurement items of risk-taking propensity were reversely presented (see those marked (R) in Appendices B7 and B10 in the pilot study and Appendix E7 in the main study).

3.3.1 Measuring Perceived Luck, Locus of Control on Luck, and Intention to Play

Perceived luck was measured by four Likert-scale items adapted from Andre (2009). A sample item is "Based on the current outcome, I am lucky". The measure of locus of control on luck contained four semantic differential items. One of them was derived from the construct definition (Based on the current outcome, the luck that I feel is attached to me (1)/attached to other things (e.g., objects, numbers, rituals, etc.) (7)), whereas the remaining three

were adapted from the scale measuring the attribution of outcome to external versus internal factors in Russell (1982). Regarding intention to play, the participants were asked the extent to which they would play the Wheel of Fortune again with their own money whilst the payoff was 2 to 1. Three bipolar items extracted from Ryan (1982) were used in the measure including Improbable (1)/Probable (7), Impossible (1)/Possible (7), and Unlikely (1)/Likely (7). More information on the measurement items is detailed in Appendices B3, B4, and B5.

3.3.2 Measure for Manipulation Check

The five determinants of perceived luck, namely valence, importance, rarity, exclusivity, and proximity of an outcome were manipulated in this study. As valence of an outcome was manipulated by win and loss which were obviously known to the participants, a manipulation check was not conducted for this construct. The manipulations of other four determinants were each assessed by one bipolar item. Regarding the importance of an outcome, participants had to indicate if winning or failure to win the prize mattered to them (definitely not (1)/definitely yes (7)). For rarity of an outcome, participants were asked to refer to the area of the winning and losing wedges in the Wheel of Fortune and indicate whether they had a higher probability of getting their current outcome than the alternative outcome (definitely not (1)/definitely yes (7)). To measure exclusivity of an outcome, participants were asked if their current outcomes were exclusive to them ranging from definitely not (1) to definitely yes (7). Lastly, for proximity of an outcome, participants were asked

if they were very close to the alternative outcome ranging from definitely not (1) to definitely yes (7). The measurement items are exhibited in Appendices B2, B6, B7, and B8.

3.3.3 Measuring the Control Variables

In this study, the effects of certain psychographic and socio-demographic variables were controlled in the analyses. Those variables were belief in luck, risk-taking propensity, attitude toward casino gaming, social norm of casino gaming, perceived behavioral control over casino gaming, objective probability of winning, casino gaming frequency in the past, education level, country of residence, age, and gender.

Belief in luck was gauged by six Likert-scale items adapted from Maltby et al. (2008). Sample items were "There is such a thing as bad luck that affects some people more than others" and "Some people are consistently lucky, and others are unlucky". Risk-taking propensity was measured by Meertens and Lion's (2008) risk propensity scale, containing six Likert-scale items (e.g., I take risks regularly) and one bipolar item (I view myself as a risk avoider (1)/risk seeker (7)). The measures of attitude toward casino gaming (five items), social norm of casino gaming (two items), and perceived behavioral control over casino gaming (three items) were adapted from Oh and Hsu (2001). All of them were bipolar scales. Sample items of attitude toward casino gaming and social norm of casino gaming were participants' reactions to participation in casino gaming activities (Extremely unfavorable (1)/Extremely favorable (7))

and whether people who are important to them approve them to participate in casino gaming activities (No, definitely not (1)/Yes, for sure (7)) respectively. Regarding perceived behavioral control over casino gaming, since the three measurement items (the extent to which they can control themselves to or not to participate in casino gaming activities, with responses ranging from Extremely difficult (1) to Extremely easy (7); the extent to which they can spend time to participate in casino gaming activities, with response ranging from Extremely difficult (1) to Extremely easy (7); casino gaming skills with responses ranging from Poor (1) to Excellent (7)) were conceptually independent of each other; they were separately treated during the analysis (Oh & Hsu, 2001). To have an overview of the measurement items, please refer to Appendices B9 to B13.

Objective probability of winning (a dichotomous variable) was determined by the distribution of winning and losing in the Wheel of Fortune (~~1~~" was assigned if the total area of winning is greater than losing, otherwise ~~0~~" was assigned). Following Oh and Hsu's (2001) approach, casino gaming frequency in the past was gauged by the question ~~H~~ow often do you participate in casino gaming activities?" with response categories ranging from never to more than 10 times a month (please refer to Appendix B14).

Participants' demographic information including their education level, country of residence, monthly household income, age, and gender were collected in the final section of the questionnaire. For education level, participants were asked the highest level of education they had completed, with response categories ranging from primary or below to Master's degree or above. An open-ended question (i.e., other, please specify) was also provided to

accommodate any response which did not fit in the categories. The categories of country of residence consisted of Macao and its top three tourism source markets in 2011. These source markets occupied 89.1% of the tourist arrivals in Macao (Macao Statistics and Census Service, 2012a). To account for other countries of residence which were not listed in the questionnaire, an open-ended question (i.e., other, please specify) was provided. The categories of monthly household income were presented in Hong Kong dollars (ranging from less than HKD 2,000 to HKD 100,000 or above), because it was the most important currency in the money supply of the Macao economy (Monetary Authority of Macao, 2012) and the only currency that was accepted for casino gaming in the jurisdiction. The age categories were based on Mok and Hraba (1991) who found that gaming behavior varied with age (ranging from 18-24 to 75 or above). Detailed information about the measurement items can be found in Appendix B14.

3.3.4 Language of the Instrument

As Macao is a Chinese community and most of the tourists are Chinese, it was of utmost importance to develop a Chinese version of the instrument. Since the Chinese language used in Hong Kong, Macao, and Taiwan was occasionally different (both characters and wordings) from that used in Mainland China, two Chinese versions were created. One was the Traditional Chinese version targeting participants originating from Hong Kong, Macao, and Taiwan. The other was the Simplified Chinese version aimed at Mainland Chinese participants. To ensure that the original meanings of the measurement

items were not distorted during the translation process (Brislin, 1980), the back translation approach was used. The English questionnaire was firstly translated to the Traditional Chinese version by a translator and then translated back to English by another translator. A third translator modified the Traditional Chinese version to create the Simplified Chinese version.

To ensure the adequacy and user-friendliness of the instrument before going to the field for the pilot test, 25 persons, consisting of scholars, research students, professionals, civil servants, housemaids, and retirees, were invited to try the experiment and provide comments on their version of the questionnaire in July 2012. Two of the respondents had difficulty in understanding the phrases denoting external locus of control on luck (for example, attached to other things). Hence, examples (e.g., objects, numbers, rituals, etc.) were provided with the measurement items in order to provide a more precise meaning. Also, the Chinese language was revised to make it more colloquial, considering that some participants might have difficulty understanding formal Chinese language. The revised questionnaires were used in the pilot test (see Appendix B for the English version, Appendix C for the Traditional Chinese version, and Appendix D for the Simplified Chinese version).

3.4 Pilot Study

A pilot study was conducted in the first two weeks of August 2012 in Macao to assess the reliability and validity of the measurement scale as well as the validity of the manipulations. The pilot test resembled the main study in all

aspects except that the sample size was smaller. Four participants were assigned to each of the 32 conditions so that the total number of participants recruited for the pilot test was 128.

3.4.1 Participants' Characteristics

Participants' characteristics are shown in Table 3.2. There were more female participants (n = 75, 58.6%) than male participants. The participants were not old given that most of them were aged between 25 and 44 inclusive (n = 87, 68.0%). They tended to be highly educated as 64.1% held a Bachelor's degree or above. Regarding their monthly household income, a majority of participants (n = 107, 83.7%) had an amount between HKD 10,000 and HKD 59,999. Local residents dominated the pool of participants (n = 109, 85.2%). Less than half of the participants (n = 61, 47.7%) had casino gaming experience and they tended to be infrequent players (Less than once a month: n = 60, 46.9%; Once a month: n = 1, .8%).

Table 3.2

Respondents' Characteristics in the Pilot Test

	Frequency	Percentage
Gender		
Male	53	41.4%
Female	75	58.6%

(continued)

	Frequency	Percentage
Age		
18-24	12	9.4%
25-34	54	42.2%
35-44	33	25.8%
45-54	8	6.3%
55-64	14	10.9%
65-74	6	4.7%
75 or above	1	.8%
Education		
Primary or below	12	9.4%
High school	34	26.6%
Bachelor's degree	49	38.3%
Master's degree or above	33	25.8%
Monthly Household Income		
Less than HKD 2,000	1	.8%
HKD 2,000-3,999	4	3.1%
HKD 4,000-5,999	6	4.7%
HKD 6,000-7,999	1	.8%
HKD 8,000-9,999	2	1.6%
HKD 10,000-14,999	12	9.4%
HKD 15,000-19,999	13	10.2%
HKD 20,000-24,999	20	15.6%
HKD 25,000-29,999	12	9.4%

(continued)

	Frequency	Percentage
HKD 30,000-39,999	33	25.8%
HKD 40,000-59,999	17	13.3%
HKD 60,000-79,999	5	3.9%
HKD 80,000-99,999	2	1.6%
Country/Region of Residence		
Macao	109	85.2%
Mainland China	17	13.3%
Hong Kong	2	1.6%
Frequency of Participating in Casino Gaming Activities		
Never	67	52.3%
Less than once a month	60	46.9%
Once a month	1	.8%

3.4.2 Manipulation Check

To check the validity of the manipulations, four 2x2x2x2x2 ANOVA tests with valence, rarity, importance, exclusivity, and proximity of an outcome as the independent variables were performed. The dependent variables in these four tests were perceived rarity, perceived importance, perceived exclusivity, and perceived proximity respectively. Before doing the tests, univariate outliers were checked in each treatment condition of rarity, importance, exclusivity, and proximity. As the sample size in each treatment condition was below 80 (i.e.,

64), a *z*-value of ±2.5 was used as the threshold to identify outliers. Outliers were found in high importance condition (two cases both with a *z*-value of 2.566), low importance condition (two cases with *z*-values of 2.856 and 3.581 respectively), non-exclusive condition (two cases both with a *z*-value of 2.748), and high proximity condition (two cases both with a *z*-value of -2.711). Since all these outliers were found in only one treatment condition, the outlier cases were retained in the ANOVA tests. As an *F*-test in ANOVA was robust against violations of normality (Schmider, Ziegler, Danay, Beyer, & Bühner, 2010), data distribution was not a concern in the analysis. Since random assignment was adopted in the experiment, the assumption of independence of observations was also not a concern (Mertler & Vannatta, 2010).

Results showed that the assumption of homogeneity of variance was violated across all four ANOVA tests given that Levene's tests were not passed ($p < .05$). However, since the sample sizes of the treatment conditions were equal, violating this assumption would not deter the analysis (Field, 2009). In the ANOVA test where the dependent variable was perceived rarity, the main effect of rarity of an outcome was significant ($F(1, 96) = 36.85$, $p < .001$). Perceived rarity in the high rarity condition ($M = 4.95$) was greater than in the low rarity condition ($M = 2.78$). Thus, the result suggested that manipulation was valid. In the test where the dependent variable was perceived importance, the main effect of importance of an outcome was significant ($F(1, 96) = 16.61$, $p < .001$). Perceived importance in the high importance condition ($M = 2.95$) was greater than that in the low importance condition ($M = 2.06$). So the manipulation was successful. When the dependent variable was perceived exclusivity, the main effect of exclusivity of an outcome was significant ($F(1,$

96) = 25.07, $p < .001$). Perceived exclusivity in exclusive condition ($M = 4.20$) was greater than that in non-exclusive condition ($M = 2.39$). Hence, this manipulation was successful as well. Finally, the main effect of proximity of an outcome was significant when the dependent variable was perceived proximity ($F(1, 96) = 45.65$, $p < .001$). Perceived proximity in the high proximity condition ($M = 5.72$) was greater than that in the low proximity condition ($M = 3.63$). Therefore, this manipulation was also valid. In general, the manipulations were successful and thus replicated in the main study.

3.4.3 Reliability and Validity of the Multi-item Measures

Cronbach's α was used to gauge the reliability of the seven multi-item measures (i.e., perceived luck, locus of control on luck, intention to play, belief in luck, risk-taking propensity, attitude toward casino gaming, and social norm of casino gaming) in this study. Principal component analysis (PCA) with a varimax rotation method was performed to assess the validity of these measures, given that another widely used approach – Confirmatory Factor Analysis (CFA) – needs a larger sample size. Before that, identification of outliers was conducted. According to Hair, Black, Babin, and Anderson (2010), if the sample size is greater than 80, univariate outliers are those with standardized values (i.e., *z*-values) greater than 4 or less than -4. Results showed that only one item of risk-taking propensity (i.e., safety first) contains outliers (three outlier cases with standardized values equal to 4.024). Given that only one variable (i.e., safety first) contains outliers, all outlier cases were retained (Hair et al., 2010).

Checking of multivariate outliers was also conducted. To complete this task, the treatment condition number was regressed on the variables included in PCA in order to generate the Mahalanobis D^2/df value (Mertler & Vannatta, 2010). Results revealed one outlier case (case number 22) given that its Mahalanobis D^2/df value (2.54) was greater than 2.5 (Hair et al., 2010). Therefore, it was excluded from the subsequent reliability test and PCA. As PCA has the advantage of entailing no distributional assumptions (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Mertler & Vannatta, 2010), data distribution was not a concern in the analysis.

As reliability is the pre-requisite of validity, reliability tests were performed before assessing validity with PCA (Hair et al., 2010). Results showed that all Cronbach's α values were greater than the generally recommended threshold (i.e., .7) (Nunnally, 1978), except the *α*-value of risk-taking propensity, which was .592. By removing the item "I do not take risks with my health", the *α*-value improved but was still lower than .7 (i.e., 609). Then the item "I really dislike not knowing what is going to happen" was removed but the *α*-value was still below .7 (i.e., .643). The same procedure was followed until the *α*-value reached a point above .7. By removing "Safety first", the *α*-value became .683. A further removal of the item "I prefer to avoid risks" raised the *α*-value to .782. Hence, three out of seven items were retained for validity assessment in PCA.

PCA generated a seven-factor solution (the point that eigenvalues become 1) which was in line with the expected number of factors. All measurement items loaded to the factors to which they were supposed to load

and no cross-loading item was found. However, the communality of an attitude toward casino gaming item –participation in casino gaming activities with friends" was .474, which was below the recommended value of .5 (Hair et al., 2010). This item was not adequately accounted for by the factor solution and was thus deleted. Removing this item lifted the α-value from .907 to .948.

PCA was performed again and seven factors were generated (the point that eigenvalues become 1). Table 3.3 presents the results of the PCA. The Kaiser-Meyer-Olkin (KMO) value was .769 whilst all individual measures of sampling adequacy (MSA) values were greater than .65, which exceeds the acceptable limit of .5. Hence, the sampling adequacy for the analysis was satisfactory (Field, 2009). Bartlett's Test of Sphericity χ^2 (325) = 3134.97, p < .001, reflected that the correlations between items were large enough for performing PCA (Field, 2009). The solution accounted for 82.35% of the variance. All items loaded to the factors to which they were supposed to load and no cross-loading was found. All communality values were greater than .5 and all factor loadings were greater than .5. The model was of good fit as the percentage of non-redundant residuals with absolute values greater than .05 (i.e., 13%) was well below the suggested threshold of 50% (Field, 2009). In general, the solution of this PCA was adequate.

Table 3.3

Results of Principal Component Analysis (PCA)

Factor and Items	Factor loading	Commu-nality	Eigen-value	Variance (%)	α
F1: Belief in Luck			4.040	15.539%	.892
Some people are consistently lucky, and others are unlucky	.853	.781			
Some people are consistently unlucky, and others are lucky	.869	.792			
There is such a thing as good luck that favors some people, but not others	.797	.687			
There is such a thing as bad luck that affects some people more than others	.774	.639			
Luck plays an important part in everyone's life	.779	.703			
I believe in luck	.730	.645			
F2: Perceived Luck			3.713	14.280%	.962
I am lucky	.883	.824			
I have good luck	.928	.932			
Luck is on my side	.920	.931			
Luck works in my favor	.928	.933			
F3: Attitude toward Casino Gaming			3.686	14.18%	.948
Favorableness of participating in casino gaming activities	.876	.865			
Pleasantness of participating in casino gaming activities	.937	.902			

(continued)

Factor and Items	Factor loading	Commu-nality	Eigen-value	Variance (%)	α
Happiness of participating in casino gaming activities	.928	.897			
Terrible/Enjoyable when participating in casino gaming activities	.877	.838			
F4: Locus of Control on Luck			3.359	12.92%	.927
My luck is attached to me/other things	.883	.828			
My luck is about me/other things	.926	.876			
My luck is inside of me/other things	.931	.890			
My luck is something that reflects an aspect of myself/other things	.850	.754			
F5: Intention to Play			2.691	10.35%	.949
Probability of playing with own money	.899	.912			
Possibility of playing with own money	.900	.926			
Likelihood of playing with own money	.892	.889			
F6: Risk-taking Propensity			2.168	8.34%	.782
I usually view risks as a challenge	.829	.739			
I take risks regularly	.881	.851			
Risk avoider/seeker	.662	.665			

(continued)

Factor and Items	Factor loading	Commu-nality	Eigen-value	Variance (%)	α
F7: Social Norm of Casino Gaming			1.753	6.74%	.827
People who are important to you approve you to participate in casino gaming activities	.881	.861			
People who are important to you approve you to participate in casino gaming activities with friends	.860	.848			
Total variance extracted (%)				82.35%	

Note. Bartlett's Test of Sphericity, $p < .001$; Measures of sampling adequacy (MSA) of the variables > .5 (ranging from .651 to .880); Kaiser-Meyer-Olkin (KMO) = .769

The construct validity was assessed by correlation analyses. All the within-factor correlations were statistically significant, providing evidence of convergent validity (Narver & Slater, 1990) (see Table 3.4). Discriminant validity was demonstrated by the fact that none of the, except one, cross-construct correlation was greater than within-construct correlations (Kirsch, Sambamurthy, Ko, & Purvis, 2002; Narver & Slater, 1990) (see Table 3.4). As a result, the construct validity existed and the items could be used in the main study, which was conducted from late August to late October 2012 in Macao.

Table 3.4

Assessment of Construct Validity by Correlation

Construct	Range of Within-construct Correlation	Number of Between-construct Correlation Greater than Any Within-construct Correlation
Perceived Luck	.790 to .956***	0
Locus of Control on Luck	.685 to .871***	0
Intention to Play	.830 to .893***	0
Belief in Luck	.345 to .927***	0
Risk-taking Propensity	.367 to .665***	1[a]
Attitude Toward Casino Gaming	.775 to .897***	0
Social Norm of Casino Gaming	.713***	0

Note. *** represents $p < .001$; [a] correlation between a risk-taking propensity item "Risk avoider/seeker" and an attitude toward casino gaming item "Favorableness of participating in casino gaming activities" was .371.

While participants were asked to provide comments in the last question, none of them indicated any misunderstanding or ambiguity in the instrument.

3.5 Summary

This chapter focuses on the research design, sampling method, procedures, instruments, and pilot study results of this study. A field experiment that engaged 640 participants to play Wheel of Fortune in a computer was designed. The participants were recruited in Macao by convenience sampling, had not participated in the study before, were aged 18 or above, and had not pursued any gaming activities in the previous 24 hours. With a 2^5 between-subject factorial design, valence (winning/losing), importance (win/failure to

win $10/$30 McDonald's coupon), rarity (large/small winning wedges), proximity (not near to/near to the alternative outcome on the Wheel of Fortune), and exclusivity (the only winner or loser/one of the three winners or losers relative to the previous three players) of an outcome were manipulated. Participants were randomly assigned to one of the 32 treatment conditions. Through the translation back-translation process, three versions of the instrument, namely English, Traditional Chinese, and Simplified Chinese were created. Results of the pilot study with 128 participants showed that four items of the risk-taking propensity measure and one item of the attitude toward casino gaming measure had to be removed before proceeding to the main study. The manipulation check showed that the design of treatment conditions was valid.

CHAPTER 4 : RESULTS

This chapter reports the outcomes of the main study. There are six major sections. First, the respondents' characteristics are articulated. Second, results of manipulation check are exhibited. Third, reliability and validity of the multi-item measures are assessed, followed by the fourth section focusing on the transformation of non-normal data. In the fifth section, results of hypothesis testing are presented with the support of tables and charts. Finally, a summary of this chapter is provided.

4.1 Participants' Characteristics

The characteristics of the 640 participants in the main study are exhibited in Table 4.1. Although there were more male participants (52.8%) than their female counterparts, the distribution was close to even. Almost two-thirds of the participants were aged between 18 and 34 (63.8%), indicating that the sample participants tended to be young. Less than half of the participants held a Bachelor's degree or above (45.8%). Regarding their monthly household income, over half of the participants (58.2%) belonged to the category of HKD 10,000 to HKD 29,999 inclusive. About three quarters of the participants (74.4%) were local residents and more than half of the participants (53.9%) had casino gaming experience, though they tended to be infrequent players (39.8% of them played less than once a month).

Table 4.1

Participants' Characteristics in the Main Study

	Frequency	Percentage
Gender		
Male	338	52.8%
Female	302	47.2%
Age		
18-24	216	33.8%
25-34	192	30.0%
35-44	86	13.4%
45-54	92	14.4%
55-64	48	7.5%
65 or above	6	.9%
Education		
Primary or below	111	17.3%
High school	236	36.9%
Bachelor's degree	264	41.3%
Master's degree or above	29	4.5%
Monthly Household Income		
Less than HKD 2,000	29	4.5%
HKD 2,000-3,999	25	3.9%
HKD 4,000-5,999	27	4.2%
HKD 6,000-7,999	22	3.4%
HKD 8,000-9,999	45	7.0%
HKD 10,000-14,999	89	13.9%

(continued)

	Frequency	Percentage
HKD 15,000-19,999	97	15.2%
HKD 20,000-24,999	108	16.9%
HKD 25,000-29,999	78	12.2%
HKD 30,000-39,999	56	8.8%
HKD 40,000-59,999	40	6.3%
HKD 60,000-79,999	16	2.5%
HKD 80,000-99,999	4	.6%
HKD 100,000 or above	4	.6%
Country/Region of Residence		
Macao	476	74.4%
Mainland China	146	22.8%
Hong Kong	12	1.9%
Taiwan	4	.6%
The Philippines	2	.3%
Frequency of Participating in Casino Gaming Activities		
Never	295	46.1%
Less than once a month	255	39.8%
Once a month	47	7.3%
2-3 times a month	27	4.2%
4-6 times a month	7	1.1%
7-10 times a month	6	.9%
More than 10 times a month	3	.5%

4.2 Manipulation Check

As with the manipulation check procedures explained in Chapter Three (see section 3.4.2), four 2x2x2x2x2 ANOVA tests were performed. Before doing the tests, univariate outliers were checked in each treatment condition of rarity, importance, exclusivity, and proximity. No outlier was found (i.e., all *z*-values were between -4 and 4) and thus all samples were retained for the manipulation check. Data normality was not a concern given the ANOVA test. Random assignment in this experiment helped fulfill the assumption of independence of observations.

Among the four ANOVA tests, the tests for assessing the manipulations of rarity and exclusivity of an outcome revealed violations of the assumption of homogeneity of variance (Levene's tests were not passed, $p < .05$). However, this was not a major problem given that the sample sizes of the treatment conditions were equal. In the ANOVA test where the dependent variable was perceived rarity, the main effect of rarity of an outcome was significant ($F(1, 608) = 181.08$, $p < .001$). Perceived rarity in the high rarity condition ($M = 4.82$) was larger than that in the low rarity condition ($M = 2.73$). The results reflected that the manipulation was successful. In the test where the dependent variable was perceived importance, the main effect of importance of an outcome was also significant ($F(1, 608) = 23.69$, $p < .001$). Perceived importance in the high importance condition ($M = 3.59$) was greater than that in the low importance condition ($M = 2.83$). So the manipulation was valid. When the dependent variable was perceived exclusivity, the main effect of exclusivity of an outcome was significant ($F(1, 608) = 182.12$, $p < .001$). Perceived exclusivity in the

exclusive condition (M = 4.24) was greater than that in the non-exclusive condition (M = 2.18). The results suggested that the manipulation was valid. Finally, the main effect of proximity of an outcome was significant ($F(1, 96) = 45.65$, $p < .001$) when the dependent variable was perceived proximity. Perceived proximity in the high proximity condition (M = 5.72) was larger than that in the low proximity condition (M = 3.63). Therefore, this manipulation could be deemed valid. In general, the manipulations were successful.

4.3 Reliability and Validity of the Multi-item Measures

CFA was performed to assess the reliability and validity of the constructs with multiple measurement items. Before that, the standardized values of the variables were generated in order to check if there were any outliers. No outlier was detected because the standardized values were all within the range of -4 through 4 (Hair et al., 2010). Therefore all cases were retained for CFA.

Maximum likelihood estimation, which is the most common approach, was adopted in CFA, in particular because this estimation approach was suggested to be more efficient and unbiased (Hair et al., 2010). Based on a review of the Mahalanobis d-squared (D^2), the values did not peculiarly deviate from other values (see Appendix I), providing trivial evidence of serious multivariate outliers (Byrne, 2010). Therefore all cases were retained in the reliability and validity check.

While the maximum likelihood estimation is vulnerable to data non-normality, it was necessary to ensure that the data were univariate and multivariate normal. Results showed that the data were univariate normal given that all kurtosis indices were less than 10 and skew indices were less than 3 (Kline, 2005). However, the Mardia's index (i.e., c.r. = 102) was greater than the suggested value 5, indicating that the assumption of multivariate normality was violated (Byrne, 2010). While asymptotic distribution-free (ADF) estimation has been suggested to analyze non-normal data, this approach requires a sample size as large as 1,000 to yield unbiased results (Byrne, 2010). Therefore, ADF was not adequate for this study (with 640 samples). Alternatively, bootstrapping was performed to address the issue of nonnormal data.

Following Cheung and Lau's (2008) contention that bootstrap samples are usually between 500 and 1,000 and that a larger sample size helps increase the reliability of confidence levels, the bootstrap sample size was set to 1,000 in this study. Results showed that all standardized loadings were statistically significant, with a 95% bias-corrected bootstrap confidence interval. The model fit indices were: χ^2 (278) = 1,034.35, GFI = .886, CFI = .939, SRMR = .053, RMSEA = .065. All these indices, except the GFI (less than .9), indicated a good fit between the model and the data. However, it was observed that the standardized loading estimates of two measurement items of belief in luck (BIL) including BIL5 (.473) and BIL6 (.469) were less than the generally recommended value (i.e., .5). Thus the construct validity was questionable (Hair et al., 2010). To improve the validity, the item with a smaller standardized

loading estimate was removed – BIL6 (i.e., *I believe in luck*) and, then CFA was performed again.

The results showed that data were again multivariate non-normal (i.e., Mardia's index = 100.79) and hence bootstrapping was performed. All standardized loadings were statistically significant and the model fit improved: $\chi 2$ (254) = 746.90, GFI = .913, CFI = .959, SRMR = .042, RMSEA = .055. However, the standardized loading estimate of BIL5 (.453) was still less than .5. Therefore, this item (i.e., *Luck plays an important part in everyone's life*) was removed and the CFA was performed once again.

The data still violated the assumption of multivariate normality as the Mardia's index was 100.61. So bootstrapping was conducted. The model fit further improved: χ^2 (231) = 631.44, GFI = .923, CFI = .966, SRMR = .036, RMSEA = .052. No Heywood case was found as all variance estimates were positive. All standardized loading estimates exceeded .5 and were statistically significant (see Table 4.2), providing an initial signal that convergent validity was adequate.

Table 4.2

Bias-corrected Factor Loading Confidence Interval (Standardized)

Parameter	Estimate	Lower	Upper	*p*-value
Perceived Luck				
1. I am lucky	.833	.785	.871	.004
2. I have good luck	.920	.891	.944	.002
3. Luck is on my side	.939	.912	.959	.002
4. Luck works in my favor	.921	.885	.947	.002

(continued)

Parameter	Estimate	Lower	Upper	*p*-value
Locus of Control on Luck				
1. My luck is attached to me/other things (e.g., objects, numbers, rituals, and others)	.792	.729	.838	.002
2. My luck is about me/other things (e.g., objects, numbers, rituals, and others)	.857	.804	.893	.004
3. My luck is inside of me/other things (e.g., objects, numbers, rituals, and others)	.875	.825	.911	.004
4. My luck is something that reflects an aspect of myself/other things (e.g., objects, numbers, rituals, and others)	.806	.749	.849	.003
Intention to Play				
1. Probability of playing with own money	.875	.841	.905	.002
2. Possibility of playing with own money	.918	.880	.946	.003
3. Likelihood of playing with own money	.947	.923	.967	.003
Belief in Luck				
1. Some people are consistently lucky, and others are unlucky	.924	.886	.949	.004
2. Some people are consistently unlucky, and others are lucky	.947	.914	.976	.002
3. There is such a thing as good luck that favors some people, but not others	.674	.614	.732	.002
4. There is such a thing as bad luck that affects some people more than others	.540	.461	.615	.002

(continued)

Parameter	Estimate	Lower	Upper	*p*-value
Risk-taking Propensity				
1. I usually view risks as a challenge	.685	.617	.752	.003
2. I take risks regularly	.817	.730	.898	.002
3. Risk avoider/seeker	.656	.558	.744	.002
Attitude toward Casino Gaming				
1. Favorableness of participating in casino gaming activities	.877	.835	.912	.003
2. Pleasantness of participating in casino gaming activities	.936	.896	.962	.003
3. Happiness of participating in casino gaming activities	.937	.913	.957	.003
4. Terrible/Enjoyable when participating in casino gaming activities	.829	.786	.863	.003
Social Norm of Casino Gaming				
1. People who are important to you approve you to participate in casino gaming activities	.929	.879	.972	.004
2. People who are important to you approve you to participate in casino	.868	.813	.914	.003

To examine the construct validity further, the average variance extracted (AVE) values were calculated. As shown in Table 4.3, all AVE values were greater than .5, signaling the convergent validity was good. Also, the AVE values were greater than the squared correlation estimates, providing a good evidence of discriminant validity (see Table 4.3). Construct reliability was

assessed by Cronbach's α and composite reliability. All reliability indices were greater than the generally suggested value (i.e., .7) (see Table 4.4). Based on these results, the measures of perceived luck, locus of control on luck, intention to play, belief in luck, risk-taking propensity, attitude toward casino gaming, and social norm of casino gaming could be deemed reliable and valid.

Table 4.3

Squared Correlation Estimates Between Constructs

Constructs	PL	LOCL	INT	BIL	RT	ATT	SN
Average Variance Extracted (AVE)	.818	.694	.835	.625	.523	.803	.809
Perceived Luck (PL)		.008	.042	.011	.007	.008	.026
Locus of Control on Luck (LOCL)	.008		.001	.000	.000	.000	.002
Intention to Play (INT)	.042	.001		.021	.052	.194	.090
Belief in Luck (BIL)	.011	.000	.021		.005	.001	.002
Risk-taking Propensity (RT)	.007	.000	.052	.005		.150	.065
Attitude towards Casino Gaming (ATT)	.008	.000	.194	.001	.150		.253
Social Norm of Casino Gaming (SN)	.026	.002	.090	.002	.065	.253	

Table 4.4

Construct Reliability

Constructs	Cronbach's α	Composite Reliability
Perceived Luck	.945	.947
Locus of Control on Luck	.900	.901
Intention to Play	.937	.938
Belief in Luck	.860	.864
Risk-taking Propensity	.761	.765
Attitude towards Casino Gaming	.941	.942
Social Norm of Casino Gaming	.892	.894

4.4 Transformation of Data

While ANOVA and regression were used in the examination of the hypotheses, summated scores of the multi-item constructs were derived by averaging the scores of their corresponding measurement items. Univariate normality and outliers of all these constructs as well as the three single-item continuous variables pertaining to perceived behavioral control (see Table 4.5) were assessed. It was found that intention to play, social norm of casino gaming, time availability for participating in casino gaming, and casino gaming skills were positively skewed (i.e., skewness statistic/standard error > 1.96), whereas belief in luck and self-controllability on participating in casino gaming activities were negatively skewed (i.e., skewness statistic/standard error < -1.96). Therefore, transformation of data was performed for these skewed variables. Following Mertler and Vanatta's (2010) suggestion, the data were initially transformed by means of square root. If the distribution was still non-normal,

Log_{10} was used to transform the data. Inversion (i.e., 1/X) was the last resort if non-normal distribution was still found. The transformation approaches for the constructs in this study are shown in Table 4.5. After the data transformation, all the non-normal variables became normally distributed. Detection of outliers was conducted and none were found (i.e., all *z*-values were between -4 and 4).

Table 4.5

Assessment of Normality and Data Transformation

Constructs (X)	Skewness Statistic /Standard Error	Transform-ation Approach	Skewness Statistic /Standard Error After Transformation
Perceived Luck	.64	-	
Locus of Control on Luck	1.87	-	
Intention to Play	4.80	Sqrt(X)	1.36
Belief in Luck	-4.43	Sqrt(K-X) [a]	-.73
Risk-taking Propensity	-.48	-	
Attitude towards Casino Gaming	.95	-	
Social Norm of Casino Gaming	9.91	1/X [a]	1.88
Self-controllability on participating in casino gaming activities	-11.82	1/(K-X)	-.94
Time availability on participating in casino gaming activities	4.84	Sqrt(X)	1.47
Casino gaming skills	5.27	Sqrt(X)	1.70

Note. K equals the highest score of the variable plus 1; [a] means the interpretation of the results needs to be reversed

4.5 Testing of Hypotheses

4.5.1 Effect of Valence of an Outcome on Perceived Luck (Hypothesis 1)

Hypothesis 1 (H1) posited that a winning outcome evokes higher perceived luck than a losing outcome. Belief in luck, a construct that might affect perceived luck, was treated as covariate. Hence, ANCOVA rather than ANOVA should be used to perform the analysis. However, ANCOVA requires the data to fulfill two further assumptions, namely independence of the covariate and treatment effect and homogeneity of regression slopes (Hair et al., 2010). The first assumption can be assessed by the correlation between covariate and dependent variable. This assumption was met in this study as the Pearson correlation between belief in luck and perceived luck was significant (r = -.120, p < .01). To test the second assumption, a custom model of ANCOVA was performed. Since the interaction between valence of an outcome and belief in luck (i.e., the covariate) was statistically significant (F(1, 636) = 18.52, p < .001), the second assumption was violated and thus belief in luck should not be treated as covariate in the analysis. As a result, an ANOVA was performed in the examination of H1.

Results aligned with the postulation in H1 given that perceived luck after winning (M = 5.01, SD = 1.62) was higher than that after losing (M = 2.68, SD = 1.51) (F(1, 638) = 356.16, p < .001) (see Table 4.6). The Levene's test was passed given a p-value greater than .05.

Table 4.6

Comparison of Perceived Luck Between Winning and Losing Outcomes

	Winning Outcome (n = 320)	Losing Outcome (n = 320)		
	M (SD)	*M* (SD)	*df*	*F*-value
Perceived luck	*5.01* (1.62)	*2.68* (1.51)	1, 638	356.16***

Note. *** represents $p < .001$

4.5.2 Effects of the Determinants on Intensity of Perceived Luck (Hypotheses 2 to 6)

The current study hypothesized that a losing outcome, an exclusive outcome, high rarity, high importance, and high proximity of an outcome all have stronger effects on perceived luck than their counterparts. Since the interests of these hypotheses were on how the determinants affected the intensity, but not the orientation, of perceived luck, the scores of perceived luck in the losing condition were reversed. As of the practice in testing H1, the qualification of belief in luck as a covariate in ANCOVA was assessed. Pearson correlation shows a significant correlation between belief in luck and perceived luck (r = -.154, $p < .001$). The interaction between outcome, rarity, importance, exclusivity, proximity, and belief in luck was not significant ($F(31, 602) = 1.17$, $p > .1$). Therefore, belief in luck could be used as covariate in the 2x2x2x2x2 ANCOVA for testing Hypotheses 2 through 6.

Results showed that the assumption of homogeneity of variance was met (Levene's test: $p > .05$). The main effects and interaction effects are shown in Table 4.7. The main effects of valence of an outcome ($F(1, 607) = 7.42$, $p < .01$),

and importance of an outcome ($F(1, 607) = 4.17$, $p < .05$) were significant whilst the main effect of proximity of outcome was marginally significant ($F(1, 607) = 3.01$, $p < .1$). Hence, coherent with H2, H4, and H6, stronger perceived luck was found in the losing condition ($M = 5.33$) than in the winning condition ($M = 5.00$), in the high importance condition ($M = 5.29$) than in the low importance condition ($M = 5.04$), and in the high proximity condition ($M = 5.27$) than in the low proximity condition ($M = 5.02$). However, the main effects of rarity of an outcome ($F(1, 607) = .06$, $p > .1$) and exclusivity of an outcome ($F(1, 607) = .60$, $p > .1$) were not statistically significant. The mean values of perceived luck in high and low rarity conditions were 5.18 and 5.15 respectively, whilst the mean values in the exclusive and non-exclusive conditions were 5.21 and 5.12 respectively. In summary, H2, H4, and H6 were confirmed, but not H3 and H5.

Table 4.7

Main and Interaction Effects of the Determinants on Intensity of Perceived Luck

Variables / Interactions	*df*	*F*-value
Covariate		
Belief in Luck	1, 607	12.71 ***
Main Effect		
Valence of an outcome (Valence)	1, 607	7.42 **
Rarity of an outcome (Rarity)	1, 607	.06
Importance of an outcome (Importance)	1, 607	4.17 *
Exclusivity of an outcome (Exclusivity)	1, 607	.60
Proximity of an outcome (Proximity)	1, 607	3.01 #

(continued)

Variables / Interactions	*df*	*F*-value
Two-way Interaction		
Valence x Rarity	1, 607	.00
Valence x Importance	1, 607	.00
Valence x Exclusivity	1, 607	.01
Valence x Proximity	1, 607	.06
Rarity x Importance	1, 607	.10
Rarity x Exclusivity	1, 607	1.65
Rarity x Proximity	1, 607	.71
Importance x Exclusivity	1, 607	.26
Importance x Proximity	1, 607	3.08 #
Exclusivity x Proximity	1, 607	1.69
Three-way Interaction		
Valence x Rarity x Importance	1, 607	.57
Valence x Rarity x Exclusivity	1, 607	.61
Valence x Rarity x Proximity	1, 607	.60
Valence x Importance x Exclusivity	1, 607	.20
Valence x Importance x Proximity	1, 607	.23
Valence x Exclusivity x Proximity	1, 607	3.37 #
Rarity x Importance x Exclusivity	1, 607	.14
Rarity x Importance x Proximity	1, 607	.26
Rarity x Exclusivity x Proximity	1, 607	.12
Importance x Exclusivity x Proximity	1, 607	2.93 #
Four-way Interaction		
Valence x Rarity x Importance x Exclusivity	1, 607	2.58
Valence x Rarity x Importance x Proximity	1, 607	.05
Valence x Rarity x Exclusivity x Proximity	1, 607	.47

(continued)

Variables / Interactions	*df*	*F*-value
Valence x Importance x Exclusivity x Proximity	1, 607	.20
Rarity x Importance x Exclusivity x Proximity	1, 607	.00
Five-way Interaction		
Valence x Rarity x Importance x Exclusivity x Proximity	1, 607	.36

Note. *** represents $p < .001$; ** represents $p < .01$;* represents $p < .05$; # represents $p < .1$

Moreover, it was noted that the covariate belief in luck had a significant negative effect on the intensity of perceived luck (β = -.605, t = -3.565, p < .001). Given that the data of belief in luck were transformed inversely, interpretation of the results had to be reversed. Therefore, the correct interpretation should be that belief in luck exerted a significant positive effect on the intensity of perceived luck.

4.5.3 Interaction Effects of the Determinants on Intensity of Perceived Luck

A major objective of this study was to examine the interaction effects of the valence, rarity, importance, exclusivity, and proximity of an outcome on the intensity of perceived luck. Therefore, the significant interaction effects were decomposed. A two-way significant interaction effect between importance and proximity (F(1, 607) = 3.08, p < .1) was found. This interaction effect and the main effects were qualified by a couple of three-way interactions, namely valence x exclusivity x proximity (F(1, 607) = 3.37, p < .1) and importance x exclusivity x proximity (F(1, 607) = 2.93, p < .1). Following Maxwell and Delaney's (2004) suggestions, decomposition of interaction effect should focus on the highest-order significant interaction effect. The reason is that

interpretation of the lower order significant interaction effects can be incorrect without considering the higher order significant interaction. Therefore, the three-way significant interaction effects including Valence x Exclusivity x Proximity and Importance x Exclusivity x Proximity were decomposed (see Table 4.8).

While three-way interaction means that the interaction between two of the variables varies with different levels of the remaining variable, analyses of the interaction between exclusivity and proximity at different levels of valence (i.e., win and loss), the interaction between valence and proximity at different levels of exclusivity (i.e., exclusive and non-exclusive), and the interaction between valence and exclusivity at different levels of proximity (i.e., high and low) were performed with ANCOVA (belief in luck as covariate). Similarly, analyses of the interaction between exclusivity and proximity at different levels of importance (i.e., high and low), the interaction between importance and proximity at different levels of exclusivity (i.e., exclusive and non-exclusive), and the interaction between importance and exclusivity at different levels of proximity (i.e., high and low) were performed. As exhibited in Part 1 and 2 of Table 4.8, three out of the 12 tests revealed significant results, namely the interaction between exclusivity and proximity in the winning condition ($F(1, 315) = 4.40$, $p < .05$), the interaction between importance and proximity when the outcome is exclusive ($F(1, 315) = 5.98$, $p < .05$), and the interaction between exclusivity and proximity when the outcome is of high importance ($F(1, 315) = 4.64$, $p < .05$).

Table 4.8

Analysis of the Significant Interaction of the Determinants on Intensity of Perceived Luck

Variables/Interactions	Control Conditions	*df*	*F*-value
Part 1: Valence x Exclusivity x Proximity			
Exclusivity x Proximity	Win	1, 315	4.40 *
Exclusivity x Proximity	Loss	1, 315	.19
Valence x Proximity	Exclusive	1, 315	1.90
Valence x Proximity	Non-exclusive	1, 315	1.20
Valence x Exclusivity	High Proximity	1, 315	1.90
Valence x Exclusivity	Low Proximity	1, 315	1.32
Part 1.1: Exclusivity x Proximity | Win			
Proximity	Win & Exclusive	1, 157	4.96 *
Proximity	Win & Non-exclusive	1, 157	.41
Exclusivity	Win & High Proximity	1, 157	3.71 #
Exclusivity	Win & Low Proximity	1, 157	1.16
Part 2: Importance x Exclusivity x Proximity			
Importance x Exclusivity	High Proximity	1, 315	.73
Importance x Exclusivity	Low Proximity	1, 315	2.22
Importance x Proximity	Exclusive	1, 315	5.98 *
Importance x Proximity	Non-exclusive	1, 315	.00
Exclusivity x Proximity	High Importance	1, 315	4.64 *
Exclusivity x Proximity	Low Importance	1, 315	.08

(continued)

Variables/Interactions	Control Conditions	*df*	*F*-value
Part 2.1: Proximity x Importance | Exclusive			
Importance	Exclusive & High Proximity	1, 157	7.40 **
Importance	Exclusive & Low Proximity	1, 157	.72
Proximity	Exclusive & High Importance	1, 157	10.11 **
Proximity	Exclusive & Low Importance	1, 157	.05
Part 2.2: Proximity x Exclusivity | High Importance			
Exclusivity	High Importance & High Proximity	1, 157	3.15 #
Exclusivity	High Importance & Low Proximity	1, 157	1.86
Proximity	High Importance & Exclusive	1, 157	10.11 **
Proximity	High Importance & Non-exclusive	1, 157	.09

Note. ** represents $p < .01$;* represents $p < .05$; # represents $p < .1$

To decompose the significant interaction between exclusivity and proximity given a winning condition, further ANCOVA were performed (see Part 1.1 in Table 4.8). As illustrated in Figure 4.1, when the winning outcome was exclusive to the player, a high proximity outcome (i.e., near loss) evoked stronger perceived luck ($M = 5.35$) than a low proximity outcome (i.e., not near to loss) ($M = 4.77$) ($F(1, 157) = 4.96$, $p < .05$). However, when the winning outcome was not exclusive to the player, proximity did not make any significant difference to the intensity of perceived luck ($M = 5.04$ versus $M = 4.89$, $F(1, 157) = .41$, $p > .1$).

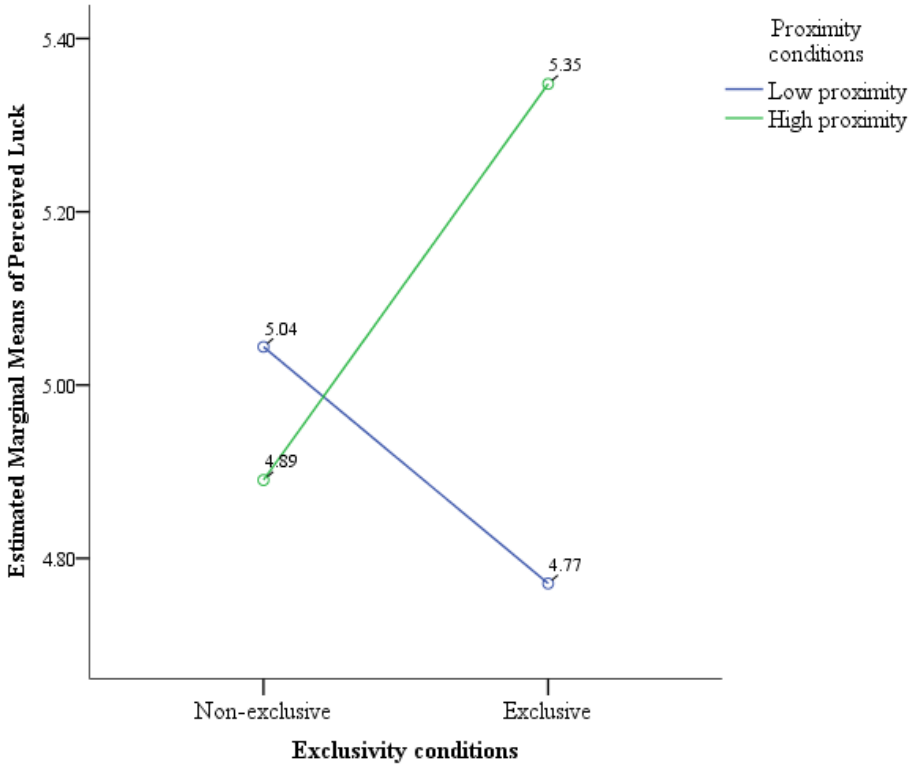


Figure 4.1. Intensity of perceived luck as a function of interaction between exclusivity and proximity given a winning outcome

When the winning outcome was of high proximity (i.e., near loss), an exclusive outcome evoked marginally higher perceived luck (M = 5.35) than a non-exclusive outcome (M = 4.89) ($F(1, 157) = 3.71$, $p < .1$) (see Figure 4.2). However, when the winning outcome was of low proximity (i.e., not near to loss), exclusivity did not make any significant difference to perceived luck (M = 5.04 versus M = 4.77, $F(1, 157) = 1.16$, $p > .1$).

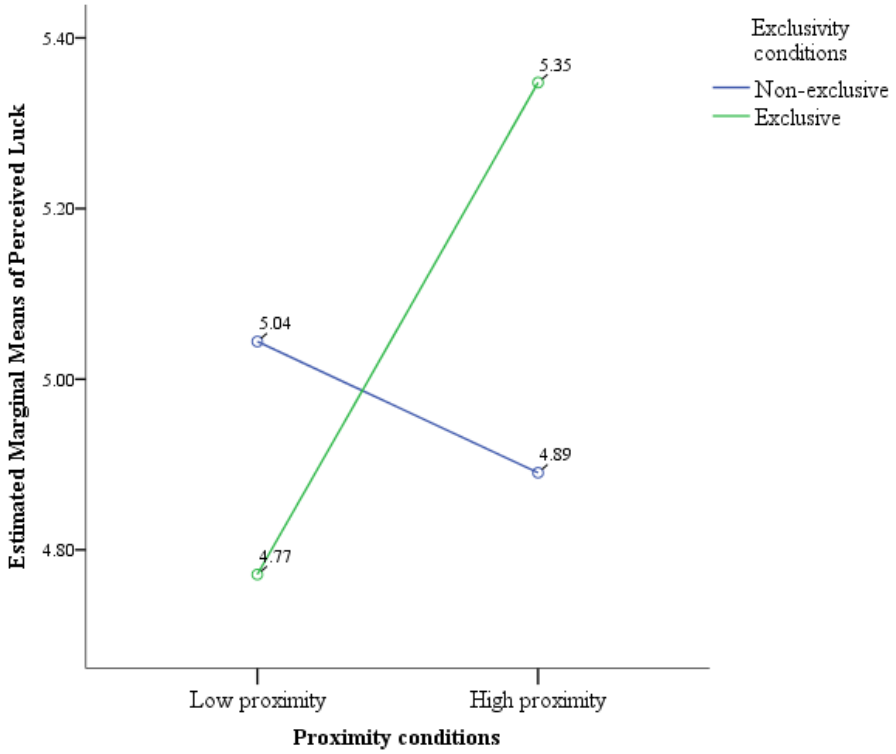


Figure 4.2. Intensity of perceived luck as a function of interaction between proximity and exclusivity given a winning outcome

An ANCOVA was also performed to analyze the significant interaction between proximity and importance given an exclusive outcome, (see Part 2.1 in Table 4.8). As shown in Figure 4.3, when the exclusive outcome was near to the alternative outcome (i.e., high proximity), an outcome of high importance had a stronger effect on perceived luck (M = 5.72) than an outcome of low importance (M = 5.11) ($F(1, 315) = 7.40$, $p < .01$). However when the exclusive outcome was not near to the alternative outcome (i.e., low proximity), importance did not make any significant difference to the intensity of perceived luck (M = 5.16 versus M = 4.94, $F(1, 157) = .72$, $p > .1$).

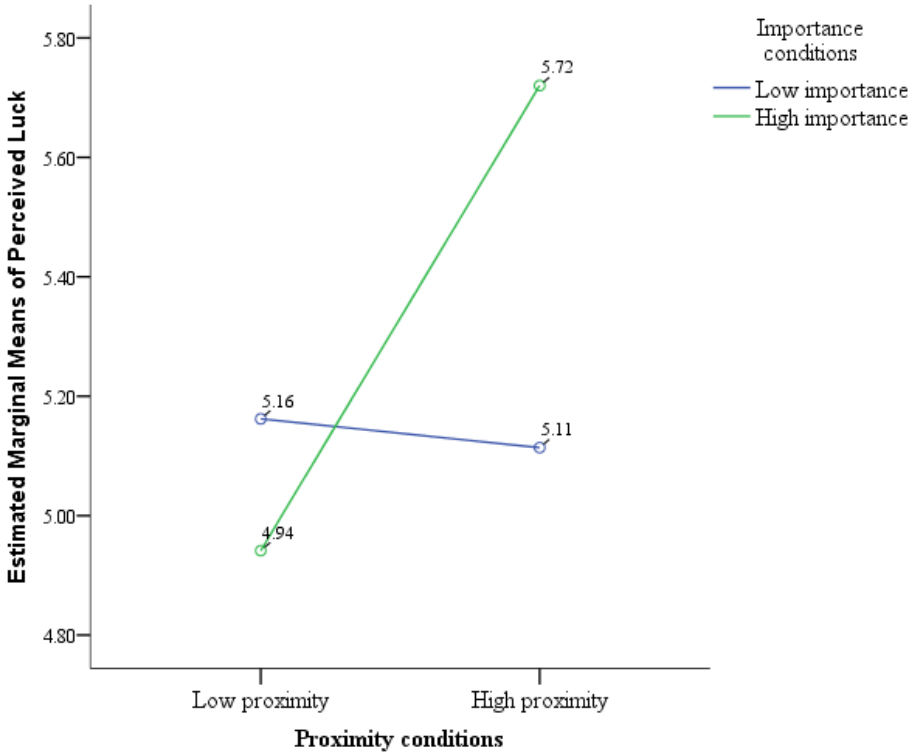


Figure 4.3. Intensity of perceived luck as a function of interaction between proximity and importance given an exclusive outcome

On the other hand, when the exclusive outcome was of high importance, a high proximity outcome (M = 5.72) had a stronger effect on perceived luck than a low proximity outcome (M = 4.94) ($F(1, 157) = 10.11$, $p < .01$) (see Figure 4.4). However, when the exclusive outcome was of low importance, proximity did not make any significant difference to the intensity of perceived luck (M = 5.16 versus M = 5.11, $F(1, 157) = .05$, $p > .1$).

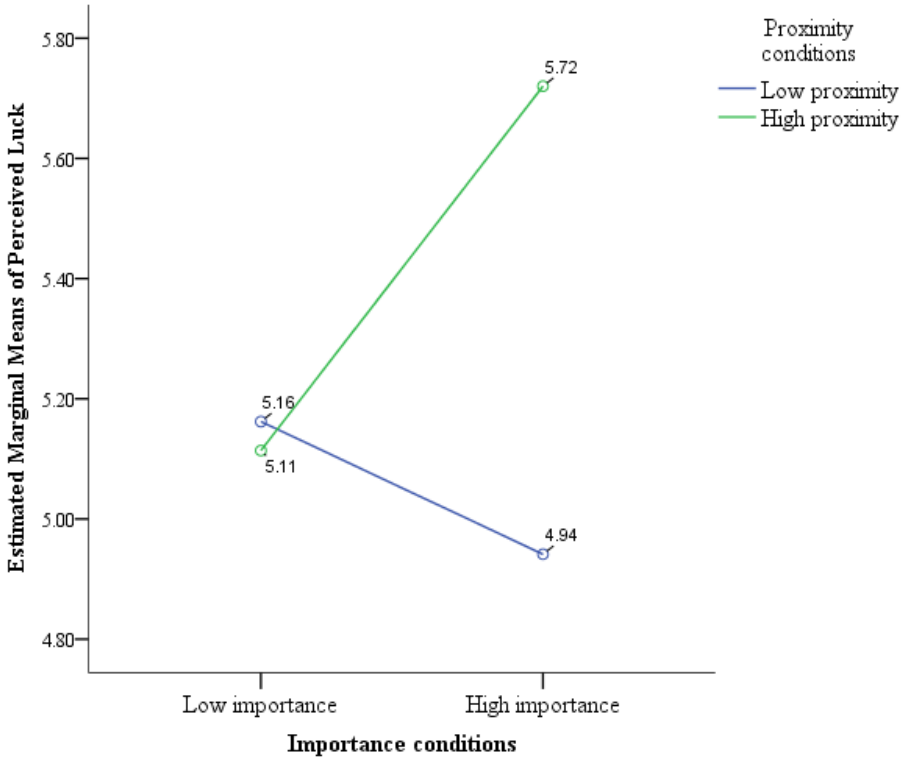


Figure 4.4. Intensity of perceived luck as a function of interaction between importance and proximity given an exclusive outcome

To resolve the significant interaction between proximity and exclusivity given an outcome of high importance, an ANCOVA was performed (see Part 2.2 in Table 4.8). As shown in Figure 4.5, when an outcome of high importance was near to the alternative outcome (i.e., high proximity), an exclusive outcome had a marginally stronger effect on perceived luck (M = 5.71) than a non-exclusive outcome (M = 5.31) ($F(1, 315) = 3.15$, $p < .1$). However when an outcome of high importance was not near to the alternative outcome (i.e., low proximity), exclusivity did not make any significant difference to the intensity of perceived luck ($M = 5.25$ versus $M = 4.91$, $F(1, 157) = 1.86$, $p > .1$).

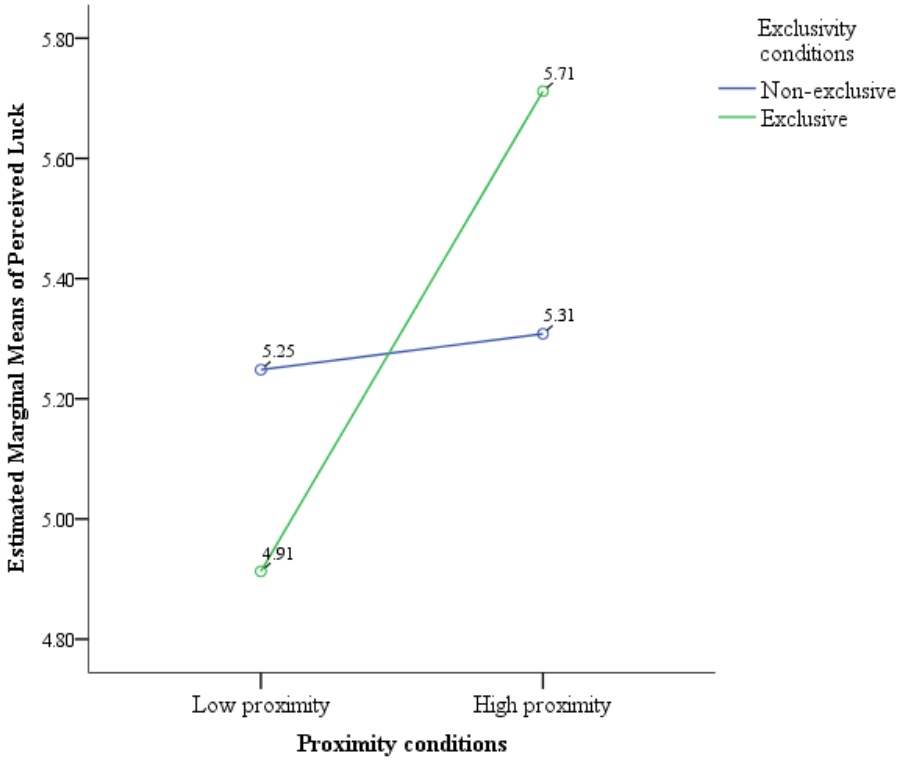


Figure 4.5. Intensity of perceived luck as a function of interaction between proximity and exclusivity given an outcome of high importance

When an outcome of high importance was also exclusive to the player, a high proximity outcome (M = 5.71) had a stronger effect on perceived luck than a low proximity outcome (M = 4.91) ($F(1, 157) = 10.11$, $p < .01$) (see Figure 4.6). However, when that important outcome was a non-exclusive one, proximity did not make any significant difference to the intensity of perceived luck (M = 5.31 versus M = 5.25, $F(1, 157) = .09$, $p > .1$).

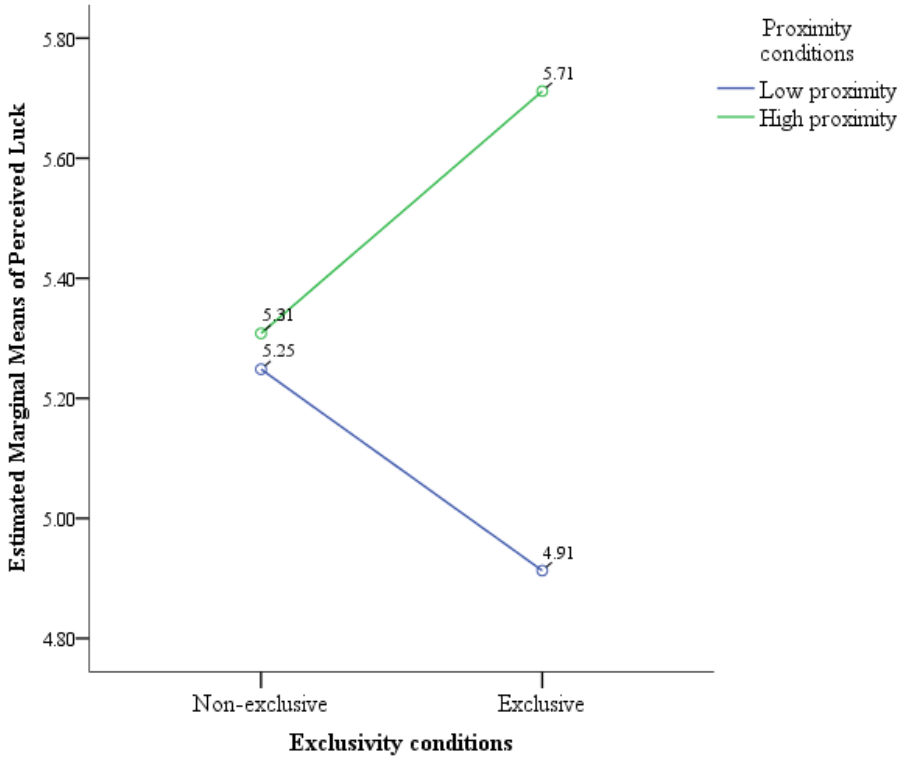


Figure 4.6. Intensity of perceived luck as a function of interaction between exclusivity and proximity given an outcome of high importance

4.5.4 Predicting Intention to Play by Perceived Luck (Hypothesis 7)

In Hypothesis 7 (H7), it was postulated that perceived luck has a significantly positive relationship with intention to play. To control the effect that could be caused by the covariates, hierarchical regression analysis was deployed. With this analysis, the effects of the covariates could be controlled whilst the significance of the relationship between perceived luck and intention to play was assessed. In the first step of the hierarchical regression analysis, all fourteen control variables, namely objective probability of winning (1 - high; 0 - low), frequency of participating in casino gaming activities, education level, country/region of residence (1 - Macao; 0 - Non-Macao), monthly household income, age, gender (1 - male; 0 - female), belief in luck, risk-taking propensity, attitude toward casino gaming, social norm of casino gaming, self-

controllability on participating in casino gaming activities, time availability on participating in casino gaming activities, and casino gaming skills were entered into the regression model. Perceived luck was entered into the model in the second step.

The regression analyses identified outlier cases as the standardized residual values of 16 cases were greater than 2 (Field, 2009) and four cases contained Mahalanobis values greater than χ^2 value of 37.70 ($df = 15$, $p < .001$) (Mertler & Vannatta, 2010). However, none of the Cook's distance values was greater than 1 and thus retaining the outlier cases should not significantly deter the regression analysis (Field, 2009). Moreover, none of the *dfbeta* values were greater than 1, indicating that none of the cases had a large influence on the regression parameters (Field, 2009). Following Mertler and Vanatta's (2010) suggestions, graphical analyses were used to check the assumptions of normality, linearity, and homoscedasticity (see Appendix J). The distribution of the standardized residual appeared to be normal whilst the P-P plot of the residuals showed that the observed residuals slightly deviated from the line. The scatterplot of standardized residual against standardized predicted values did not appear in a triangular or curvilinear shape. Therefore, it was concluded that the assumptions of normality, linearity, and homoscedasticity were met. The Durbin-Watson value (1.841) was close to 2 so that the assumption of independence of error terms was not violated. The ANOVA showed that the independent variables predicted intention to play very well ($F(15, 624) = 17.15$, $p < .001$). All variance inflation factor (VIF) values were less than 10 (see Table 4.9) and hence there was no multicollinearity issue (Field, 2009).

Table 4.9

Regression Model of Intention to Play – Hypothesis 7

Independent Variables & Covariates	B	Standard Error	β	*t*-value	VIF
Intercept	1.561	.214		7.296 ***	
Objective Probability of Winning	.084	.038	.075	2.221 *	1.015
Frequency of participating in casino gaming activities	.070	.024	.128	2.947 **	1.662
Education level	-.017	.027	-.025	-.627	1.394
Country/Region of residence	-.066	.045	-.052	-1.470	1.114
Monthly household income	.009	.017	-.021	-.507	1.046
Age	-.010	.018	-.024	-.568	1.500
Gender	-.036	.041	-.033	-.892	1.182
Belief in luck [a]	-.171	.052	-.115	-3.289 **	1.071
Risk-taking propensity	.001	.015	.003	.069	1.251
Attitude towards casino gaming	.069	.017	.186	3.945 ***	1.953
Social norm of casino gaming [a]	-.046	.070	-.027	-.658	1.487
Self-controllability on participating in casino gaming activities	-.145	.061	-.091	-2.356 *	1.303
Time availability on participating in casino gaming activities	.107	.040	.111	2.666 **	1.515
Casino gaming skills	.084	.044	.081	1.903 [#]	1.611
Perceived luck	.047	.010	.166	4.787 ***	1.058

Note. *** represents $p < .001$; ** represents $p < .01$; * represents $p < .05$; [#] represents $p < .1$;
[a] means the interpretation of the data needs to be reversed owing to data transformation.

H7 was supported as the R^2 change was significant ($R^2 = .292$; $\Delta F(1, 624) = 22.91$; $p < .001$), whilst the regression coefficient of perceived luck on

intention to play was significantly positive (β = .166, t = 4.787, p < .001) (see Table 4.9). Also, it could be observed that the control variables including objective probability of winning (β = .075, t = 2.221, p < .05), frequency of participating in casino gaming activities (β = .128, t = 2.947, p < .01), attitude toward casino gaming (β = .186, t = 3.945, p < .001), and time availability on participating in casino gaming activities (β = .111, t = 2.666, p < .01) were all significantly positive predictors of intention to play. A marginally positive association was found between casino gaming skills and intention to play (β = .081, t = 1.903, p < .1). Belief in luck was negatively associated with intention to play (β = -.115, t = -3.289, p < .01). However, since the data on belief in luck have been inverted, the relationship should be interpreted as positive. Moreover, a negative relationship between self-controllability on participating in casino gaming activities and intention to play was found (β = -.091, t = -2.356, p < .05).

4.5.5 Moderating Effect of Locus of Control on Luck on the Relationship Between Perceived Luck and Intention to Play (Hypothesis 8)

Hypothesis 8 (H8) posited that the positive relationship between perceived luck and intention to play is stronger when locus of control on luck is internal than when it is external. To examine this hypothesis, locus of control on luck was split into two with a cutoff point of 4. The cases with a value of 4 in locus of control on luck were excluded from the analysis. Therefore, among 640 samples, 549 cases were retained for the analysis, with 212 cases representing the external locus of control on luck and 337 cases representing internal locus of control on luck. Following Baron and Kenny's (1986) suggestion, two

hierarchical regression models (one for the external locus of control on luck and another for the internal locus of control on luck) were formed and their regression coefficients were compared.

Although outlier cases were found in both regression models, all Cook's distance values were less than 1 so that none of the cases was removed. Graphical analyses indicated that the assumptions of normality, linearity, and homoscedasticity were met (see Appendix K for the external locus of control on luck model and Appendix L for the internal locus of control on luck model). The Durbin-Watson values (2.004 in the external locus of control on luck model and 1.718 in the internal locus of control on luck model) were not far from 2. The ANOVA showed that the predictability of both models was very good ($F(15, 196) = 5.91$, $p < .001$ for the external locus of control on luck model and $F(15, 321) = 10.80$, $p < .001$ for the internal locus of control on luck model). All variance inflation factor (VIF) values were less than 10. In the external locus of control on luck model, the R^2 change was significant ($R^2 = .311$; $\Delta F(1,196) = 11.30$; $p < .01$), as was the positive predicting effect from perceived luck on intention to play ($\beta = .213$, $t = 3.362$, $p < .01$). In the internal locus of control on luck model, the R^2 change was marginally significant ($R^2 = .335$; $\Delta F(1,321) = 2.87$; $p < .1$), as was the positive effect from perceived luck on intention to play ($\beta = .081$, $t = 1.694$, $p < .1$).

To compare the regression coefficients, Clogg, Petkova, and Haritou's (1995) formula, which was suggested to be unbiased toward rejecting the null hypothesis (i.e., no difference between the regression coefficient) (Paternoster, Brame, Mazerolle, & Piquero, 1998), was used:

$$z = (b_1 - b_2) / \sqrt{(SE\ b_1^2 + SE\ b_2^2)}$$

where b_1 denotes the unstandardized regression coefficient in the external locus of control on luck model = .060;

b_2 denotes the unstandardized regression coefficient in the internal locus of control on luck model = .023;

SE b_1^2 is the coefficient variances of in the external locus of control on luck model = .0000324;

SE b_2^2 is the coefficient variances of the internal locus of control on luck model = .0000169

Calculation generated a *z*-value of 1.67 which was greater than 1.645 so that the regression coefficient in the external locus of control on luck model was marginally greater than that in the internal locus of control on luck ($p < .1$). In this regard, contrary to the postulation in H8, the results showed that the positive relationship between perceived luck and intention to play was stronger when the locus of control on luck was external than when the locus of control on luck was internal.

4.5.6 Predicting Locus of Control on Luck by Perceived Luck (Hypothesis 9)

In Hypothesis 9 (H9), it was posited that higher (lower) perceived luck leads to a higher tendency toward internal (external) locus of control on luck. To test this hypothesis, locus of control on luck (a higher value indicated a higher tendency towards external locus of control on luck whereas a lower value

indicated a higher tendency towards internal locus of control on luck) was regressed on perceived luck (a higher value indicated higher perceived luck). Although outlier cases were found in the regression model, all Cook's distance values were less than 1 so that all cases were retained. Graphical analyses indicated that the assumptions of normality, linearity, and homoscedasticity were satisfied (see Appendix M). The Durbin-Watson value (1.814) was close to 2. The ANOVA showed that predictability of the model was good ($F(1, 638) = 5.00$, $p < .05$). The analysis revealed a significantly negative relationship between perceived luck and locus of control on luck ($\beta = -.088$, $t = -2.235$, $p < .05$). Thus, H9 was supported.

4.6 Summary

This chapter presents the findings of this study. There were more male participants than female counterparts, but the discrepancy was small. Also, the participants tended to be young and not very well educated, with monthly household incomes between HKD 10,000 and HKD 29,999 inclusive, locals, and having casino gaming experience. A manipulation check showed that manipulations of rarity, importance, exclusivity, and proximity of an outcome were successful. Drawing on the CFA, two measurement items of belief in luck were excluded in the subsequent analyses. All other multi-item measures were reported reliable and valid. While data distribution of variables was found non-normal, data transformation was performed accordingly. Results showed that three out of nine hypotheses were not supported including that rarity (H3) and exclusivity (H5) of an outcome did not affect the intensity of perceived luck and

that the relationship between perceived luck and intention to play was stronger when the locus of control on luck was external than internal, which was actually the opposite of H8. All other six hypotheses were confirmed. A winning outcome evoked higher perceived luck than a losing outcome (H1). A losing outcome, an outcome of high importance, and an outcome near to the alterative outcome strengthened players' perceived luck (H2, H4, and H6 respectively). Perceived luck was positively associated with intention to play (H7) and locus of control on luck (H9), indicating that higher perceived luck led to internal locus of control on luck, whereas lower perceived luck led to external locus of control on luck. Moreover, interaction effects of the determinants on perceived luck were also examined. A couple of three-way interaction effects were found, namely Valence x Exclusivity x Proximity and Importance x Exclusivity x Proximity.

CHAPTER 5 : DISCUSSION

This chapter discusses the findings of this study. There are four sections in this chapter. The first section discusses the findings about the causal effects of the determinants on perceived luck and its intensity, as well as the interactions among the determinants. The second section discusses the predicting role of perceived luck on intention to play as well as other predictors which were controlled in the analysis. Discussions in the third section center upon locus of control on luck as a moderator between perceived luck and intention to play and a consequence of perceived luck. Finally, a summary of this chapter is provided.

5.1 Determinants of Perceived Luck

The results showed that three out of the five proposed factors had effects on perceived luck and its intensity. Although not all the factors were confirmed significant, still perceived luck and its intensity were determined by multiple factors, in particular the interaction effects were significant. This finding confirmed the traditional contention that the formulation of perception rests on multiple reference points.

In line with the prediction, valence of an outcome (i.e., win and loss) dictated perceived luck, which was defined in this study as evaluation of an unpredictable outcome that happens to oneself. A winning outcome evoked higher perceived luck than a losing outcome. While winning was the players' common goal, it served as the reference point to evaluate perceived luck.

Therefore, an unpredictable outcome that was coherent with this reference point would result in a higher perceived luck than one which negatively disconfirmed the reference point. This phenomenon actually concurred with the advocacy of expectancy-disconfirmation theory that performance confirming expectation would result in a positive evaluation (Oliver, 1980).

This study found that the valence of an outcome also influenced the intensity of perceived luck. This finding provided support for the robustness of prospect theory (Kahneman & Tversky, 1979). The intensity of perceived luck was stronger in the losing condition than in the winning condition. Players tended to assign more weight to losses than wins when they were evaluating their perceived luck, indicating the existence of the negativity effect in virtue of the positivity bias. Underpinning by the positivity bias, players expected to win the game. This sort of expectation was not unusual in gaming as players tend to be overwhelmed by their overrating of their personal abilities to win (Andre, 2009). The winning expectation in turn served as the reference point for evaluation of luck by the players. Imagining that there was a spectrum with one half representing winning and the other half representing losing, a winning expectation meant the reference point was put in a position within the half representing the winning outcome. Thus, a factual winning outcome would not be perceived as much different in relation to the reference point, but a comparable losing outcome would be evaluated as far away from the reference point. This cognitive mechanism perhaps caused the unbalanced evaluation of luck.

Coherent with those in previous studies (Teigen & Jensen, 2011; Wohl & Enzle, 2003), the findings in this study showed that a factual outcome which was very close to the alternative outcome (i.e., high proximity of an outcome) strengthened players' perceived luck. In this situation, the alternative outcome served as the reference point for players to evaluate their luck. A factual outcome which was proximal to the reference point facilitated the evocation of counterfactual thinking, which in turn generated stronger perceived luck. While Pritchard and Smith (2004) argued that the core determinants of intensity of perceived luck are the rarity and importance of an outcome, the current research implied that proximity of an outcome also needs to be considered. However, there is doubt on whether the proximity of an outcome is as prominent as the rarity and importance of an outcome, because the effect of the proximity of an outcome on the intensity of the perceived luck needs a pre-condition (i.e., go through a counterfactual thinking process). Yet, evocation of counterfactual thinking may not happen in every situation (Boles & Messick, 1995). In a relative sense, the rarity and importance of an outcome are more stable as they are born with the outcome and thus a pre-condition is not necessary. Given that the proximity of an outcome requires pre-condition, it can only be considered an auxiliary determinants rather than a core one.

As stated earlier, the rarity and importance of an outcome were suggested as the core predictors of the intensity of perceived luck (Pritchard & Smith, 2004). However, the findings in this study did not concur with this argument as only importance of an outcome was found a significant predictor. Even rarity of an outcome did not play any role in the interaction effect of the determinants. The finding seemed to contradict with the understanding that

perceived luck is strong when the probability of occurrence of an outcome (i.e., the reference point) is small, like winning a lottery. Perhaps the high rarity condition in this experimental study was not rare enough to produce a significant impact on the intensity of perceived luck, albeit the experimental manipulations were proved valid. An alternative reason is that the effect of rarity was overshadowed by the effects of other determinants when players were evaluating their luck. When the players were evaluating their luck, rarity of an outcome might not be as salient as other determinants in their mind, which in turn might hinder the rarity effect.

A salient stimulus can be one that occurred recently (Perdue & Summers, 1986; Tversky & Kahneman, 1974). While rarity of an outcome was manipulated before the participants played the game and thus also prior to the manipulation of valence, exclusivity, and proximity of an outcome in the experiment, it was not surprising that the rarity effect was less salient than others when evaluation of luck happened. Following this rationale, the effect of importance of an outcome on perceived luck should not be significant either because its manipulation occurred before that of rarity of an outcome in the experiment. Yet, once the players were aware of their outcomes in the experiment (i.e., after the manipulation of valence, exclusivity, and proximity of an outcome), the winners received the $30/$10 coupon whereas the losers saw the interviewers withdraw the coupons. That particular circumstance could have primed the players about the importance of an outcome so that this determinant would be salient in players' minds when they were evaluating their luck.

Like the rarity of an outcome, the exclusivity of an outcome did not exert an impact on the intensity of perceived luck. However, exclusivity was involved in all the significant interaction effects found in this study, reflecting that it was an auxiliary determinant rather than a core one. It affected the intensity of perceived luck when interacting with the proximity of an outcome given the pre-condition that the players won the game. Specifically, an exclusively winning outcome which was very close to the alternative outcome (i.e., high proximity of a winning outcome) evoked higher perceived luck. However, if the exclusively winning outcome was of low proximity, perceived luck was even worse than it was when the winning outcome was non-exclusive. Thus, subject to the proximity of an outcome, an exclusively winning outcome could be a functional, but also a dysfunctional determinant of perceived luck.

The interaction effect between exclusivity and proximity of an outcome on the intensity of perceived luck was also revealed when the outcome was of high importance. Specifically, a highly important and exclusive outcome which was close to the alternative outcome (i.e., high proximity) strengthened perceived luck. Yet, a comparable outcome which was of low proximity weakened perceived luck, making it even weaker than a highly important outcome that was non-exclusive.

Another interaction effect on intensity of perceived luck happened with the pre-condition that the outcome was exclusive to the player. Specifically, an exclusive and highly important outcome that was close to the alternative outcome (i.e., high proximity) strengthened perceived luck, but a comparable

outcome that was of low proximity weakened perceived luck to an even greater extent than an exclusive outcome of low importance.

In sum, given that all the interaction effects involved the exclusivity and proximity of an outcome and that exclusivity did not exert its effects alone, the proximity of an outcome may set the ground for the exclusivity effect on intensity of perceived luck, especially when the outcome was winning and was of high importance.

5.2 Perceived Luck as a Predictor of Intention to Play

This study found that perceived luck was an important predictor of players' intention to play with their own money. The finding confirmed the contention that players were superstitious and luck was salient in their minds (Vyse, 1997). In line with prior empirical findings about the positive relationship between perceived luck and subsequent cognitive and behavioral consequences (Darke & Freedman, 1997b; Jiang et al., 2009; Wohl & Enzle, 2003), players who held higher perceived luck exhibited higher intention to play again. In this regard, the findings confirmed the argument that prediction based on evaluation of a personal outcome (e.g. win and loss) follows positive recency (i.e., the tendency to predict the same as the last event) (Ayton & Fischer, 2004; Croson & Sundali, 2005; Sundali & Croson, 2006). While perceived luck was considered a cue of skill (Wohl et al., 2011), it was reasonable to see players with high (low) perceived luck, as of those skillful (unskillful) individuals, would be confident of attaining the same outcome in the future.

While fourteen covariates were also incorporated as predictors of intention to play in this study, only half of them were found significant. Coherent with the prediction, a Wheel of Fortune characterized with a higher objective probability to win induced a higher intention to play. Players who played frequently in casinos and held stronger beliefs in luck also exhibited higher intention to play. While the theory of planned behavior was found a solid ground to predict gaming intention and behavior (Martin et al., 2010; Oh & Hsu, 2001; Walker et al., 2006), findings in this study just partially supported the theory. Players who held positive attitude toward casino gaming, had less control over their participation in casino gaming, had more time to play in casinos, and believed themselves skillful in casino gaming showed higher intention to play with their own money. In this regard, attitude and perceived behavioral control were significant predictors of intention to play. However, social norm of casino gaming failed to predict intention to play with players' own money. The finding was not unusual as the predicting validity of attitude, social norm and perceived behavioral control on intention varied with behaviors and situations (Ajzen, 1991). Sheeran and Orbell (1999) also revealed that social norm failed to predict purchase behavior in lotteries. They attributed their findings to low personal involvement, which sheds light on the finding of the current research. While a majority of participants in this study were infrequent casino players (39.8% played less than once a month) or even had never played in a casino (46.1%), the samples' personal involvement in casino gaming might be low. So other important persons' approval of pursuing casino gaming was just a trivial issue to them, which in turn mitigated the predictive ability of social norm of casino gaming on intention to play.

Moreover, intention to play did not vary with gender, age, education level, country/region of residence, and monthly household income, indicating that the role of demographics as predictors of intention to play was minimal. The findings were not entirely surprising given that demographic effects were still inconclusive as evidenced in previous studies (see section 2.5).

In this study, risk-taking propensity also failed to predict the intention to play. This was not unreasonable as risk-taking behavior was not limited to gaming. A risk-taking person might not have played in the casino because he or she held a negative attitude toward the activity. Following this rationale, other predictors like attitude toward gaming may override the effect of risk-taking propensity on intention to play.

5.3 The Role of Locus of Control on Luck

The moderating effect of the newly proposed notion, locus of control on luck, on the relationship between perceived luck and intention to play was found in this study. While perceived control over the outcome under internal locus of control was maintained more strongly than under proxy control like control via powerful others, this study speculated that the positive influence of perceived luck would be stronger when the perceived luck was internalized than when it was externalized. The results of this study revealed a positive impact of perceived luck on intention to play whether the perceived luck was internalized or externalized. However, contrary to the hypothesis, the predicting capacity of perceived luck was stronger when perceived luck was externalized. This may be

because of the different assumptions behind internal and external locus of control on luck. Within internal locus of control on luck, perceived luck was considered a personal trait (i.e., a dispositional factor), whereas perceived luck under external locus of control on luck was considered a factor varying with situations (i.e., a situational factor). Personality researchers and social psychologists generally believe that situational factors are more influential than dispositional factors in the prediction of human behavior (Funder & Ozer, 1983). Based on this rationale, the current finding was not unreasonable. While the predicting power of perceived luck on intention to play (a manifestation of the level of superstition) was stronger upon external locus of control on luck, this finding implied that players who attributed their perceived luck to external factors were more superstitious than their counterparts who attributed their perceived luck to themselves.

In addition to its moderating role on the relationship between perceived luck and intention to play, locus of control on luck was also found to be a consequence of perceived luck. Specifically, higher perceived luck led to a higher propensity toward internal locus of control on luck, whereas lower perceived luck led to a higher propensity toward external locus of control on luck. This finding provides support for the robustness of self-serving bias. People tended to take credit for the high perceived luck they had and to attribute their low perceived luck to external factors in order to deny responsibility.

5.4 Summary

This chapter discusses the results presented in Chapter 4. The findings provide support for the assumption in this study that perceived luck (including its intensity) is determined by multiple factors, though not all the determinants were found significant. Valence and importance of an outcome were suggested as the core determinants of perceived luck and its intensity. Exclusivity and proximity of perceived luck played auxiliary roles, given that their existences required pre-conditions. Moreover, proximity provided the room for the exclusivity effect on intensity of perceived luck. Although the effect of rarity of an outcome was not statistically significant, discussions indicated that removing this determinant from the conceptual framework was not easy to justify. The positive relationship between perceived luck and intention to play indicated that people tended to follow positive recency rather than negative recency in their predictions of outcome with their perceived luck. While fourteen predictors of intention to play were incorporated in the regression model, half of them were found not statistically significant, especially demographic variables. Contrary to predictions, external locus of control on luck enhances the predicting effect of perceived luck on intention to play. This finding could be the result of external locus of control on luck resembling a situational factor and internal locus of control on luck resembling a personal trait, while situational factors were maintained to be more influential on the subsequent reaction than personal traits. This finding also implies that people who attribute their perceived luck to external factors are more superstitious than their counterparts who internalize their perceived luck. Finally, the findings in this study indicate that attribution of perceived luck aligns with self-serving bias.

CHAPTER 6 : CONCLUSION

This chapter presents the essence of this study and provides direction for future research. There are five sections in this chapter. The first section summarizes the findings of this study in response to the objectives set out at the beginning of this thesis. The second section explains how this study adds knowledge to the literature and extends the robustness of several theories. In the third section, managerial implications for casino operators are delineated. The fourth section specifies the research limitations and what can be done in the future. Finally, a summary of this chapter is provided.

6.1 Summary of Findings

As growth of casino gaming revenue is critical for the competitiveness of a tourist destination like Macao, increasing casino players' intention to play is paramount. As luck is salient in players' minds, the central objective of this study was to heighten casino players' intention to play via shaping of their perceived luck. Given this goal, four specific objectives were established for this study: (a) identifying and examining the determinants of perceived luck, (b) examining the interaction effect of the determinants on perceived luck, (c) examining the relationship between perceived luck and intention to play, and (d) exploring if the relationship can be moderated.

To address the first and second objectives, five determinants of perceived luck and its intensity, namely valence, rarity, importance, exclusivity, and proximity of an outcome were identified. Valence of an outcome (win or

loss) was found to affect perceived luck. Specifically, a winning outcome evoked higher perceived luck than a losing outcome did. Echoing the prospect theory, the intensity of high perceived luck in the winning scenario was not as strong as that of low perceived luck in the losing scenario. The effects of importance and proximity of an outcome on intensity of perceived luck were also confirmed. However, these two determinants differed in that proximity required a pre-condition (i.e., a counterfactual thinking process) and thus could only be considered an auxiliary determinant. Similarly, exclusivity of an outcome also played an auxiliary role given the pre-condition that players should be aware of others' outcomes. More importantly, the exclusivity effect needed the support of the proximity effect, making the auxiliary role of exclusivity more prominent. Findings regarding interaction effects indicated that an exclusively winning outcome heightened perceived luck when the outcome was of high proximity. Also, if an outcome was an important one, an exclusive and high proximity outcome strengthened the perceived luck.

Rarity of an outcome was the only determinant that did not affect perceived luck, but there was still a lack of strong reasoning to exclude this determinant. Based on the findings in this study, it could be observed that the formulation of perceived luck rests on multiple determinants, confirming the contention of the adaptation-level theory that perception is formed with respect to multiple reference points.

In response to the third objective, this study revealed that players holding higher (lower) perceived luck were more (less) likely to play, implying that players expected their perceived luck to persist in the next trial. Regarding the

fourth objective, the newly proposed construct, namely locus of control on luck was found to moderate the predicting effect of perceived luck on intention to play and in particular it was found that the predicting effect was stronger when players thought their perceived luck came from external factors than when they thought their perceived luck was attached to themselves. As an extension of self-serving bias, players who had higher perceived luck were more likely to attribute their perceived luck to themselves, whereas their counterparts were more likely to attribute their low perceived luck to external factors.

6.2 Theoretical Contribution

While there is a vast body of literature on perceived luck, a comprehensive picture of the factors that influence perceived luck was still lacking. The current research fills in some of this void by identifying and examining five determinants which are derived from philosophy, psychology, and the marketing literature. Another major contribution of this study fell into the newly proposed construct called locus of control on luck, which provides a breakthrough over the previous understanding of perceived luck. Perhaps this construct could provide more thinking room for future studies and arouse researchers' interest to extend the literature of luck.

Through an empirical examination of the hypothesized relationships in the conceptual framework, the current research extended and confirmed the robustness of several important theories and concepts including adaptation-level theory, prospect theory, locus of control, and self-serving bias. To my best

knowledge, this was the first attempt to explain the phenomenon of perceived luck and its intensity with the theories. With the adaptation-level theory, the rationale behind the predicting effect of the determinants on perceived luck and its intensity can be explained. More specifically, players' evaluation of perceived luck and its intensity rest on multiple reference points to which the outcome is compared. By adjusting the reference point, perceived luck and its intensity can be shaped.

Coherent with the principle in prospect theory, the current research confirmed the asymmetrical effect of negative and positive outcomes on the intensity of perceived luck where negative outcome results in a stronger perceived luck than that of a comparable positive outcome. In other words, players tend to put more weight on the negative outcome than the positive one when they are evaluating their luck.

Locus of control suggested that people would distinguish the attribution of outcome into internal locus of control, control through powerful others (external), and control by chance forces (external). The first two dimensions provide the rationale for constructing the concept namely locus of control on luck in this study, with internal locus of control on luck resembling internal locus of control and external locus of control on luck resembling control through powerful others.

Self-serving bias contended that people attribute positive outcome to themselves and negative outcome to external factors. Given this bias, the current research confirmed that players also attributed high perceived luck to themselves and low perceived luck to external factors.

In addition, this was the first attempt to empirically examine the effects of the five determinants on perceived luck simultaneously. The findings enrich the understanding of the roles (e.g., core or auxiliary) of each determinant. Also, the empirical confirmation of the significance of locus of control on luck in this study might provide a convincing reason for other researchers to probe into this construct in the future.

Although the conceptual framework of this study was examined in the gaming context, it does not mean that the framework is context-specific. As the framework was grounded in an extensive body of literature and empirical findings in various disciplines and contexts, it is assumed that the framework is a fundamental one which can be used to explain the phenomena of perceived luck across situations.

6.3 Managerial Implications

The competitiveness of tourist destinations like Macao relies heavily on the well-being of casino gaming revenue. Thus, it is essential to maintain or enhance casino players' gaming intention irrespective of the perspectives of casino operators or destination management organizations. Following this rationale, the current study purposed to provide implications for casino operators to enhance players' intention to play via manipulation of perceived luck (see section 1.3). As important outcomes are essential to enhance perceived luck, casinos should allow their patrons to win a considerable amount of money. However, this recommendation should be unwelcome from casino operators'

perspectives, as they tend to be profit-oriented. Instead, the importance of the outcome can be applied to the design of lucky draw events in casinos. While an important outcome is one that helps satisfy personal goals, casino operators should give out prizes that match most of their patrons' goals. Then the lucky fellows' perceived luck can be heightened. Following self-serving bias, it is likely that the lucky fellows will generalize their high perceived luck derived from the lucky draw game to their gaming episodes in the casino. That means it is likely they will play in the casinos.

Following the rationale that higher proximity of an outcome strengthens the intensity of perceived luck, casino operators should provide more high proximity conditions for winners and less high proximity conditions for losers. However, implementation would be difficult. For instance, to evoke more high proximity conditions, casino operators can narrow the wedges in the Wheel of Fortune, but this practice would worsen low perceived luck in the losing condition. As losses are prevalent in casino gaming, casino operators should reduce the occurrence of high proximity conditions (e.g., widen the wedges in the Wheel of Fortune).

This study found that a winning outcome of high proximity and high exclusivity heightened perceived luck. Accordingly, casino operators may make use of the exclusivity of an outcome. For instance, if a slot-machine player gets a winning outcome near to a loss, the machine can prompt a message denoting the exclusiveness of the player's outcome, which in turn would help to heighten the players' perceived luck. The same practice can be applied to the lucky draw game in casinos. As the lucky draw game is usually operated by staff rather than

machine, the staff can tell the lucky fellow that the outcome is an exclusive one. Moreover, following the findings that importance interacts with proximity and exclusivity, the positive effect of high proximity and high exclusivity on perceived luck should be more profound if the lucky draw prize is important to the lucky fellow. As previously stated, casino operators should think of prizes that can satisfy most of their patrons' needs.

While external locus of control on luck (in relation to internal locus of control on luck) strengthens the positive relationship between perceived luck and intention to play, a slot machine can prompt a message to the winner that it is a lucky machine to him or her in order to induce him or her to endorse external locus of control on luck. This practice is important as self-serving bias causes winners to internalize rather than externalize their high perceived luck. As losers tend to attribute their low perceived luck to external factors, it is possible that types of game, machines, tables, dealers, and casinos become the factors to which they attribute their low perceived luck. Then casino operators need to ensure a diversity of games and sufficiency of machines, tables, and dealers so as to facilitate the losers in switching. Casino operators may also operate more than one casino in a specific geographical area so that even if the losers attribute their low perceived luck to one of their casinos and leave, the incumbent casino operator can still have a chance to capture those losers at its casinos in nearby locations.

Although this study targets to provide implications for casino operators to increase players' gaming intention, it does not mean that the negative impact of casino gaming can be neglected. As stated in Chapter 1 (see section 1.1.4), it

is desirable to maintain the development of casino gaming industry at a healthy level, specifically in achieving a balance between the costs and the benefits of casino gaming. Gaming can bring a lot of negative impacts to the society, however it can also bring fun to the players and even play an important role in tourism development like Macao. Therefore, it is the responsibilities of all stakeholders of the gaming business to work out the optimal solution or to foster an environment where every stakeholder's net benefits are maximized. In this regard, the finding in this study is a two-edge sword. The casino operators may adopt the implications to increase their gaming revenue. On the other hand, the government may ponder whether the implications will lead to unacceptable social costs. Then the government may need to incorporate the implications into the gaming policy.

6.4 Limitations and Future Studies

While the current research enriched the literature, it also has limitations. The experiment in this study was not conducted in a real setting (i.e., a casino environment) and the participants were not required to play with their own money owing to ethical reasons. Moreover, the low rarity of winning condition in the experiment is unlikely to happen in casino gaming given the house advantage of casinos. Therefore, it is difficult to provide very concrete implications for casino operators. Future study, if practically feasible, may replicate the study in real casino gaming episodes. In this way, gaming behavior instead of intention can be captured while the house advantage of casinos can be

incorporated, which should provide more convincing implications for practitioners.

In order to strengthen the external validity of this study, participants were recruited from general public in Macao. Since engaging all participants in the same controlled environment (e.g., a laboratory) was practically infeasible for the current study, the potential environmental effects on participants' responses could not be assessed. Future study may replicate the experiment in a controlled environment, but the experimenter has to be cautious about generalizability of the findings.

In this study, rarity of an outcome was the only determinant that did not exert any main or interaction effect on intensity of perceived luck. As discussed earlier, the insignificance of rarity can be due to the non-extreme rarity level in the high rarity condition or because the manipulation of rarity happened far earlier than the time at which participants indicated their perceived luck in the experiment. To address these two possible limitations, future studies may include additional rarity levels with one of them being very rare, and reiterate the rarity of an outcome just before the participants indicate their perceived luck. While rarity of an outcome may also be dictated by previous outcome records, future research can engage participants in a number of trials and manipulate the valence of outcome of the trials. As the design of the current research might not be adequate to examine the rarity effect, making a conclusion about the importance of determinants of intensity of perceived luck (specifically comparing the effects of hypotheses 2 to 6) becomes conceptually infeasible.

Future research may investigate this issue so that a more concrete implication can be provided for the practitioners.

In this study, the five determinants were only manipulated by two levels each. Since additional treatment level requires a larger sample size, using more levels was not feasible for the current study. Future studies may add more treatment levels to examine if the effect of the determinants on perceived luck and its intensity is linear or not. The findings might provide implications on the point where the determinant effects are optimized.

This study was the first attempt to examine the effects of the determinants on perceived luck and its intensity. Given the exploratory nature, the effects of determinants are assumed paralleling each other (Victora, Huttly, Fuchs, and Olinto, 1997). Future studies may investigate if the effects of the determinants on perceived luck and its intensity can be hierarchical, or more specifically if there is any relationship between the determinants.

While separate analyses were conducted for the effects of determinants on perceived luck (and its intensity) and the effect of perceived luck on intention to play, direct effects of the determinants on intention to play and mediating effects of perceived luck and intensity of perceived luck are unknown. Future studies may investigate these effects so that the importance of perceived luck (and its intensity) can be evaluated.

In the experiment, participants were asked to play Wheel of Fortune on a computer. As there are many games of chance in casino, future research may examine if the same findings can be drawn from other games (e.g., slot

machines). Also, participants in this study might cast doubt on whether the outcome was pre-determined by the computer during the experiment. Future studies may engage participants to play a conventional Wheel of Fortune.

While the significance of the newly proposed construct locus of control on luck has been confirmed in this study, the construct merits further scholarly attention. In this study, the external factor to which players attributed their perceived was unknown. It would be worthwhile for future studies to investigate the type of external factors to which people most frequently attribute their perceived luck and to examine if the moderating role of locus of control on luck and self-serving bias of perceived luck vary with the nature of external factors, for instance, human (e.g., other people) and non-human (e.g., number and color) factors. The findings will help to provide insights on whether external factors can further be decomposed into different sub-dimensions. Accordingly, casino operators' strategic initiatives based on the external of locus of control on luck effect can be more specific and effective.

While internal locus of control on luck assumes that perceived luck is robust against external factors, this assumption could not be empirically verified in this study owing to the fact that participants were asked about their intention to play the same game on the same machine. Future studies can examine this assumption by asking some participants who also endorse internal locus of control on luck to play a different game.

Although this research found that locus of control on luck was predicted by the level of perceived luck (i.e., a situational factor), future studies can incorporate other potential predictors, especially personal factors which are

always suggested as effective predictors of behavior (Funder & Ozer, 1983). In this regard, personality and demographic variables can be considered.

As previously stated, it is assumed that the conceptual framework is a fundamental one (see section 6.2). Future studies can verify this assumption by replicating the studies in different parts of the world. Moreover, a replication of the study in a non-gaming context would be most welcomed.

6.5 Summary

As the competitiveness of a tourist destination like Macao relies heavily on the well-being of casino gaming revenue, maintaining and increasing casino players' intention to play is crucial. As luck is salient in players' minds, this study aims to heighten casino players' gaming intention via shaping their perceived luck. In this regard, identifying and examining the factors that affect perceived luck is essential. Findings in this study showed that valence, importance, exclusivity, and proximity of an outcome affected perceived luck, whereas rarity of an outcome did not. There was a positively predicting relationship between perceived luck and intention to play whilst the positive relationship was more salient when the perceived luck was attributed to external factors. Players with high perceived luck were more likely to attribute their perceived luck to themselves. Based on these findings, the current research confirmed the robustness of several important theories and concepts and the significance of a new construct namely locus of control on luck. Also, the findings provided insights for casino operators on how they can enhance casino

players' gaming intention via shaping players' perceived luck, particularly on the role of each determinant of perceived luck. They should pay special attention to the importance, exclusivity, and proximity of a winning outcome in designing their luck draw events inside the casino. High proximity of an outcome should be avoided in game of chance like Wheel of Fortune as players usually lose. In response to the findings on locus of control on luck, casino operators can prompt the winners with message echoing external locus of control on luck. Also, casino operators may need to expand their facilities and human resources in order to cater to the switching behavior of losers caused by external locus of control on luck. Future studies have been suggested to address the limitations caused by the research design in this study.

APPENDICES

Appendix A

Proportion of Gaming Tax Revenue to Total Revenue of Macao Government in 2011

Formula:

(Casino gaming tax revenue / Government's total revenue) x 100

wherein,

Gaming tax revenue = 99,520 million Macao Patacas (Macao Statistics and Census Service, 2012b)

Government's total revenue = 122,972 million Macao Patacas (Macao Statistics and Census Service, 2012b)

Calculation:

(99,520 million Macao Patacas / 122,072 million Macao Patacas) x 100

= 80.9%

Appendix B

Questionnaire Used in the Pilot Study (English Version)

B1: Introduction and Screening Questions

A STUDY OF PERCEPTION OF CASINO GAMING

You are invited to participate in a study conducted by Mr. Lawrence Fong, who is a doctoral student of the School of Hotel and Tourism Management in The Hong Kong Polytechnic University. The project has been approved by the Human Subjects Ethics Sub-committee (HSESC) of The Hong Kong Polytechnic University (HSESC Reference Number: HSEARS20120416003).

The aim of this study is to examine a casino player's perception of casino gaming. The study will involve playing with a computer-simulated Wheel of Fortune and completing a questionnaire, which will take you about 10 minutes. It is hoped that this information will help understand how a casino player perceives and reacts to a casino game.

A prize is offered but it is subject to whether you can get a winning outcome in the Wheel of Fortune associated with this study. All information related to you will remain confidential, and will be identifiable by codes only known to the researchers. You have every right to withdraw from the study at any time without penalty of any kind.

If you would like to get more information about this study, please contact Mr. Lawrence Fong on tel. no. 852-3400-2337, mailing address:TH842, School of Hotel & Tourism Management, 17 Science Museum Road, TST East, Kowloon, Hong Kong, and email address: lawrence.fong@

If you have any complaints about the conduct of this research study, please do not hesitate to contact Ms Kath Lui, Secretary of the Human Subjects Ethics Sub-Committee of The Hong Kong Polytechnic University in writing (c/o Research Office of the University) stating clearly the responsible person and school of this study.

Mr. Lawrence Fong
Investigator

- ❍ I understand the terms stated above and consent to participate in the captioned study.
- ❍ I refuse to participate in the captioned study.
- ❍ I have participated in the captioned study before.

Are you aged 18 or above?

- ❍ Yes
- ❍ No

Have you participated in any casino gaming activities in the past 24 hours?

- ❍ Yes
- ❍ No

B2: Perceived Importance of an Outcome

Do you think that winning or failure to win the *($10/$30)* McDonald's cash coupon matters to you?

Definitely not	❍	❍	❍	❍	❍	❍	❍	Definitely yes

Note. The content in the brackets varies with the treatment condition to which the participant is exposed

B3: Perceived Luck

Please indicate your level of agreement with the following statements.

Based on the current outcome…

	Strongly Disagree			Neither agree nor disagree			Strongly Agree
I am lucky.	❍	❍	❍	❍	❍	❍	❍
I have good luck.	❍	❍	❍	❍	❍	❍	❍
Luck is on my side.	❍	❍	❍	❍	❍	❍	❍
Luck works in my favor.	❍	❍	❍	❍	❍	❍	❍

B4: Locus of Control on Luck

Based on the current outcome, the luck that I feel is...

Attached to me	❍	❍	❍	❍	❍	❍	❍	Attached to other things (e.g., objects, numbers, rituals, etc.)
About me	❍	❍	❍	❍	❍	❍	❍	About other things (e.g., objects, numbers, rituals, etc.)
Inside of me	❍	❍	❍	❍	❍	❍	❍	Inside of other things (e.g., objects, numbers, rituals, etc.)
Something that reflects an aspect of myself	❍	❍	❍	❍	❍	❍	❍	Something that reflects an aspect of other things (e.g., objects, numbers, rituals, etc.)

B5: Intention to Play

To what extent will you play the Wheel of Fortune again with your own money (the payoff is 2 to 1 and the betting amount is subject to you)?

Improbable	❍	❍	❍	❍	❍	❍	❍	Probable
Impossible	❍	❍	❍	❍	❍	❍	❍	Possible
Unlikely	❍	❍	❍	❍	❍	❍	❍	Likely

B6: Perceived Proximity of an Outcome

Do you think that you were very close to *(loss/win)*?

Definitely not	❍	❍	❍	❍	❍	❍	❍	Definitely yes

Note. The content in the brackets varied with the treatment condition to which the participant was exposed

B7: Perceived Rarity of an Outcome (R)

Based on the area of the winning and losing wedges in the Wheel of Fortune, do you think that you had a higher probability of *(winning than losing/losing than winning)*?

Definitely not	❍	❍	❍	❍	❍	❍	❍	Definitely yes

Note. (R) indicates reverse scored; The content in the brackets varied with the treatment condition to which the participant was exposed.

B8: Perceived Exclusivity of an Outcome

Do you think that the current outcome is exclusive to you?

Definitely not	❍	❍	❍	❍	❍	❍	❍	Definitely yes

B9: Belief in Luck

Please indicate your level of agreement with the following statements.

	Strongly Disagree			Neither agree nor disagree			Strongly Agree
Some people are consistently lucky, and others are unlucky.	❍	❍	❍	❍	❍	❍	❍
Some people are consistently unlucky, and others are lucky.	❍	❍	❍	❍	❍	❍	❍
There is such a thing as good luck that favors some people, but not others.	❍	❍	❍	❍	❍	❍	❍
There is such a thing as bad luck that affects some people more than others.	❍	❍	❍	❍	❍	❍	❍
Luck plays an important part in everyone's life.	❍	❍	❍	❍	❍	❍	❍
I believe in luck.	❍	❍	❍	❍	❍	❍	❍

B10: Risk-taking Propensity

Please indicate your level of agreement with the following statements.

	Strongly Disagree			Neither agree nor disagree			Strongly Agree
Safety first. (R)	❍	❍	❍	❍	❍	❍	❍
I do not take risks with my health. (R)	❍	❍	❍	❍	❍	❍	❍
I prefer to avoid risks. (R)	❍	❍	❍	❍	❍	❍	❍
I really dislike not knowing what is going to happen. (R)	❍	❍	❍	❍	❍	❍	❍
I usually view risks as a challenge.	❍	❍	❍	❍	❍	❍	❍
I take risks regularly.	❍	❍	❍	❍	❍	❍	❍

I view myself as a…

Risk avoider	❍	❍	❍	❍	❍	❍	❍	Risk seeker

Note. (R) indicates reverse scored.

B11: Attitude Toward Casino Gaming

What are your reactions to participation in casino gaming activities?

Extremely unfavorable	❍	❍	❍	❍	❍	❍	❍	Extremely favorable
Extremely unpleasant	❍	❍	❍	❍	❍	❍	❍	Extremely pleasant
Extremely unhappy	❍	❍	❍	❍	❍	❍	❍	Extremely happy
Very terrible activity	❍	❍	❍	❍	❍	❍	❍	Very enjoyable activity

What do you think about participation in casino gaming activities with friends?

Very bad idea	❍	❍	❍	❍	❍	❍	❍	Very good idea

B12: Social Norm of Casino Gaming

Would people who are important to you approve you to participate in casino gaming activities?

No, definitely not	❍	❍	❍	❍	❍	❍	❍	Yes, for sure

Would people who are important to you approve you to participate in casino gaming activities with friends?

No, definitely not	❍	❍	❍	❍	❍	❍	❍	Yes, for sure

B13: Perceived Behavioral Control

To what extent can you control yourself to or not to participate in casino gaming activities?

Extremely difficult	❍	❍	❍	❍	❍	❍	❍	Extremely easy

To what extent can you spend time to participate in casino gaming activities?

Extremely difficult	❍	❍	❍	❍	❍	❍	❍	Extremely easy

What do you think about your casino gaming skills?

Poor	❍	❍	❍	❍	❍	❍	❍	Excellent

B14: Participants' Characteristics

How often do you participate in casino gaming activities?

- ❍ Never
- ❍ Less than once a month
- ❍ Once a month
- ❍ 2-3 times a month
- ❍ 4-6 times a month
- ❍ 7-10 times a month
- ❍ More than 10 times a month

What is the highest level of education you have completed?

- ❍ Primary or below
- ❍ High school
- ❍ Bachelor's degree
- ❍ Master's degree or above
- ❍ Other, please specify _____

What is your country/region of origin?

- ❍ Macao
- ❍ Mainland China
- ❍ Hong Kong
- ❍ Taiwan
- ❍ Other, please specify _____

What is your monthly household income range?

- ❍ Less than HKD 2,000
- ❍ HKD 2,000 - 3,999
- ❍ HKD 4,000 - 5,999
- ❍ HKD 6,000 - 7,999
- ❍ HKD 8,000 - 9,999
- ❍ HKD 10,000 -,14,999
- ❍ HKD 15,000 - 19,999
- ❍ HKD 20,000 - 24,999
- ❍ HKD 25,000 - 29,999
- ❍ HKD 30,000 - 39,999
- ❍ HKD 40,000 - 59,999
- ❍ HKD 60,000 - 79,999
- ❍ HKD 80,000 - 99,999
- ❍ HKD 100,000 or above

What is your age?

- ❍ 18 - 24
- ❍ 25 - 34
- ❍ 35 - 44
- ❍ 45 - 54
- ❍ 55 - 64
- ❍ 65 - 74
- ❍ 75 or above

What is your gender?

- ❍ Male
- ❍ Female

Do you have any queries or comments on this study?

_____ _____

Appendix C

Questionnaire Used in the Pilot Study (Traditional Chinese Version)

C1: Introduction and Screening Questions

賭場博彩感知研究

您好！香港理工大學酒店及旅遊業管理學院博士研究生馮學能現誠邀閣下參與上述研究項目。該項目已獲得香港理工大學人類道德小組委員會的認可(參考編號: HSEARS20120416003)。

本研究之目的是了解賭場博彩者對賭場博彩的感知，本研究將要求閣下玩一個電腦模擬幸運輪及完成一份問卷，所需時間約十分鐘。收集的資料將有助了解博彩者對賭場博彩遊戲的感知及反應。

若參與者在本研究的幸運輪遊戲中勝出，可獲獎品一份。有關閣下的所有資料會被保密及編成只有研究人員才能識別的代碼。閣下有權隨時退出而不受任何懲處。

若閣下有意獲取更多有關本研究的資料，請聯絡馮學能先生，電話：852-3400-2337；地址：香港九龍尖東科學館道十七號酒店及旅遊業管理學院 TH842 室；電郵：lawrence.fong@

若閣下就本研究的操作有任何投訴，請致函香港理工大學人類道德小組委員會秘書呂美蘭小姐(轉交大學研究事務處)，並註明研究項目的負責人及所屬學院。

馮學能先生
博士研究生

- ❍ 本人了解以上條款，並同意參與上述研究項目。.
- ❍ 本人不願意參與上述研究項目。
- ❍ 本人早前已參與過上述研究項目。

您是否已年滿十八歲呢?

- ❍ 是
- ❍ 否

您有沒有在過去的 24 小時內去過賭場博彩呢?

- ❍ 是
- ❍ 否

C2: Perceived Importance of an Outcome

對您來講，能否贏得*($10/$30)*麥當勞現金券有關係嗎**?**

絕對沒有	❍	❍	❍	❍	❍	❍	❍	絕對有

Note. The content in the brackets varied with the treatment condition to which the participant was exposed.

C3: Perceived Luck

請就以下句子表達您的同意程度。

根據這個遊戲結果...

	十分不贊成			很難講贊成或不贊成			十分贊成
我好彩。	❍	❍	❍	❍	❍	❍	❍
我有好運。	❍	❍	❍	❍	❍	❍	❍
好運在我這一邊。	❍	❍	❍	❍	❍	❍	❍
有好運幫我。	❍	❍	❍	❍	❍	❍	❍

C4: Locus of Control on Luck

根據這個遊戲結果，我的運氣是...

跟着我	❍	❍	❍	❍	❍	❍	❍	跟着其他東西（例如，物件、號碼、做法等）
與我有關	❍	❍	❍	❍	❍	❍	❍	與其他東西有關（例如，物件、號碼、做法等）
在我裡面	❍	❍	❍	❍	❍	❍	❍	在其他東西裡面（例如，物件、號碼、做法等）
一些東西反映我自己某方面	❍	❍	❍	❍	❍	❍	❍	一些東西反映其他東西的某方面（例如，物件、號碼、做法等）

C5: Intention to Play

您有幾大程度願意用自己的錢再次玩這個幸運輪呢（賠率是 1 賠 2，投注幾多隨便您）?

多數不會	❍	❍	❍	❍	❍	❍	❍	多數會
沒有機會的	❍	❍	❍	❍	❍	❍	❍	有機會的
不可能的	❍	❍	❍	❍	❍	❍	❍	可能的

C6: Perceived Proximity of an Outcome

您是否差少少就(*輸/贏*)呢?

絕對不是	❍	❍	❍	❍	❍	❍	❍	絕對是

Note. The content in the brackets varied with the treatment condition to which the participant was exposed.

C7: Perceived Rarity of an Outcome (R)

按照這個幸運輪的輸贏面積，您認為您(*贏的機會較輸/輸的機會較贏*)的大嗎?

絕對不是	❍	❍	❍	❍	❍	❍	❍	絕對是

Note. (R) indicates reverse scored; The content in the brackets varied with the treatment condition to which the participant was exposed.

C8: Perceived Exclusivity of an Outcome

您認為這個結果只得您有嗎?

絕對不是	❍	❍	❍	❍	❍	❍	❍	絕對是

C9: Belief in Luck

請您就以下句子表達您的同意程度。

	十分不贊成			很難講贊成或不贊成			十分贊成
有些人總是行好運，而其他人就總是行衰運。	❍	❍	❍	❍	❍	❍	❍
有些人總是行衰運，而其他人就總是行好運。	❍	❍	❍	❍	❍	❍	❍
好運總是幫某些人的，而不幫其他人。	❍	❍	❍	❍	❍	❍	❍
衰運總是影響某些人較多的。	❍	❍	❍	❍	❍	❍	❍
運氣在每個人的生命中扮演一個重要的角色。	❍	❍	❍	❍	❍	❍	❍
我相信運氣。	❍	❍	❍	❍	❍	❍	❍

C10: Risk-taking Propensity

請您就以下句子表達您的同意程度。

	十分不贊成			很難講贊成或不贊成			十分贊成
安全第一。(R)	❍	❍	❍	❍	❍	❍	❍
我不會在健康方面冒險。(R)	❍	❍	❍	❍	❍	❍	❍
我喜歡迴避風險。(R)	❍	❍	❍	❍	❍	❍	❍
我討厭對未來的事情一無所知。(R)	❍	❍	❍	❍	❍	❍	❍
我通常視風險為挑戰。	❍	❍	❍	❍	❍	❍	❍
我經常會冒險。	❍	❍	❍	❍	❍	❍	❍

我認為自己是一個...

迴避風險的人	❍	❍	❍	❍	❍	❍	❍	冒險者

Note. (R) indicates reverse scored.

C11: Attitude Toward Casino Gaming

您對於去賭場博彩有什麼反應呢?

非常不喜歡	❍	❍	❍	❍	❍	❍	❍	非常喜歡
非常不愉快	❍	❍	❍	❍	❍	❍	❍	非常愉快
非常不高興	❍	❍	❍	❍	❍	❍	❍	非常高興
十分可怕的活動	❍	❍	❍	❍	❍	❍	❍	十分享受的活動

您對於和朋友一起去賭場博彩有什麼想法呢?

十分差的主意	❍	❍	❍	❍	❍	❍	❍	十分好的主意

C12: Social Norm of Casino Gaming

您視為重要的人會否贊成您去賭場博彩呢?

絕對不會	❍	❍	❍	❍	❍	❍	❍	一定會

您視為重要的人會否贊成您和朋友一起去賭場博彩呢?

絕對不會	❍	❍	❍	❍	❍	❍	❍	一定會

C13: Perceived Behavioral Control

您有幾大程度能夠控制自己去或不去賭場博彩呢?

非常困難	❍	❍	❍	❍	❍	❍	❍	非常容易

您有幾大程度能夠花時間去賭場博彩呢?

非常困難	❍	❍	❍	❍	❍	❍	❍	非常容易

您對於您的賭場博彩技術有什麼想法呢?

差勁	❍	❍	❍	❍	❍	❍	❍	出色

C14: Participants' Characteristics

您有幾經常去賭場博彩呢?

- ❍ 從來不會
- ❍ 每月少於 1 次
- ❍ 每月 1 次
- ❍ 每月 2 至 3 次
- ❍ 每月 4 至 6 次
- ❍ 每月 7 至 10 次
- ❍ 每月多於 10 次

您已完成的最高教育程度是什麼?

- ❍ 小學或以下
- ❍ 中學
- ❍ 大學
- ❍ 碩士或以上
- ❍ 其他，請註明_____

你來自哪一個國家/地區?

- ❍ 澳門
- ❍ 中國大陸
- ❍ 香港
- ❍ 台灣
- ❍ 其他，請註明_____

您每月家庭收入的範圍是什麼?

- ❍ 少於港幣 2,000 元
- ❍ 港幣 2,000 - 3,999 元
- ❍ 港幣 4,000 - 5,999 元
- ❍ 港幣 6,000 - 7,999 元
- ❍ 港幣 8,000 - 9,999 元
- ❍ 港幣 10,000 -,14,999 元
- ❍ 港幣 15,000 - 19,999 元
- ❍ 港幣 20,000 - 24,999 元
- ❍ 港幣 25,000 - 29,999 元
- ❍ 港幣 30,000 - 39,999 元
- ❍ 港幣 40,000 - 59,999 元
- ❍ 港幣 60,000 - 79,999 元
- ❍ 港幣 80,000 - 99,999 元
- ❍ 港幣 100,000 元或以上

您的年齡是什麼?

- ❍ 18 至 24 歲
- ❍ 25 至 34 歲
- ❍ 35 至 44 歲
- ❍ 45 至 54 歲
- ❍ 55 至 64 歲
- ❍ 65 至 74 歲
- ❍ 75 歲或以上

您的性別是什麼?

- ❍ 男
- ❍ 女

您對於本研究有沒有任何問題或意見?

_____

Appendix D

Questionnaire Used in the Pilot Study (Simplified Chinese Version)

D1: Introduction and Screening Questions

赌场博彩的感知研究

您好！香港理工大学旅游管理专业博士研究生冯学能，现诚邀您参与上述研究项目。本项目已经通过了香港理工大学道德小组委员会的许可（许可编号： HSEARS20120416003）。

本研究的目的是了解赌场博彩者对于赌场博彩的感知。研究中，您将玩一个电脑虚拟的幸运轮并完成一份问卷，整个过程约占用您十分钟的时间。收集的资料将有助于了解赌场博彩者对于赌场游戏的感知与反应。

如果您在游戏中胜出，将获得一份奖品。所有和您有关的信息都是保密的，并且将被编写成只有研究人员才能识别的代码。您在过程中有权随时退出，而不受任何约束。

如果您希望得到有关本研究的更多信息，请联系冯学能先生，电话：852-3400-2337，地址：香港九龙尖沙咀东部科学馆道 17 号酒店及旅游管理学院 TH842 室，电子邮件地址：lawrence.fong@

如果您就本研究有任何投诉，请致函香港理工大学道德小组委员会秘书吕美兰小姐（转交大学研究事务处），并注明研究项目负责人及所属学院。

博士研究生：冯学能

- ❍ 本人了解上述条款并同意参加上述研究项目。.
- ❍ 本人不愿意参加上述研究项目。
- ❍ 本人先前已参与过上述研究项目。

请问您是否年满十八岁？

- ❍ 是
- ❍ 否

请问您有没有在过去 24 小时中参与过任何赌场博彩活动?

- ❍ 是
- ❍ 否

D2: Perceived Importance of an Outcome

是否赢得(*10 元/30 元*) 麦当奴现金券跟您有关系吗？

绝对没有	❍	❍	❍	❍	❍	❍	❍	绝对有

Note. The content in the brackets varied with the treatment condition to which the participant was exposed.

D3: Perceived Luck

请您就以下句子表达您的同意程度。

根据这个游戏结果...

	非常不同意			很难说同意或者不同意			非常同意
我走运了。	❍	❍	❍	❍	❍	❍	❍
我有好运气。	❍	❍	❍	❍	❍	❍	❍
好运气在我这一边	❍	❍	❍	❍	❍	❍	❍
好运气在帮助我。	❍	❍	❍	❍	❍	❍	❍

D4: Locus of Control on Luck

根据这个游戏结果，我的运气是...

伴随着我	❍	❍	❍	❍	❍	❍	❍	伴随着其他的东西（例如，物品、号码、做法等）
与我自身有关	❍	❍	❍	❍	❍	❍	❍	与其它东西有关（例如，物品、号码、做法等）
在我之内	❍	❍	❍	❍	❍	❍	❍	在其他东西之内（例如，物品、号码、做法等）
一种东西反映了我的某些方面	❍	❍	❍	❍	❍	❍	❍	一种东西反映了其他东西的某些方面（例如，物品、号码、做法等）

D5: Intention to Play

在多大程度上您愿意自己花钱再次玩这个幸运轮（赔率是 1 赔 2，下注多少随便您）?

大多数不会	❍	❍	❍	❍	❍	❍	❍	大多数会
没有机会的	❍	❍	❍	❍	❍	❍	❍	有机会的
不可能的	❍	❍	❍	❍	❍	❍	❍	可能的

D6: Perceived Proximity of an Outcome

您是否差一点就(*输/赢*)了吗？

绝对不是	❍	❍	❍	❍	❍	❍	❍	绝对是

Note. The content in the brackets varied with the treatment condition to which the participant was exposed.

D7: Perceived Rarity of an Outcome (R)

就这个幸运轮的赢和输面积而言，您认为您(*赢的机会比输/输的机会比赢*)的大吗？

绝对不是	❍	❍	❍	❍	❍	❍	❍	绝对是

Note. (R) indicates reverse scored; The content in the brackets varied with the treatment condition to which the participant was exposed.

D8: Perceived Exclusivity of an Outcome

您认为这个结果只发生在您身上吗？

绝对不是	❍	❍	❍	❍	❍	❍	❍	绝对是

D9: Belief in Luck

请就下面的句子表达您的同意程度。

	非常不同意			很难说同意或者不同意			非常同意
有的人总是走运，其它的人总是倒霉。	❍	❍	❍	❍	❍	❍	❍
有的人总是倒霉，其它的人总是走运。	❍	❍	❍	❍	❍	❍	❍
好运气总会帮助一部份人，而不帮助另外一部份人。	❍	❍	❍	❍	❍	❍	❍
坏运气总会更多的影响一部份人。	❍	❍	❍	❍	❍	❍	❍
运气在每一个人的人生中都扮演重要的角色。	❍	❍	❍	❍	❍	❍	❍
我相信运气。	❍	❍	❍	❍	❍	❍	❍

D10: Risk-taking Propensity

请就下面有关您冒险倾向的句子表达您的同意程度。

	非常不同意			很难说同意或者不同意			非常同意
安全第一。(R)	❍	❍	❍	❍	❍	❍	❍
对于我的健康，我不会冒险。(R)	❍	❍	❍	❍	❍	❍	❍
我更喜欢回避风险。(R)	❍	❍	❍	❍	❍	❍	❍
我讨厌对未来发生的事一无所知。(R)	❍	❍	❍	❍	❍	❍	❍
我经常视冒险为一种挑战。	❍	❍	❍	❍	❍	❍	❍
我经常冒险。	❍	❍	❍	❍	❍	❍	❍

我认为自己是一个...

回避风险的人	❍	❍	❍	❍	❍	❍	❍	偏向冒险的人

Note. (R) indicates reverse scored.

D11: Attitude Toward Casino Gaming

您对于参与赌场博彩活动有什么反应？

非常不喜欢	❍	❍	❍	❍	❍	❍	❍	非常喜欢
非常不愉快	❍	❍	❍	❍	❍	❍	❍	非常愉快
非常不高兴	❍	❍	❍	❍	❍	❍	❍	非常高兴
十分可怕的活动	❍	❍	❍	❍	❍	❍	❍	十分享受的活动

您对于和朋友一起参与赌场博彩活动有什么想法？

十分坏的主意	❍	❍	❍	❍	❍	❍	❍	十分好的主意

D12: Social Norm of Casino Gaming

您认为对您重要的人会赞成您参与赌场博彩活动吗？

绝对不会	❍	❍	❍	❍	❍	❍	❍	一定会

您认为对您重要的人会赞成您和朋友一起参与赌场博彩活动吗？

绝对不会	❍	❍	❍	❍	❍	❍	❍	一定会

D13: Perceived Behavioral Control

在多大程度上您有能力控制自己去或者不去参加赌场博彩活动？

非常困难	❍	❍	❍	❍	❍	❍	❍	非常容易

在多大程度上您能花时间去参加赌场博彩活动？

非常困难	❍	❍	❍	❍	❍	❍	❍	非常容易

您对于您的赌场博彩技术有何想法?

差劲	❍	❍	❍	❍	❍	❍	❍	优秀

D14: Participants' Characteristics

请问您参与赌场博彩活动的频率是怎么样?

- ❍ 从来不
- ❍ 少于每个月 1 次
- ❍ 一个月 1 次
- ❍ 一个月 2 到 3 次
- ❍ 一个月 4 到 6 次
- ❍ 一个月 7 到 10 次
- ❍ 一个月超过 10 次

请问您的最高学历是什么？

- ❍ 小学或以下
- ❍ 高中
- ❍ 大学
- ❍ 硕士或以上
- ❍ 其他，请注明_____

请问您是从哪一个国家/地区来？

- ❍ 澳门
- ❍ 中国大陆
- ❍ 香港
- ❍ 台湾
- ❍ 其他，请注明_____

请问您家庭的月收入范围是多少？

- ❍ 少于港币 2,000 元
- ❍ 港币 2,000 - 3,999 元
- ❍ 港币 4,000 - 5,999 元
- ❍ 港币 6,000 - 7,999 元
- ❍ 港币 8,000 - 9,999 元
- ❍ 港币 10,000 -,14,999 元
- ❍ 港币 15,000 - 19,999 元
- ❍ 港币 20,000 - 24,999 元
- ❍ 港币 25,000 - 29,999 元
- ❍ 港币 30,000 - 39,999 元
- ❍ 港币 40,000 - 59,999 元
- ❍ 港币 60,000 - 79,999 元
- ❍ 港币 80,000 - 99,999 元
- ❍ 港币 100,000 元或以上

请问您的年龄多大？

- 18 至 24 岁
- 25 至 34 岁
- 35 至 44 岁
- 45 至 54 岁
- 55 至 64 岁
- 65 至 74 岁
- 75 岁或以上

请问您的性别是什么?

- 男
- 女

请问您对本研究还有其它问题或者意见吗？

_____

Appendix E

Questionnaire Used in the Main Study (English Version)

E1: Introduction and Screening Questions

A STUDY OF PERCEPTION OF CASINO GAMING

You are invited to participate in a study conducted by Mr. Lawrence Fong, who is a doctoral student of the School of Hotel and Tourism Management in The Hong Kong Polytechnic University. The project has been approved by the Human Subjects Ethics Sub-committee (HSESC) of The Hong Kong Polytechnic University (HSESC Reference Number: HSEARS20120416003).

The aim of this study is to examine a casino player's perception of casino gaming. The study will involve playing with a computer-simulated Wheel of Fortune and completing a questionnaire, which will take you about 10 minutes. It is hoped that this information will help understand how a casino player perceives and reacts to a casino game.

A prize is offered but it is subject to whether you can get a winning outcome in the Wheel of Fortune associated with this study. All information related to you will remain confidential, and will be identifiable by codes only known to the researchers. You have every right to withdraw from the study at any time without penalty of any kind.

If you would like to get more information about this study, please contact Mr. Lawrence Fong on tel. no. 852-3400-2337, mailing address:TH842, School of Hotel & Tourism Management, 17 Science Museum Road, TST East, Kowloon, Hong Kong, and email address: lawrence.fong@

If you have any complaints about the conduct of this research study, please do not hesitate to contact Ms Kath Lui, Secretary of the Human Subjects Ethics Sub-Committee of The Hong Kong Polytechnic University in writing (c/o Research Office of the University) stating clearly the responsible person and school of this study.

Mr. Lawrence Fong
Investigator

- ❍ I understand the terms stated above and consent to participate in the captioned study.
- ❍ I refuse to participate in the captioned study.
- ❍ I have participated in the captioned study before.

Are you aged 18 or above?

- ❍ Yes
- ❍ No

Have you participated in any casino gaming activities in the past 24 hours?

- ❍ Yes
- ❍ No

E2: Perceived Importance of an Outcome

Do you think that winning or failure to win the *($10/$30)* McDonald's cash coupon matters to you?

Definitely not	❍	❍	❍	❍	❍	❍	❍	Definitely yes

Note. The content in the brackets varied with the treatment condition to which the participant was exposed

E3: Perceived Luck

Please indicate your level of agreement with the following statements.

Based on the current outcome…

	Strongly Disagree			Neither agree nor disagree			Strongly Agree
I am lucky.	❍	❍	❍	❍	❍	❍	❍
I have good luck.	❍	❍	❍	❍	❍	❍	❍
Luck is on my side.	❍	❍	❍	❍	❍	❍	❍
Luck works in my favor.	❍	❍	❍	❍	❍	❍	❍

E4: Locus of Control on Luck

Based on the current outcome, the luck that I feel is...

Attached to me	❍	❍	❍	❍	❍	❍	❍	Attached to other things (e.g., objects, numbers, rituals, etc.)
About me	❍	❍	❍	❍	❍	❍	❍	About other things (e.g., objects, numbers, rituals, etc.)
Inside of me	❍	❍	❍	❍	❍	❍	❍	Inside of other things (e.g., objects, numbers, rituals, etc.)
Something that reflects an aspect of myself	❍	❍	❍	❍	❍	❍	❍	Something that reflects an aspect of other things (e.g., objects, numbers, rituals, etc.)

E5: Intention to Play

To what extent will you play the Wheel of Fortune again with your own money (the payoff is 2 to 1 and the betting amount is subject to you)?

Improbable	❍	❍	❍	❍	❍	❍	❍	Probable
Impossible	❍	❍	❍	❍	❍	❍	❍	Possible
Unlikely	❍	❍	❍	❍	❍	❍	❍	Likely

E6: Perceived Proximity of an Outcome

Do you think that you were very close to *(loss/win)*?

Definitely not	❍	❍	❍	❍	❍	❍	❍	Definitely yes

Note. The content in the brackets varied with the treatment condition to which the participant was exposed

E7: Perceived Rarity of an Outcome (R)

Based on the area of the winning and losing wedges in the Wheel of Fortune, do you think that you had a higher probability of *(winning than losing/losing than winning)*?

Definitely not	❍	❍	❍	❍	❍	❍	❍	Definitely yes

Note. (R) indicates reverse scored; The content in the brackets varied with the treatment condition to which the participant was exposed.

E8: Perceived Exclusivity of an Outcome

Do you think that the current outcome is exclusive to you?

Definitely not	❍	❍	❍	❍	❍	❍	❍	Definitely yes

E9: Belief in Luck

Please indicate your level of agreement with the following statements.

	Strongly Disagree			Neither agree nor disagree			Strongly Agree
Some people are consistently lucky, and others are unlucky.	❍	❍	❍	❍	❍	❍	❍
Some people are consistently unlucky, and others are lucky.	❍	❍	❍	❍	❍	❍	❍
There is such a thing as good luck that favors some people, but not others.	❍	❍	❍	❍	❍	❍	❍
There is such a thing as bad luck that affects some people more than others.	❍	❍	❍	❍	❍	❍	❍
Luck plays an important part in everyone's life.	❍	❍	❍	❍	❍	❍	❍
I believe in luck.	❍	❍	❍	❍	❍	❍	❍

E10: Risk-taking Propensity

Please indicate your level of agreement with the following statements.

	Strongly Disagree			Neither agree nor disagree			Strongly Agree
I usually view risks as a challenge.	❍	❍	❍	❍	❍	❍	❍
I take risks regularly.	❍	❍	❍	❍	❍	❍	❍

I view myself as a…

Risk avoider	❍	❍	❍	❍	❍	❍	❍	Risk seeker

E11: Attitude Toward Casino Gaming

What are your reactions to participation in casino gaming activities?

Extremely unfavorable	❍	❍	❍	❍	❍	❍	❍	Extremely favorable
Extremely unpleasant	❍	❍	❍	❍	❍	❍	❍	Extremely pleasant
Extremely unhappy	❍	❍	❍	❍	❍	❍	❍	Extremely happy
Very terrible activity	❍	❍	❍	❍	❍	❍	❍	Very enjoyable activity

E12: Social Norm of Casino Gaming

Would people who are important to you approve you to participate in casino gaming activities?

No, definitely not	❍	❍	❍	❍	❍	❍	❍	Yes, for sure

Would people who are important to you approve you to participate in casino gaming activities with friends?

No, definitely not	❍	❍	❍	❍	❍	❍	❍	Yes, for sure

E13: Perceived Behavioral Control

To what extent can you control yourself to or not to participate in casino gaming activities?

Extremely difficult	❍	❍	❍	❍	❍	❍	❍	Extremely easy

To what extent can you spend time to participate in casino gaming activities?

Extremely difficult	❍	❍	❍	❍	❍	❍	❍	Extremely easy

What do you think about your casino gaming skills?

Poor	❍	❍	❍	❍	❍	❍	❍	Excellent

E14: Participants' Characteristics

How often do you participate in casino gaming activities?

- ❍ Never
- ❍ Less than once a month
- ❍ Once a month
- ❍ 2-3 times a month
- ❍ 4-6 times a month
- ❍ 7-10 times a month
- ❍ More than 10 times a month

What is the highest level of education you have completed?

- ❍ Primary or below
- ❍ High school
- ❍ Bachelor's degree
- ❍ Master's degree or above
- ❍ Other, please specify _____

What is your country/region of origin?

- ❍ Macao
- ❍ Mainland China
- ❍ Hong Kong
- ❍ Taiwan
- ❍ Other, please specify _____

What is your monthly household income range?

- ❍ Less than HKD 2,000
- ❍ HKD 2,000 - 3,999
- ❍ HKD 4,000 - 5,999
- ❍ HKD 6,000 - 7,999
- ❍ HKD 8,000 - 9,999
- ❍ HKD 10,000 -,14,999
- ❍ HKD 15,000 - 19,999
- ❍ HKD 20,000 - 24,999
- ❍ HKD 25,000 - 29,999
- ❍ HKD 30,000 - 39,999
- ❍ HKD 40,000 - 59,999
- ❍ HKD 60,000 - 79,999
- ❍ HKD 80,000 - 99,999
- ❍ HKD 100,000 or above

What is your age?

- ❍ 18 - 24
- ❍ 25 - 34
- ❍ 35 - 44
- ❍ 45 - 54
- ❍ 55 - 64
- ❍ 65 - 74
- ❍ 75 or above

What is your gender?

- ❍ Male
- ❍ Female

Appendix F

Questionnaire Used in the Main Study (Traditional Chinese Version)

F1: Introduction and Screening Questions

賭場博彩感知研究

您好！香港理工大學酒店及旅遊業管理學院博士研究生馮學能現誠邀閣下參與上述研究項目。該項目已獲得香港理工大學人類道德小組委員會的認可(參考編號: HSEARS20120416003)。

本研究之目的是了解賭場博彩者對賭場博彩的感知，本研究將要求閣下玩一個電腦模擬幸運輪及完成一份問卷，所需時間約十分鐘。收集的資料將有助了解博彩者對賭場博彩遊戲的感知及反應。

若參與者在本研究的幸運輪遊戲中勝出，可獲獎品一份。有關閣下的所有資料會被保密及編成只有研究人員才能識別的代碼。閣下有權隨時退出而不受任何懲處。

若閣下有意獲取更多有關本研究的資料，請聯絡馮學能先生，電話：852-3400-2337；地址：香港九龍尖東科學館道十七號酒店及旅遊業管理學院 TH842 室；電郵：lawrence.fong@

若閣下就本研究的操作有任何投訴，請致函香港理工大學人類道德小組委員會秘書呂美蘭小姐(轉交大學研究事務處)，並註明研究項目的負責人及所屬學院。

馮學能先生
博士研究生

- ❍ 本人了解以上條款，並同意參與上述研究項目。.
- ❍ 本人不願意參與上述研究項目。
- ❍ 本人早前已參與過上述研究項目。

您是否已年滿十八歲呢?

- ❍ 是
- ❍ 否

您有沒有在過去的 24 小時內去過賭場博彩呢?

- ❍ 是
- ❍ 否

F2: Perceived Importance of an Outcome

對您來講，能否贏得*($10/$30)*麥當勞現金券有關係嗎**?**

絕對沒有	❍	❍	❍	❍	❍	❍	❍	絕對有

Note. The content in the brackets varied with the treatment condition to which the participant was exposed.

F3: Perceived Luck

請就以下句子表達您的同意程度。

根據這個遊戲結果...

	十分不贊成			很難講贊成或不贊成			十分贊成
我好彩。	❍	❍	❍	❍	❍	❍	❍
我有好運。	❍	❍	❍	❍	❍	❍	❍
好運在我這一邊。	❍	❍	❍	❍	❍	❍	❍
有好運幫我。	❍	❍	❍	❍	❍	❍	❍

F4: Locus of Control on Luck

根據這個遊戲結果，我的運氣是...

跟着我	❍	❍	❍	❍	❍	❍	❍	跟着其他東西（例如，物件、號碼、做法等）
與我有關	❍	❍	❍	❍	❍	❍	❍	與其他東西有關（例如，物件、號碼、做法等）
在我裡面	❍	❍	❍	❍	❍	❍	❍	在其他東西裡面（例如，物件、號碼、做法等）
一些東西反映我自己某方面	❍	❍	❍	❍	❍	❍	❍	一些東西反映其他東西的某方面（例如，物件、號碼、做法等）

F5: Intention to Play

您有幾大程度願意用自己的錢再次玩這個幸運輪呢（賠率是 1 賠 2，投注幾多隨便您）?

多數不會	❍	❍	❍	❍	❍	❍	❍	多數會
沒有機會的	❍	❍	❍	❍	❍	❍	❍	有機會的
不可能的	❍	❍	❍	❍	❍	❍	❍	可能的

F6: Perceived Proximity of an Outcome

您是否差少少就(*輸/贏*)呢?

絕對不是	❍	❍	❍	❍	❍	❍	❍	絕對是

Note. The content in the brackets varied with the treatment condition to which the participant was exposed.

F7: Perceived Rarity of an Outcome (R)

按照這個幸運輪的輸贏面積，您認為您(*贏的機會較輸/輸的機會較贏*)的大嗎?

絕對不是	❍	❍	❍	❍	❍	❍	❍	絕對是

Note. (R) indicates reverse scored; The content in the brackets varied with the treatment condition to which the participant was exposed.

F8: Perceived Exclusivity of an Outcome

您認為這個結果只得您有嗎?

絕對不是	❍	❍	❍	❍	❍	❍	❍	絕對是

F9: Belief in Luck

請您就以下句子表達您的同意程度。

	十分不贊成			很難講贊成或不贊成			十分贊成
有些人總是行好運，而其他人就總是行衰運。	❍	❍	❍	❍	❍	❍	❍
有些人總是行衰運，而其他人就總是行好運。	❍	❍	❍	❍	❍	❍	❍
好運總是幫某些人的，而不幫其他人。	❍	❍	❍	❍	❍	❍	❍
衰運總是影響某些人較多的。	❍	❍	❍	❍	❍	❍	❍
運氣在每個人的生命中扮演一個重要的角色。	❍	❍	❍	❍	❍	❍	❍
我相信運氣。	❍	❍	❍	❍	❍	❍	❍

F10: Risk-taking Propensity

請您就以下句子表達您的同意程度。

	十分不贊成			很難講贊成或不贊成			十分贊成
我通常視風險為挑戰。	❍	❍	❍	❍	❍	❍	❍
我經常會冒險。	❍	❍	❍	❍	❍	❍	❍

我認為自己是一個...

迴避風險的人	❍	❍	❍	❍	❍	❍	❍	冒險者

Note. (R) indicates reverse scored.

F11: Attitude Toward Casino Gaming

您對於去賭場博彩有什麼反應呢?

非常不喜歡	❍	❍	❍	❍	❍	❍	❍	非常喜歡
非常不愉快	❍	❍	❍	❍	❍	❍	❍	非常愉快
非常不高興	❍	❍	❍	❍	❍	❍	❍	非常高興
十分可怕的活動	❍	❍	❍	❍	❍	❍	❍	十分享受的活動

F12: Social Norm of Casino Gaming

您視為重要的人會否贊成您去賭場博彩呢?

絕對不會	❍	❍	❍	❍	❍	❍	❍	一定會

您視為重要的人會否贊成您和朋友一起去賭場博彩呢?

絕對不會	❍	❍	❍	❍	❍	❍	❍	一定會

F13: Perceived Behavioral Control

您有幾大程度能夠控制自己去或不去賭場博彩呢?

非常困難	❍	❍	❍	❍	❍	❍	❍	非常容易

您有幾大程度能夠花時間去賭場博彩呢?

非常困難	❍	❍	❍	❍	❍	❍	❍	非常容易

您對於您的賭場博彩技術有什麼想法呢?

差勁	❍	❍	❍	❍	❍	❍	❍	出色

F14: Participants' Characteristics

您有幾經常去賭場博彩呢?

- ❍ 從來不會
- ❍ 每月少於 1 次
- ❍ 每月 1 次
- ❍ 每月 2 至 3 次
- ❍ 每月 4 至 6 次
- ❍ 每月 7 至 10 次
- ❍ 每月多於 10 次

您已完成的最高教育程度是什麼?

- ❍ 小學或以下
- ❍ 中學
- ❍ 大學
- ❍ 碩士或以上
- ❍ 其他，請註明_____

你來自哪一個國家/地區?

- ❍ 澳門
- ❍ 中國大陸
- ❍ 香港
- ❍ 台灣
- ❍ 其他，請註明_____

您每月家庭收入的範圍是什麼?

- ❍ 少於港幣 2,000 元
- ❍ 港幣 2,000 - 3,999 元
- ❍ 港幣 4,000 - 5,999 元
- ❍ 港幣 6,000 - 7,999 元
- ❍ 港幣 8,000 - 9,999 元
- ❍ 港幣 10,000 -,14,999 元
- ❍ 港幣 15,000 - 19,999 元
- ❍ 港幣 20,000 - 24,999 元
- ❍ 港幣 25,000 - 29,999 元
- ❍ 港幣 30,000 - 39,999 元
- ❍ 港幣 40,000 - 59,999 元
- ❍ 港幣 60,000 - 79,999 元
- ❍ 港幣 80,000 - 99,999 元
- ❍ 港幣 100,000 元或以上

您的年齡是什麼?

- ❍ 18 至 24 歲
- ❍ 25 至 34 歲
- ❍ 35 至 44 歲
- ❍ 45 至 54 歲
- ❍ 55 至 64 歲
- ❍ 65 至 74 歲
- ❍ 75 歲或以上

您的性別是什麼?

- ❍ 男
- ❍ 女

Appendix G

Questionnaire Used in the Main Study (Simplified Chinese Version)

G1: Introduction and Screening Questions

赌场博彩的感知研究

您好！香港理工大学旅游管理专业博士研究生冯学能，现诚邀您参与上述研究项目。本项目已经通过了香港理工大学道德小组委员会的许可（许可编号： HSEARS20120416003）。

本研究的目的是了解赌场博彩者对于赌场博彩的感知。研究中，您将玩一个电脑虚拟的幸运轮并完成一份问卷，整个过程约占用您十分钟的时间。收集的资料将有助于了解赌场博彩者对于赌场游戏的感知与反应。

如果您在游戏中胜出，将获得一份奖品。所有和您有关的信息都是保密的，并且将被编写成只有研究人员才能识别的代码。您在过程中有权随时退出，而不受任何约束。

如果您希望得到有关本研究的更多信息，请联系冯学能先生，电话：852-3400-2337，地址：香港九龙尖沙咀东部科学馆道 17 号酒店及旅游管理学院 TH842 室，电子邮件地址：lawrence.fong@

如果您就本研究有任何投诉，请致函香港理工大学道德小组委员会秘书吕美兰小姐（转交大学研究事务处），并注明研究项目负责人及所属学院。

博士研究生：冯学能

- ❍ 本人了解上述条款并同意参加上述研究项目。.
- ❍ 本人不愿意参加上述研究项目。
- ❍ 本人先前已参与过上述研究项目。

请问您是否年满十八岁？

- ❍ 是
- ❍ 否

请问您有没有在过去 24 小时中参与过任何赌场博彩活动?

- ❍ 是
- ❍ 否

G2: Perceived Importance of an Outcome

是否赢得(*10 元/30 元*) 麦当奴现金券跟您有关系吗？

绝对没有	❍	❍	❍	❍	❍	❍	❍	绝对有

Note. The content in the brackets varied with the treatment condition to which the participant was exposed.

G3: Perceived Luck

请您就以下句子表达您的同意程度。

根据这个游戏结果...

	非常不同意			很难说同意或者不同意			非常同意
我走运了。	❍	❍	❍	❍	❍	❍	❍
我有好运气。	❍	❍	❍	❍	❍	❍	❍
好运气在我这一边	❍	❍	❍	❍	❍	❍	❍
好运气在帮助我。	❍	❍	❍	❍	❍	❍	❍

G4: Locus of Control on Luck

根据这个游戏结果，我的运气是...

伴随着我	❍	❍	❍	❍	❍	❍	❍	伴随着其他的东西（例如，物品、号码、做法等）
与我自身有关	❍	❍	❍	❍	❍	❍	❍	与其它东西有关（例如，物品、号码、做法等）
在我之内	❍	❍	❍	❍	❍	❍	❍	在其他东西之内（例如，物品、号码、做法等）
一种东西反映了我的某些方面	❍	❍	❍	❍	❍	❍	❍	一种东西反映了其他东西的某些方面（例如，物品、号码、做法等）

G5: Intention to Play

在多大程度上您愿意自己花钱再次玩这个幸运轮（赔率是 1 赔 2，下注多少随便您）?

大多数不会	❍	❍	❍	❍	❍	❍	❍	大多数会
没有机会的	❍	❍	❍	❍	❍	❍	❍	有机会的
不可能的	❍	❍	❍	❍	❍	❍	❍	可能的

G6: Perceived Proximity of an Outcome

您是否差一点就(*输/ 赢*)了吗？

绝对不是	❍	❍	❍	❍	❍	❍	❍	绝对是

Note. The content in the brackets varied with the treatment condition to which the participant was exposed.

G7: Perceived Rarity of an Outcome (R)

就这个幸运轮的赢和输面积而言，您认为您(*赢的机会比输/输的机会比赢*)的大吗？

绝对不是	❍	❍	❍	❍	❍	❍	❍	绝对是

Note. (R) indicates reverse scored; The content in the brackets varied with the treatment condition to which the participant was exposed.

G8: Perceived Exclusivity of an Outcome

您认为这个结果只发生在您身上吗？

绝对不是	❍	❍	❍	❍	❍	❍	❍	绝对是

G9: Belief in Luck

请就下面的句子表达您的同意程度。

	非常不同意			很难说同意或者不同意			非常同意
有的人总是走运，其它的人总是倒霉。	❍	❍	❍	❍	❍	❍	❍
有的人总是倒霉，其它的人总是走运。	❍	❍	❍	❍	❍	❍	❍
好运气总会帮助一部份人，而不帮助另外一部份人。	❍	❍	❍	❍	❍	❍	❍
坏运气总会更多的影响一部份人。	❍	❍	❍	❍	❍	❍	❍
运气在每一个人的人生中都扮演重要的角色。	❍	❍	❍	❍	❍	❍	❍
我相信运气。	❍	❍	❍	❍	❍	❍	❍

G10: Risk-taking Propensity

请就下面有关您冒险倾向的句子表达您的同意程度。

	非常不同意			很难说同意或者不同意			非常同意
我经常视冒险为一种挑战。	❍	❍	❍	❍	❍	❍	❍
我经常冒险。	❍	❍	❍	❍	❍	❍	❍

我认为自己是一个...

回避风险的人	❍	❍	❍	❍	❍	❍	❍	偏向冒险的人

Note. (R) indicates reverse scored.

G11: Attitude Toward Casino Gaming

您对于参与赌场博彩活动有什么反应？

非常不喜欢	❍	❍	❍	❍	❍	❍	❍	非常喜欢
非常不愉快	❍	❍	❍	❍	❍	❍	❍	非常愉快
非常不高兴	❍	❍	❍	❍	❍	❍	❍	非常高兴
十分可怕的活动	❍	❍	❍	❍	❍	❍	❍	十分享受的活动

G12: Social Norm of Casino Gaming

您认为对您重要的人会赞成您参与赌场博彩活动吗？

绝对不会	❍	❍	❍	❍	❍	❍	❍	一定会

您认为对您重要的人会赞成您和朋友一起参与赌场博彩活动吗？

绝对不会	❍	❍	❍	❍	❍	❍	❍	一定会

G13: Perceived Behavioral Control

在多大程度上您有能力控制自己去或者不去参加赌场博彩活动？

非常困难	❍	❍	❍	❍	❍	❍	❍	非常容易

在多大程度上您能花时间去参加赌场博彩活动？

非常困难	❍	❍	❍	❍	❍	❍	❍	非常容易

您对于您的赌场博彩技术有何想法?

差劲	❍	❍	❍	❍	❍	❍	❍	优秀

G14: Participants' Characteristics

请问您参与赌场博彩活动的频率是怎么样?

- ❍ 从来不
- ❍ 少于每个月 1 次
- ❍ 一个月 1 次
- ❍ 一个月 2 到 3 次
- ❍ 一个月 4 到 6 次
- ❍ 一个月 7 到 10 次
- ❍ 一个月超过 10 次

请问您的最高学历是什么？

- ❍ 小学或以下
- ❍ 高中
- ❍ 大学
- ❍ 硕士或以上
- ❍ 其他，请注明_____

请问您是从哪一个国家/地区来？

- ❍ 澳门
- ❍ 中国大陆
- ❍ 香港
- ❍ 台湾
- ❍ 其他，请注明_____

请问您家庭的月收入范围是多少？

- ❍ 少于港币 2,000 元
- ❍ 港币 2,000 - 3,999 元
- ❍ 港币 4,000 - 5,999 元
- ❍ 港币 6,000 - 7,999 元
- ❍ 港币 8,000 - 9,999 元
- ❍ 港币 10,000 -,14,999 元
- ❍ 港币 15,000 - 19,999 元
- ❍ 港币 20,000 - 24,999 元
- ❍ 港币 25,000 - 29,999 元
- ❍ 港币 30,000 - 39,999 元
- ❍ 港币 40,000 - 59,999 元
- ❍ 港币 60,000 - 79,999 元
- ❍ 港币 80,000 - 99,999 元
- ❍ 港币 100,000 元或以上

请问您的年龄多大？

- ❍ 18 至 24 岁
- ❍ 25 至 34 岁
- ❍ 35 至 44 岁
- ❍ 45 至 54 岁
- ❍ 55 至 64 岁
- ❍ 65 至 74 岁
- ❍ 75 岁或以上

请问您的性别是什么?

- ❍ 男
- ❍ 女

Appendix H

Treatment Conditions of the Experiment

Condition 1.
Win, high rarity, high importance, high exclusivity, and high proximity

Condition 2.
Win, high rarity, high importance, low exclusivity, and high proximity

Condition 3.
Win, high rarity, low importance, high exclusivity, and high proximity

Condition 4.
Win, high rarity, low importance, low exclusivity, and high proximity

Condition 5.
Win, low rarity, high importance, high exclusivity, and high proximity

Condition 6.
Win, low rarity, high importance, low exclusivity, and high proximity

Condition 7.
Win, low rarity, low importance, high exclusivity, and high proximity

Condition 8.
Win, low rarity, low importance, low exclusivity, and high proximity

Condition 9.
Win, high rarity, high importance, high exclusivity, and low proximity

Condition 10.
Win, high rarity, high importance, low exclusivity, and low proximity

Condition 11.
Win, high rarity, low importance, high exclusivity, and low proximity

Condition 12.
Win, high rarity, low importance, low exclusivity, and low proximity

Condition 13.
Win, low rarity, high importance, high exclusivity, and low proximity

Condition 14.
Win, low rarity, high importance, low exclusivity, and low proximity

Condition 15.
Win, low rarity, low importance, high exclusivity, and low proximity

Condition 16.
Win, low rarity, low importance, low exclusivity, and low proximity

Condition 17.
Loss, high rarity, high importance, high exclusivity, and high proximity

Condition 18.
Loss, high rarity, high importance, low exclusivity, and high proximity

Condition 19.
Loss, high rarity, low importance, high exclusivity, and high proximity

Condition 20.
Loss, high rarity, low importance, low exclusivity, and high proximity

Condition 21.
Loss, low rarity, high importance, high exclusivity, and high proximity

Condition 22.
Loss, low rarity, high importance, low exclusivity, and high proximity

Condition 23.
Loss, low rarity, low importance, high exclusivity, and high proximity

Condition 24.
Loss, low rarity, low importance, low exclusivity, and high proximity

Condition 25.
Loss, high rarity, high importance, high exclusivity, and low proximity

Condition 26.
Loss, high rarity, high importance, low exclusivity, and low proximity

Condition 27.
Loss, high rarity, low importance, high exclusivity, and low proximity

Condition 28.
Loss, high rarity, low importance, low exclusivity, and low proximity

Condition 29.
Loss, low rarity, high importance, high exclusivity, and low proximity

Condition 30.
Loss, low rarity, high importance, low exclusivity, and low proximity

Condition 31.
Loss, low rarity, low importance, high exclusivity, and low proximity

Condition 32.
Loss, low rarity, low importance, low exclusivity, and low proximity

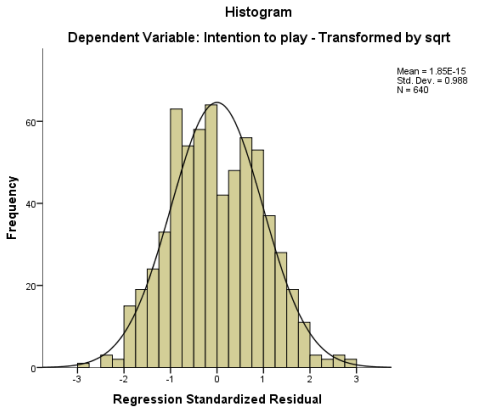
Appendix I

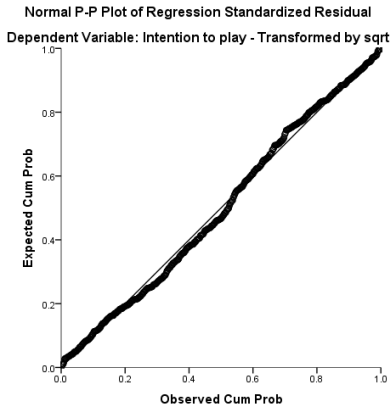
Statistics of Multivariate Outliers in the Main Study

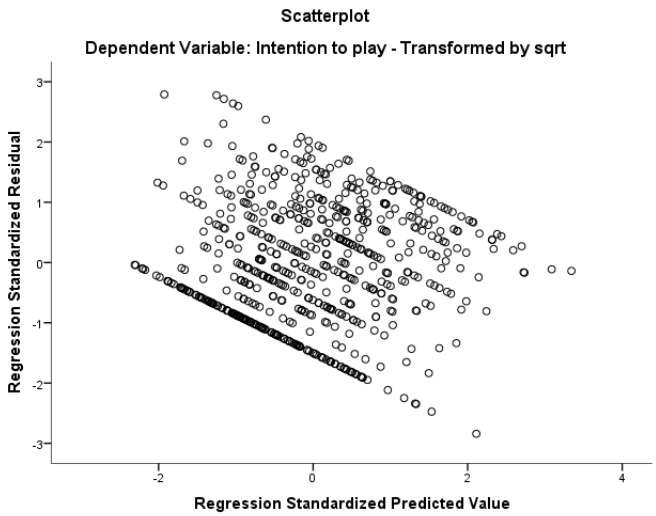
Observation number	Mahalanobis d-squared	p1	p2
378	140.796	.000	.000
319	115.136	.000	.000
510	108.850	.000	.000
66	105.579	.000	.000
190	101.656	.000	.000
441	98.406	.000	.000
63	94.936	.000	.000
193	92.786	.000	.000
320	92.553	.000	.000
208	90.459	.000	.000
439	89.453	.000	.000
266	87.561	.000	.000
498	87.311	.000	.000
48	85.042	.000	.000
575	84.812	.000	.000
511	84.540	.000	.000
326	83.468	.000	.000
370	80.598	.000	.000
581	77.692	.000	.000
573	76.424	.000	.000
371	75.097	.000	.000
416	73.198	.000	.000
437	73.183	.000	.000
2	71.282	.000	.000
281	71.168	.000	.000
256	70.930	.000	.000
244	70.718	.000	.000
373	70.295	.000	.000
73	69.711	.000	.000
108	68.246	.000	.000
325	67.546	.000	.000
71	67.210	.000	.000
204	66.859	.000	.000
440	64.521	.000	.000
482	63.468	.000	.000
473	62.807	.000	.000
483	61.939	.000	.000
196	60.495	.000	.000
35	60.220	.000	.000

Appendix J

Graphical Assessment of the Regression Assumptions for Hypothesis 7



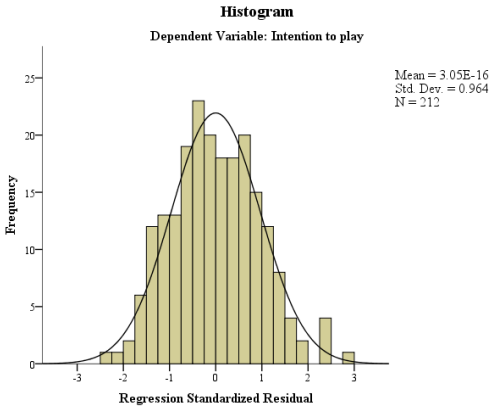


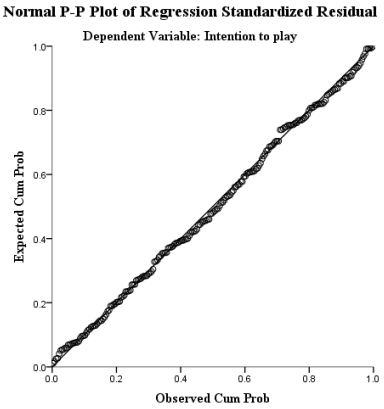


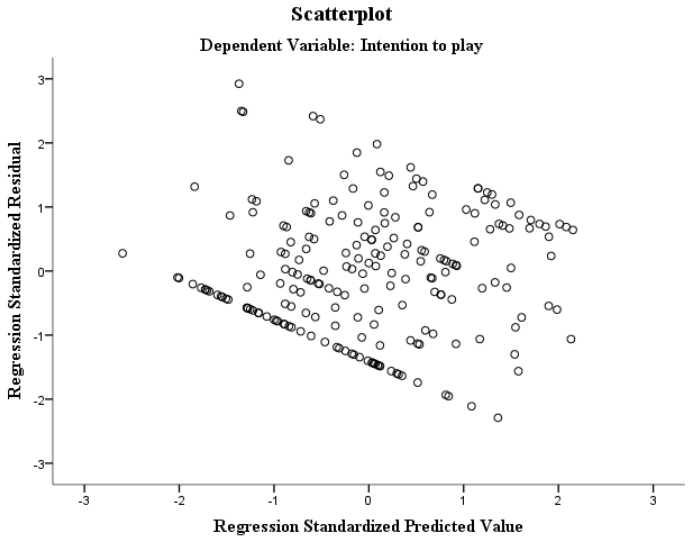
Appendix K

Graphical Assessment of the Regression Assumptions for Hypothesis 8

(External Locus of Control on Luck Model)

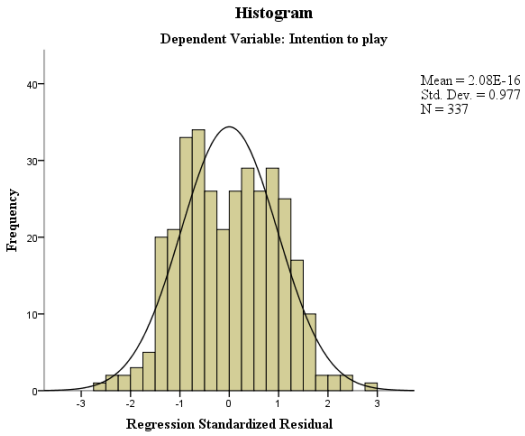


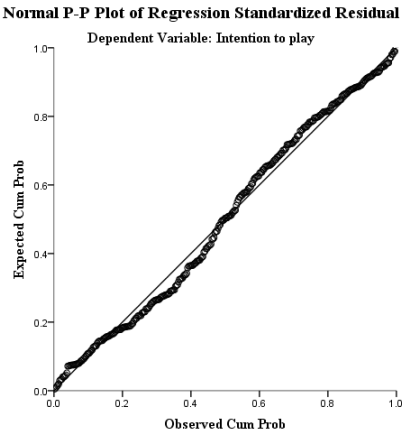


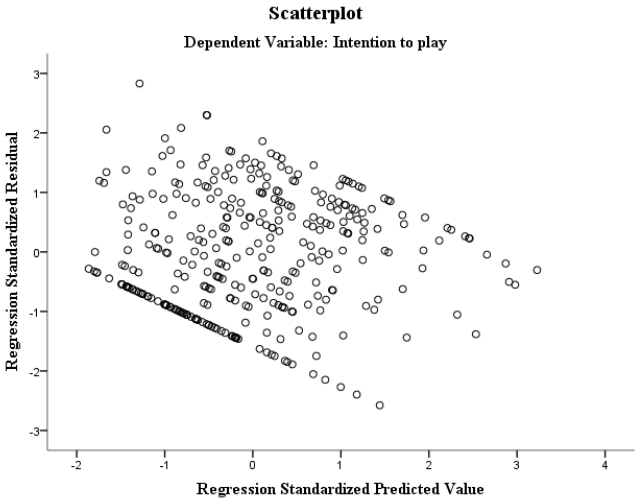


Appendix L

Graphical Assessment of the Regression Assumptions for Hypothesis 8 (Internal Locus of Control on Luck Model)

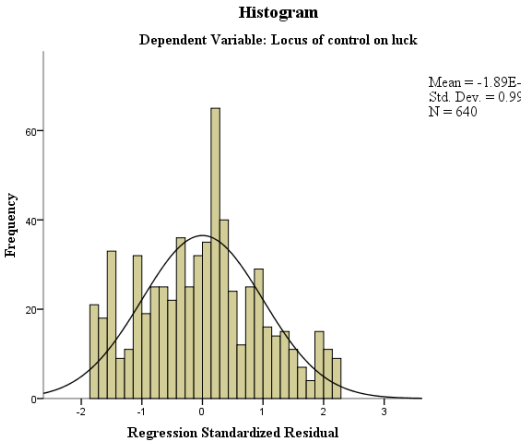


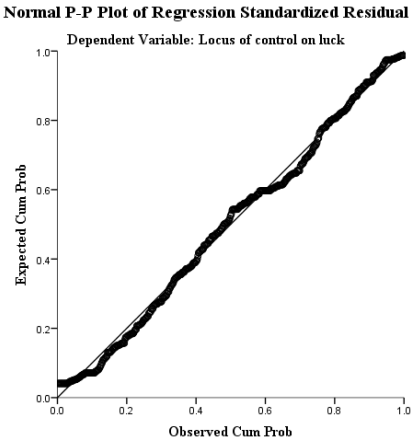


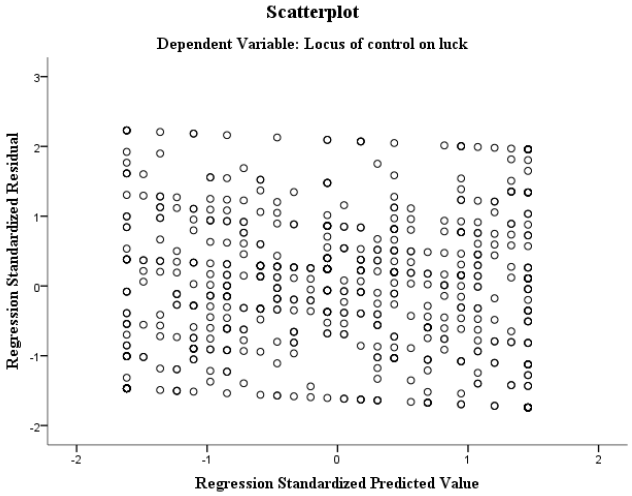


Appendix M

Graphical Assessment of the Regression Assumptions for Hypothesis 9







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