Uncertainty-Seeking in Purchasing Mysterious Products: The Mediating Effect of Sensation-Seeking

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Abstract

How does uncertainty affect consumer decision-making? Insights from the extant literature inform scholars that uncertainty ought to result in unfavorable consumer responses. Nevertheless, industry practitioners have witnessed a surge of consumers' appreciation of mysterious consumption (i.e., "blind boxes"). Such mixed findings therefore invite the thesis to address this research gap and explore the impact of uncertainty (including outcome uncertainty and probability uncertainty) on consumers' responses.

A quantitative approach utilizing the experimental method has been adopted to investigate the proposed effect of interests. By deploying a two-factor, factorial between-subjects design that manipulates outcome uncertainty (low vs. high) and probability uncertainty (low vs. high), this thesis proposed and empirically showcased that higher (vs. lower) outcome uncertainty was more likely to lead to significantly higher purchase intent. More importantly, the positive effect of outcome uncertainty is contingent upon the probability uncertainty; the effect of outcome uncertainty is present only when the probability uncertainty is high (vs. low). Furthermore, this effect occurs because when the probability uncertainty is high, greater outcome uncertainty is more prone to enhance the level of sensation-seeking, which in turn increases consumers' purchase intent.

The findings of the thesis can offer important implications for both scholars and industry practitioners. From a theoretical stand-point, first, the present work looks into the positive, instead of negative effect of uncertainty. Drawing on theories regarding hedonism and experiential values, the current research joins the emerging literature and shows that under certain circumstances, uncertainty can significantly enhance consumer favorable responses, such as the elevated purchase intent. Second, this research introduces and empirically shows the mediating effect of sensation-seeking. This is significant because although scholars might agree that hedonic experiential values might drive higher purchase intent, it is imperative to distinguish sensation-seeking from alternative factors, such as curiosity. Last but not least, this thesis explores the interplay between different types of uncertainty, namely *outcome uncertainty* and *probability uncertainty*. By differentiating the roles of different types of uncertainty,

the findings herein portray a more fine-grained picture regarding *under what circumstances* outcome uncertainty poses a positive effect on consumers' purchase intent.

Practically, the thesis offers pivotal implications for marketers and industry practitioners. First, when marketers attempt to capitalize on uncertainty to boost consumer responses, it seems optimal to maximize both outcome and probability uncertainty. Second, regarding the findings of the significant mediating effect of sensation-seeking, marketers ought to sensation-provoking techniques and strategies to promote greater patronage behaviors.

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements, nor material which to a substantial extant has been submitted for award of any other degree or diploma of a university or other institution of higher learning.

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Signature

Yishan Zhang

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Chapter 1: Introduction

1.1. Research Issue

Imagine the following scenario: you are planning on a vacation and you receive a special offer for "*Mystery Breaks*" from Air New Zealand. According to the offer, all you need to do is name a date and a place that you do not want to go, and the airline company will take care of the rest, and decide the vacation destination on your behalf. Would you like to accept this offer and go on the trip of a "blind box" experience?

The 'blind boxes' phenomenon, also known as the "mystery boxes," signals an emerging form of marketing practice, and has been prevalently adopted by a myriad of businesses in recent years to stimulate consumer patronage. Capitalizing on the uncertainty imbedded in such tactics, the marketing model of "mysterious box" has set off a wave of blind box purchases around the world. According to statistics, for example, in 2019, the sales volume of LOL Surprise! Dolls in the US alone had exceeded US $5 billion, with the sales of its Chinese counterpart, Pop mart toys, expected to grow from US $500 million in 2019 to US $3.8 billion in 2025 (Lieber, 2020). Put differently, across geographic countries, regions, and various cultural backgrounds, marketers are witnessing a surging enthusiasm from consumers, reflected by a sustaining zeal and uptake towards the mystery items. Given this, from a practical standpoint, it is therefore imperative to understand what the factors are behind the surging consumption towards mysterious products.

According to extant literature, it has been widely acknowledged that the word "uncertainty" semantically is associated with negative connotations such as anxiety, doubt, and feelings of insecurity. In particular, uncertainty tends to stimulate stronger tendency of risk aversion, thereby enact them to manifest avoidant behaviors (Gervais, 2018; Moschini & Hennessy, 2001; Zhou et al., 2017). In the marketing and consumption contexts, consumers' manifestations of such avoidant behaviors include postponing the purchase decision-making, or alternatively, abandoning the purchase altogether. Nevertheless, the example demonstrated in the opening paragraph showcases that such phenomena of "blind box fever" in the marketplace clearly challenge our understanding surrounding uncertainty, its unfavorable connotations and its downstream impact on consumer responses.

At a glance, the stream of research investigating the behavioral responses when consumers encounter "uncertain hints" can be traced back to the "Skinner box"

experiment, conducted by Skinner in 1938 (Skinner, 1938, 2019). In the focal experiment, Skinner designed and adopted an interlocking device to study animal behavior (e.g., rats). Specifically, inside the Skinner box, there is a lever connected to a food dispenser, which is located outside the box. When the rat pressed on the lever single and/or multiple times, food would be released randomly into the box. Thus, the rat learned to obtain food by repeating the action of pressing the lever. The result of this experiment put forth that no matter whether the rat received a reap after each pull of the lever or not, its subsequent actions would be reinforced. Later, researchers inspired by the "Skinner box" experiment applied uncertainty as an experimental condition in empirical studies that are designed to explore the decision-making mechanism of consumer behaviors.

One line of research deals with the psychological processes by which uncertainty activates positive feelings in consumers. For example, empirical evidence provided by Lee and Qiu (2009) reveals that information about the uncertainty of rewards would enhance people's imagination about future outcomes. Thus, uncertain rewards in positive events will lead to elated emotions with longer persistence. The same findings are argued by Wilson et al. (2005), who show that people are stimulated to engage in completely different cognitive processes when faced with uncertain information than when faced with certain information. This is due to the fact that the unknown state of the reward endows a multidimensional judgment of the perceived prospect. Another line of research, by contrast, has valuable insights on how people prefer uncertain rewards to certain rewards even when the likely outcome of the former is worse than the latter. Two other studies have also sought to explain the uncertainty effect. Shen et al. (2019) put forth that people are eager to explore the solution hidden under uncertainty and this eagerness satisfies their desire to transfer from the unknown state to the known state. On the other hand, as portrayed and concluded by Goldsmith and Amir (2010), both innate optimism and conscious optimism stimulate people's optimal prediction of the uncertainty outcome, even when their assessment of uncertainty incentive exceeds the estimated value of the reward itself. Although previous research has elaborated on people's psychological pre-judgment about the future outcomes of uncertain rewards, scarce attention has been devoted to the effects of sensation seeking on the choice preferences under different magnitudes of uncertainty. Zuckerman (1979), an American psychologist, proposed that the sensation-

seeking trait is a tendency to pursue varied, novel, and complex experiences in the hope of getting intense sensory stimuli in return. Since Zuckerman, researchers have conceptualized the sensation seeking theory and applied it to explore the behavioral divergence of people with different statuses who participate in risky or adventurous activities. According to their findings, for instance, young adults generally show a stronger interest in lottery play and place their bets more frequently (McDaniel & Zuckerman, 2003). What is more, males are more attracted to diverse and strategic betting styles than females, while the latter prefer to enter into a game of chance (Kassinove, 1998; Delfabbro, 2000). It can be observed that the main reasons for such behavioral divergence are not just limited to gender and age, but also have something to do with the different response to perceived risk due to disparate personality traits. Naturally, the intensity of individuals' affective and intuitive responses varies with different message frames in uncertain events. Thus, a more synthetical conceptual motivation for executing this study regards a lack of knowledge on purchase preferences manifested by consumers' personality traits in uncertain contexts. Though the current literature is predominantly focused on people's affective responses during uncertain events (Bhatia, Mellers, & Walasek, 2019), the dynamic psychological processes by which consumers perceive uncertainty and the impact of sensation seeking traits on their purchasing intentions have not been probed in depth.

1.2. Research Objectives and Problem Statement

As can be observed from the literature review, although there are already some studies about the phenomenon of how uncertainty attenuates people's affective adaptation to future events, researchers have largely neglected the antecedents and consequences of the magnitude of uncertainty on consumers' behavioral responses. That is, how different message frames involved in the mystery items strengthen or weaken consumers' motivation to evaluate the outcome and make purchases. A major stream of research is focused on the fact that consumers are induced to generate intense positive emotions only when they learn that the outcome of an uncertain event is in their interest. However, since purchasers of blind boxes have no idea whether the item in the box is to their taste, it is evident that the context-setting in previous researchers' reasoning has formed a paradox with the current "blind box fever". Furthermore, Shen (2015) contends that the prerequisite for consumers to engage in consistent resolution of uncertainty is that the behavior of repeat purchase has already occurred. However, this conclusion has

omitted whether consumers' primary motivation had a direct or indirect effect on the repeat-purchase behavior under the stimulation of different message frames. On account of this, it is evident that our knowledge of consumer responses under different types of uncertainty is indeed limited. In sum, conceptualizing the contextual factors of uncertainty can help ravel out how uncertainty enhances consumers' subjective awareness in decision making, which has substantial connotations and implications for researchers. In order to fill the gap in the research of the dynamic psychological processes experienced by consumers when faced with different magnitudes of uncertainty, the research proposal puts forward that consumers' purchase preferences for mystery items may change significantly after the quantity of uncertainty involved in the certain item is specified. In other words, the current research proposal is dedicated to answering the following question: How does uncertainty affect consumers' purchase of blind boxes?

A predominant stream of research is concerned with how different levels of sensation seeking moderate the risk perception of participants in novel activities. Horvath and Zuckerman (1993) found that high-level sensation seekers were more inclined to take risks, and they paid more attention than low sensation seekers to whether the returns from participation in the activities met their expected goals. According to Festinger's (1957) cognitive dissonance theory, the motivation for high sensation-seekers to participate in risk-taking activities is to gain a feeling of success, which transcends personal worth, as well as the anxiety and fear brought about by risky activities. In contrast, low sensation-seekers spontaneously increase their perceived risk of participating in the activity. The implication of this result is that individuals' perceived risk level directly leads to their willingness to engage in risky activities, and that pleasure-seeking individuals are more motivated to engage in activities that they believe to be risky. However, this response mechanism fails in low sensation-seekers, who perceive an elevated degree of risk and avoid the negative consequences of engaging in such activities. It can also be seen that different degrees of sensation seeking involve different concerns in information processing and participation activities. That being said, the moderating effect of sensation seeking on the relationship between different types of uncertainty and purchase intention is still unknown. Thus, the second question should be: How do different types of sensation seeking moderate the relationship between uncertainty and purchasing intention?

As shown by the existent literature, ambiguous information can trigger multi-sensory stimuli in consumers and prompt them to try and look for answers that could reduce uncertainty. Notably, in those events that offer particularly unexpected or novel experiences, people are likely to go through more intense emotional reactions. Two psychological mechanisms are at work here. The first mechanism equates "uncertainty" with "enjoyment". Generally speaking, when people try to understand or predict an unusual event by changing their existing knowledge structure, the affective power generated by that certain event would be dialed down. Therefore, as described by (Omigie & Ricci, 2021; To, Ali, Kaufman, & Hammer, 2016), although it is true that creating a state of information gap and eventually unraveling the mystery can prolong enjoyment, the key to people's active engagement in the quest for uncertainty is whether they had experienced curiosity in the event or not. However, very few studies have measured the specific changes in the valence of curiosity under the incentive of different magnitudes of uncertainty. The second mechanism has to do with the judgment of the unknown information. When the speculated outcome runs against the revealed facts, people would experience even greater excitement than that brought by uncertainty alone. Such a directed affective response is founded more upon the refined assessment of problem framing. More specifically, imagery processing is a continuum of elaboration, where the processing of image and discourse can run their separate course or combine into a whole. Imagery refinement, which is based on multi-sensory experiences, has integrated both information from the working memory and the existing knowledge structure, or is backed up by intuition. Several streams of research have clarified that information processing pathways are affected by the different degrees of cognitive refinement (Cacioppo & Petty, 1984; Chaiken, 1980; Mitchell, 1981). That being said, since scholars have focused most of their attention on cognitive refinement, the affective elaboration motivated by the information gap has been largely omitted. In view of this, the third question should be: How does the perceived hedonic value, mental imagery, and curiosity of consumers mediate the relationship between uncertainty and purchasing intention?

1.3. Synopsis of the Methodology

To explore the focal research question, a quantitative research paradigm was employed. Specifically, this thesis will utilize an experimental method due to: 1) its superiority in establishing causal relationships among critical variables of interest

(Rosenthal & Rosnow, 2008), and 2) the ability of controlling for noises and confounding factors as a result of random assignment. In this current work, the independent variable was outcome uncertainty, and the moderating variable was probability uncertainty. The key dependent variable was purchase intent towards the mysterious products across two studies and Study 2 specifically introduced the underlying mechanism (i.e., sensation-seeking).

1.4. Research Motivation

Building on the research of how uncertainty affects the behavior intentions of consumers, we made a broader assumption that different magnitudes of "mystery" not only can effectively stimulate the purchasing desire, but also lead to differentiated affective responses. Thus, this thesis contributes to these important issues by conceptualizing the perceptual dimensions of uncertainty, so as to examine whether consumers' purchasing intentions change with the varied magnitude of unknown information. As implied by existent literature, the degree of concern for the outcome of future events is a key factor in sustaining people's positive emotions in uncertain contexts. In spite of this, we have gone beyond the previous rationales by adding a novel observation that assessing the probability of an unknown event would also generate an active cognitive state and behavioral motivation. In the meanwhile, this thesis has drawn the attention to the sensory valence that is activated in uncertain contexts. For instance, curiosity depends on the reference point of the problem in the judgment of unknown prospects, whereas the hedonism and mental imagery rely largely on subjective suppositions. In this endeavor, this study has three major targets. First, this research has revealed the incentive effect of uncertain contextual factors on consumers' purchasing intention. Previous literature has only demonstrated that consumers' subsequent actions are likely to be reinforced only when the outcome of an unknown event is accompanied by some uncertain properties (Money & Crotts, 2003). Therefore, this empirical study attempts to expand the findings and demonstrate the effects of the *outcome uncertainty* (i.e., the extent to which one is uncertain about the outcome *given all available options*; Monosov, 2020) and *probability uncertainty* (i.e., a situation where individuals are required to make assumptions as *not all options are made available*) on consumers' purchasing intention under the framework of different magnitudes of unknown information. This thesis specifically argues that the magnitude of unknown information moderates consumers' risk perception of the mystery item

without dismissing their appetence of constantly trying to obtain the outcome. Apart from this, the study has identified the antecedents and consequences of the corresponding contexts in which the psychological mechanisms of consumers occur. This has proved the existence of an interactive effect between the magnitude of the information gap and consumers' decision-making. Finally, we have also added the variable of sensation seeking into the study, which helps examine the choice preference for specific mystery items shown by individuals with different personality traits. In sum, the study has assessed the individual differences of consumers' risk perception that leads to different purchase decisions due to varied attention weights assigned to the problem. By demonstrating the interaction between choice preferences under different personality traits, the magnitude of uncertain message frames, the sensory valence, as well as their influence on consumers' purchasing intention, this thesis hopes to contribute to academia's understanding of the key underlying psychological mechanisms at work during consumers' exploration of uncertainty.

1.5. Theoretical Contributions

The findings of this research have three major theoretical contributions to the body of knowledge, thereby highlighting the importance of this research thesis. First, the current research has integrated the literature on information gap into sensory stimuli, which further explained consumer decisions and made novel findings on consumer reactions in two different types of uncertainty contexts (probability-dominated uncertainty vs. outcome-dominated uncertainty). Compared with the previous studies that mainly explored process-based uncertainty as the primary motivation behind reinforced consumer behaviors, this thesis puts forward that under the moderation of unknown prospects, the dynamic psychological mechanisms involved in consumers' purchasing intentions would change with the different context settings. One of these mechanisms inclines towards intuitive support, where consumers spontaneously generate a positive assessment of the event with mystery attributes.

Second, consumers who demonstrate a willingness to make repeat purchases may perceive the elimination of uncertainty as a reward in itself, from which they can gain affective fulfillment (Bar-Anan, Wilson, & Gilbert, 2009). However, such research has mainly focused on the "premium" effect in the prediction of reward value and the affective state during uncertainty resolution (Yoshida & Ishii, 2006). The results of this study, on the other hand, are related to the concept of cognitive style on information

processing: under different contexts of uncertain hints, individuals' cognitive considerations about the outcome would be activated, which in turn generates an impact on their purchasing decision-making. This view has been further explained by the sense-making theory of Brenda Dervin, who points out that people constantly construct and modify their knowledge structures through their interactions with the environment. Two pathways are at work in this process: the first is assimilation, where individuals subjectively integrate the external incentive information into their own knowledge structure based on the context and then produce the outcome; the second is conformation, where the cognitive structure of the individual is changed due to the external stimulus. It should be noted that instead of running their separate course, the affective state and cognitive states towards the prediction would interact with each other to maximize enjoyment.

Third, the result of this study could extend our understanding regarding the divergence in affective reactions due to different magnitudes of uncertainty. Previous studies have provided a set of empirical evidence in this regard. For instance, uncertain rewards can prolong the positive emotions experienced by individuals (Wilson et al., 2005); curiosity arises from an instinctive desire to attenuate the cognitive divergence caused by external reasons (Silvia, 2012); uncertain hints would trigger people's imagery refinement of the unknown (Vannucci & Mazzoni, 2006). This study, on the other hand, contributes to theoretical exploration into the causal relationship between consumers' affective valence and their judgment of unknown prospects in uncertain contexts.

Finally, this study attempts to empirically test the mediating role of sensation-seeking between different types of uncertainty and purchasing intention. As shown in the result of this study, when the probability uncertainty is relatively high (vs. low), greater outcome uncertainty tends to more favorable consumer responses, such as higher purchase intent. This occurs because greater probability uncertainty is more likely to stimulate a more optimistic mindset about potential outcomes. Such optimism bias thus is more prone to enact consumers to prefer greater outcome uncertainty to optimize their sensation-seeking utility in consumption. As such, the thesis diverges from the mainstream findings of curiosity and argues that sensation-seeking can significantly affect consumer behavior (Roberti, 2004). From a distinct perspective, previous research predominantly views sensation-seeking as an individual personality

trait. For instance, individuals with high sensitivity to rewards are more likely to engage in risky activities such as gambling, smoking, and drinking (Zuckerman, 2007). In contrast, this thesis puts forth sensation-seeking as a situationally-activated construct, thereby extending our understanding of how sensation-seeking affects choice preferences in contexts involving uncertainty.

1.6. Managerial Relevance

This research also offers several implications for marketers – including feasible intervention and strategies to boost the sales of "blind box" purchase, and consumers – in terms of greater awareness regarding their decision-making process under uncertainty. First, the findings of the study can assist people in better understanding their own dynamic psychological mechanisms during the process of purchasing decision-making under the effect of perceived uncertainty. The uncertain context set up in the experiment triggered two behavioral motivations in consumers, namely the desire to unravel the mystery and the speculation about the possible outcomes. By identifying their choice preferences under specific uncertain contexts, consumers are able to perceive the specific pathways of self-awareness output. Second, the most distinctive message of this study is an insight into the antecedent role of different magnitudes of uncertainty on emotion, based on which marketers can try and create a "nudging" idea to optimize the magnitude of unknown information, thereby maximizing the curiosity of consumers and prolonging their enjoyment. According to the sensory adaptation theory, unresolved events would trigger stronger affective responses than resolved ones. Considering the fact that typical sensation seekers have a higher probability of becoming repeat customers for a mystery item, marketers can raise the accessibility of the product to a proper extent. It is worth noting that although people generally maintain an optimistic forecast of the unknown prospect, certain definite rewards are still needed as an initial motivation that stimulates new customers to pay their first visits. In view of this, the study suggests that adding some promotional messages to uncertain rewards can double their reinforcing effect on consumers' purchasing intentions. Third, the result of the study extends the use of uncertainty in marketing strategies. The marketing stream of thought revolving around the concept of "Blind" has been proven with a boosting effect on people's positive feelings. This suggests that the unique attributes of "the unknown" and "mystery" can be leveraged not only in traditional product transactions, but also across a broader range of emerging business models, for instance,

a mysterious travel plan, a Christmas dinner with an unknown menu, or a gift pack containing random books. The launch of such marketing campaigns has precisely closed the loop from the creation of uncertainty to its resolution. From the perspective of "blind box economics", since people usually make assessments of uncertain rewards higher than their own value, uncertain rewards can save the marketing costs for businesses to some extent. What is more, the use of uncertainty with proper magnitudes can prompt consumers to pay more effort, time, and money in their attempt to find out about the hidden information behind the mystery items. Finally, compared with definite rewards, consumers would generate an affective dissonance towards the unknown information, which fuels their curiosity towards the unresolved event and a strong desire to verify their expectations. Urged by such desire, consumers will continuously generate ideas to resolve uncertainty and satisfy their affective needs by acting upon them. In addition, marketers are also advised to set feasible tasks for resolving uncertainty. For instance, marketers of the blind box have set tasks around uncertainty resolution for collectors: to make a complete series, consumers must collect every one of the 12 different cartoon characters. The purpose of task-setting is to create more enjoyment and satisfaction for consumers by transforming the common marketing model into the "game model". Considering the drastic growth of the "mysterious boxes" which will likely scale up to US $3.8 billion in 2025 (Lieber, 2020), industry practitioners can benefit from this thesis. Specifically, by leveraging the findings of this research, marketers are able to boost the sales of such "mysterious boxes," such that they can motivate consumers' patronage by using their sensation-seeking tendency.

1.7. Conclusion and the Remainder of This Thesis

The current thesis consists of seven chapters. After establishing the research issue, problem, the significance of the research, as well as its theoretical contributions and potential managerial relevance, in Chapter 2, a review of the extant literature will be conducted, including theories and frameworks in relation to information gap, uncertainty and its hedonic value, as well as a review of value and hedonism, including curiosity, mental imagery, fun, excitement and novelty, and spiritual consumption experience, followed by a review of uncertainty and the optimism bias. Next, a research gap will be identified via synchronizing the extant findings, thereby leading to the development of the present hypotheses and conceptual model thereof in Chapter 3. In Chapter 4, the justification of the methodology will be discussed. Two experimental

studies will then be conducted and presented in Chapter 5 and 6, including the description of the experimental design, empirical procedures, data analysis methods (using a statistical software, SPSS version 25) and the results. In the general discussion Chapter (Chapter 7), the present thesis will summarize the empirical findings of two experiments, along with delineating the theoretical contributions, practical implications, as well as limitations of the present research. Finally, in Chapter 8, limitations and future research directions have been discussed, along with the concluding remarks.

Chapter 2: Review of the Literature

2.1. Information and Information Gap

Uncertainty, to some extent, is unavoidable in everyday life. From purchasing car/home insurance policy, extended warranty for products, lotteries, to visiting doctors for regular medical examinations, consumers prevalently make decisions without possessing access to all relevant information. From this perspective, consumers' perception of uncertainty might stem from the state of lacking information (Bar-Anan, Wilson, & Gilbert, 2009).

The value of information in research investigating consumer decision-making has been widely (re-)visited by scholars. Based on the expected utility theory (Harrison, 1994), a common premise lies in that, with other factors consistent, information is valuable as it allows consumers to weigh costs and benefits of different options, and consequently, facilitates more informed decisions. Following this vein of reasoning, when some information is made unavailable for consumers, the lack of relevant information should presumably deprive consumers from the state of knowing, and lead to unfavorable consumer responses. *Information gap*, as coined by researchers in consumer studies, describes such lack of information and delineates situations where consumers are in possession of less information compared to the other parties in a transaction – such as marketers (Sah & Read, 2020).

However, consumers do not always show resistant attitudes towards the information gap. Put differently, the association of "more information, the better" does not hold universally (Golman, Hagmann, & Loewenstein, 2017). Under the assumption of normative reasoning, consumers ought to actively engage in information acquisition as it facilitates superior decision-making. Nevertheless, sometimes researchers witness consumers engaging in information avoidance, or actively seek uncertainty or prefer it

over certain alternatives. Normatively speaking, the possession of more information signifies an enhanced possibility of making more informed decisions. In this regard, the presence of information gap ought to carry unfavorable implications for consumers as it deprives consumers of opportunities to optimize the outcomes (Sah & Read, 2020). On the other hand, from an evolutionary psychology perspective, the possession of more knowledge often entails greater chances of survival from the predators and reproduction to produce offspring (Kock, 2009). Therefore, the missing information is likely to induce negative affective states, such as anxiety, anger, and frustration (Anderson, Carleton, Diefenbach, & Han, 2019).

Nevertheless, according to the information gap theory proposed by Loewenstein (2018), it highlights that uncertainty stimulates individuals' desire to resolve the missing information thereof, thereby offering, to some extent counter-intuitively, positive value when encountering an information gap. Following this line of reasoning, consumers are able to obtain utility from "thinking about (i.e., attending to) an information gap" (Golman & Loewenstein, 2018; p. 3). This assertion presumably goes against, and therefore challenges the traditional view that utility is a function of material gains one can have based on the information one has access to. Instead, based on the basic premise of the information gap theory, uncertainty as induced by an information gap can actually engender positive-valenced values, and consequently lead to favorable responses.

2.2. Uncertainty and Its Hedonic Value

Although uncertainty, as prevalently encountered in daily lives, has been paid extensive attention by scholars and industry practitioners, academics have failed to provide a comprehensive working definition thereof. According to the Cambridge dictionary, uncertainty is defined as "a situation in which something is not known, or something that is not known or certain" (n.d.). Moreover, looking into its definition semantically, it emphasizes both, the subjective experience of uncertainty – the feeling of being unsure about the future outcome – as well as the objective presence of uncertainty as induced by missing information and probable distributions of outcomes.

In light of the preceding discussion of the positive effect of information gap, prior research has documented that under some circumstances, uncertainty offers the hedonic value (Chen et al., 2015). In comparison to the value in terms of cognitive paths

focusing on the determination of whether certain entities are good or bad using reasons and objective thinking, the hedonic value emphasizes the experiential aspects of value creation (Haidt, 2001). Congenially, the word "hedonic" is originated from "pleasure" in Greek (Webster's Ninth New Collegiate Dictionary, 1989, p. 561; as cited in Higgins, 2006). In fact, as delineated by Jeremy Bentham (1781/1988), one's decisions are guided by two prominent drivers, namely the avoidance of pain and the pursuit of pleasure. This assertion therefore signals the significance of exploring the hedonism in consumer psychology and behaviors. Given the scope of the present research being consumer's consumption of mysterious boxes, it pertains closely to the hedonic and experiential aspects of consumer psychology and decision-making. Consequently, this thesis will focus on the hedonic value associated with uncertainty in purchasing mysterious products.

Over the past four decades, marketers and industry practitioners have been witnessing a skyrocketing surge in hedonism-related consumption. In academia, Holbrook and Hirschman (1982) first proposed the concept of *hedonic consumption* accordingly and challenged the traditional view of Information Processing Perspective (IPP; Beck & Clark, 1998), which is the theoretical framework dominating consumer decision-making prior to that. Specifically, they argue that consumptions in the marketplace are no longer limited to the functional and utilitarian utility and values that products/services can provide. Instead, consumers increasingly focus on the emotional and experiential values to promote greater emotional pleasure. For instance, consumers actively engage in consumption scenarios – such as watching movies and live shows, going on a vacation, and appreciating music and art – that presumably do not offer survival needs. Nevertheless, such consumption activities aim at providing consumers with emotionally rewarding experiences.

In what follows, this section will review and examine extant literature on hedonism, followed by four types of hedonism-related constructs, as documented in marketing, social psychology and philosophical research, including *curiosity*, *mental imagery*, *fun and excitement and novelty* as well as spiritual consumption experience.

2.3. A Review of Value and Hedonism

Value has been widely regarded as a multidimensional construct and represents a trade-off that occurs in the exchange of cost and benefit. Value is expressed not only

as a prediction of perceived product quality and price (Rao & Monroe, 1989), but also an overall assessment that integrates both objective and subjective utilities during the shopping experience (Schechter, 1984). According to the MEC theory (Means-End Chain theory) proposed by Gutman (1997), it highlights three levels of cognitive abstraction, namely attributes, consequences, and values. The core essence of this theory lies in that the features, and characteristics of a product would deliver certain benefits for the consumers (consequence), which eventually conjures a positive or negative outcome and eventually form its corresponding purchase value. Put differently, in consumers' consumption journey, values serve as the ultimate goal that drives consumers to engage in purchasing behavior, motivating and guiding their purchasing decision-making. Specifically, researchers have identified six dimensions of hedonic shopping motivation, including stimulation, social belonging, beliefs, self-fulfillment, role, and evaluation (Arnold & Reynolds, 2003). The theoretical gist of "hedonism" in the literature dwell on the satisfaction and pleasure obtained from the consumption *experience*. This signifies that hedonic shopping is not only about buying a specific product or service to achieve a utilitarian goal, but more importantly, about the pleasure brought by the product as well as the sense of enjoyment and novel experience gained through shopping (Dhar & Wertenbroch, 2000; Ballantine et al., 2010).

Accordingly, Babin et al. (1994) categorized the value concerning shopping into *hedonic* value and *utilitarian* value by measuring the purchasing motivation of consumers. Among the identified motivations, hedonic values embody the subjectivity and individuality shown by consumers during their shopping process. In addition, consumers with hedonic value would tend to put more emphasis on the excitement and pleasure brought by entertaining and fun experiences compared with consumers with utilitarian values. Subsequently, Rintamaki et. al. (2006) summarized findings in previous research, and proposed a conceptual framework that incorporates the different dimensions that influence hedonic values. These dimensions were categorized into tri-factor model, including social value, aesthetic value, and affective value, with the former two having a direct impact on the third one. Based on this proposed framework, the authors speculated that consumers' pursuit of for stimulation, adventure, and experience plays a critical role in ensuring consumer engagement to be more conducive in the shopping activity. Moreover, different external stimuli in the shopping environment (e.g., visual and verbal messages) seem to be capable of further reinforcing

the affective value factors.

Apart from this, hedonic values can also manifest in the form of an escape from the pressure of reality and/or satisfying one's fantasies. Generally speaking, under such circumstances, consumers tend to show higher levels of arousal, participation, and perceptual freedom towards their ambient stimuli (Hirschman, 1983).

2.3.1. Curiosity

Curiosity, as a critical construct in shaping individuals' exploration desires and behaviors (Edelman, 1997; Reiss, 2004), has been well-documented in research investigating child and adolescent development, learning experiences, education, creativity (see a comprehensive literature review by Loewenstein, 1994; Hidi & Renninger, 2020; Lindholm, 2018). Uncertainty drives people's curiosity to explore the unknown (Hsee & Ruan, 2016). For instance, the mere cue of *something useful in the package* would raise people's desire to find out exactly what's inside (van Dijk & Zeelenberg, 2007). Even if the item fails to meet their expectation, the drive of curiosity would overcome the sense of regret. Put differently, consumers tend to be less motivated to resolve the uncertainty due to the consequences per se. Rather, through the elevated curiosity, consumers expect that they would experience unusual excitement, which is intrinsically rewarding. When consumers are faced with limited (missing) information, they tend to look for more specific clues to fill the information gap, rather than being satisfied with the currently known content (Menon & Soman, 2002).

Loewenstein (1994) also concurred with this view and claimed curiosity as a highly activated and positive-valence state. As consumers encounter novel things or find themselves in new external conditions, the assessment of uncertainty activates the feeling of psychological and physiological stimulation of "wanting to know more". That is, when consumers are aware of gaps in their existing knowledge or inconsistencies, ambiguity and lack of stimulation, curiosity is likely to be aroused.

In the realm of marketing and consumption, scholars have put forth that curiosity is a pivotal factor in influencing consumers' attitudes and behaviors (Szumowska & Kruglanski, 2020). For example, research exploring the effectiveness of advertising finds that, by capitalizing on curiosity (e.g., by revealing the identity of the promoted products at the end of the advertising; King, 1991), it substantially

enhances the quality of advertising exposure, such that consumers spend significantly more time and attention on the given advertising (Menon & Soman, 2002).

With respect to how curiosity stimulates consumers' purchase decision-making, extensive studies have been conducted. To shed light upon the driving mechanisms. Curiosity, a highly aroused emotional state with a positive valence, is often activated under uncertainty, and is accompanied by a subjective assessment of future outcomes. Such subjective assessments consequently would likely trigger a mental and physiological sense of incentive. Nevertheless, research in this stream has generated mixed implications. On the one hand, in examining the impact of mysterious gifts on consumers' affective states, Hill, Fombelle, and Sirianni (2016) found that, in comparison to participants who were not given any information or clue, those who were offered three options to choose from indicated significantly stronger curiosity. On the other hand, studies in alternative research domains have challenged this finding. The authors (2016) put forth that, with other attributes being consistent and identical, the item with the highest magnitude of uncertainty would be more likely to generate the optimal level of curiosity. Consequently, research has shed light upon the downstream implications of curiosity. In a subsequent study, Hill et al. (2016) found that the induction effect of active curiosity can lead to the deeper immersion of consumers through the entire purchasing experience and stimulate their higher evaluation of the mystery item, thus generating an indirect impact on the subsequent purchasing motivation.

In relation to curiosity in the focal context of uncertainty, the information gap theory (Loewenstein, 2018) has also offered some valuable insights. Based on the fundamental premise of this theoretical framework, a missing information tends to stimulate decision-makers to experience greater curiosity, which is associated with the subjective desire to know more, to obtain the missing information and enables them to resolve the uncertainty thereof more effectively (Loewenstein, 1994). Nevertheless, in order to ensure the presence of the positive effect of uncertainty on enhanced curiosity, there seem to be two prerequisite conditions to be met; first, the potential activation of curiosity depends on whether an individual's reference point in a given domain exceeds his/her current level of knowledge. Second, the intensity of curiosity is a function of both situational factors and individual differences, which might subsequently affect consumers' ability and motivation to close the information gap.

With respect to the individual difference aspect, researchers have also portrayed that the pursuit of missing information is contingent upon consumers' current cognitive state (Loewenstein, 2018). Specifically, cognitive states tap into the subjective awareness, attention, as well as judgment one makes regarding the issue at hand, and more importantly, different options to address the focal issue. As an example, cognitive states can manifest as ones' feelings of anticipation and the satisfaction after filling the information gap. Supporting the view of cognitive states, empirical studies in marketing research have yielded confirmatory evidence. For example, in an intriguing study conducted by Hsee and Ruan (2016), the authors found that, compared to participants in the certain condition, those in the uncertain condition were more likely to resolve the uncertainty, even when doing so might entail negative and unpleasant consequences (e.g., electric shocks). Such effects, based on the findings, were mediated by elevated curiosity to address the uncertainty in the focal scenarios (e.g., the Pandora effect).

Congenially, to further consolidate this effect, researchers attempted to replicate the impact of uncertainty utilizing a similar experimental paradigm. Reassuringly, the results showed that, even when resolving uncertainty might yield undesirable outcomes, such as unpleasant noises (e.g., clicking a button leading a harsh sound of scratching a blackboard) or visual stimuli (e.g., flipping a masked picture to see the image of an insect; Hsee & Ruan, 2020), the existence of uncertainty is prone to motivate consumers to experience curiosity, which then in turn leads to higher approaching behaviors. Interpreting the findings through the lens of information gap theory – specifically, the cognitive states, curiosity induced by uncertainty tends to increase the attention one allocates to the focal problem, and at the same time, leads to lowered aversion towards potential negative consequences. Put differently, even when negative implications are present in the decision-making process, consumers' anticipatory feelings of the unknown prospect would override the possible side effects of the outcome. In addition, another insightful take-away from this stream of research lies in that even when the overall feelings after opening the mysterious box in an uncertain condition would be worse than the certain one, consumers might still choose to address their curiosity by opening the box.

Moreover, the effect of curiosity also depends on the revealing of the uncertainty – when the information gap will be closed (Cabrero, Zhu, & Ludvig, 2019). In this regard, the extant literature on the role of curiosity in the avoidance and approach

of unknown information seems particularly relevant. To empirically examine this proposition, van Dijk and Zeelenberg (2007) looked into the curiosity-addressing scenario. Specifically, participants in the revelation condition would be made aware of the content of the mysterious box whether they choose it or not. In contrast, those who in the non-revelation condition would only be informed once they chose it. The authors found that, compared to participants in the revelation condition, those in the non-revelation condition were more likely to choose the mysterious box. In addition, the researchers offered 15 euros as an alternative incentive for participants to choose from. Intriguingly, the findings showed that, participants were more prone to reject the 15-euro incentives when the curiosity would be revealed. Study 2 further replicated this effect by adopting a dice-throwing scenario. Taken together, the results showed that through the enhancement of curiosity, it can significantly reduce the anticipated feeling of regret and distaste. More importantly, at the same time, it can motivate consumers to prefer outcomes involving uncertainty over definite outcomes.

In sum, the curiosity is a key variable that has drawn close attention throughout the extant literature. As the product of active uncertainty seeking, curiosity is capable of turning the nature of activities into a "game-like experience." Although people do not seek curiosity in an active manner, it is hard for them to resist the temptation of resolving it.

2.3.2. Mental Imagery

Aa a construct closely pertains to curiosity, mental imagery has been paid extensive attention in the academia. In this line of research, scholars posit that the lack of verbal information in describing intangible things tends to deepen consumers' imagination to a certain extent. As noted by MacInnis and Price (1987), *mental imagery* usually refers to the processed image of an object that is formed in the mind of the cognitive subject based on the representational information transmitted from the source after exposure to the object. Put differently, based on the sensory and perceptual experiences from the working memory that consumers had gained in the past, they are able to reproduce a perceptual image in their mind. Although mental imagery can manifest as a multisensory process, which predominantly integrates auditory, visual, gustatory, as well as tactile sensations, it is also possible for mental imagery to occur with only a single dimension among different types of sensations.

The active engagement in mental imagery tends to increase the accessibility of events. For instance, when considering purchasing a jigsaw puzzle, consumers would subconsciously consider how easy or difficult it is to complete the task. Subsequently, such prior inquiries about the possibility of engaging in a certain activity can prompt consumers to actually participate in that activity. Similarly, extant literature has identified that vivid pictures and images in advertisements can evoke the process of mental imagery, which subsequently boosts the favorable behavioral intentions of consumers (Gavilan, Avello & Abril, 2014). Furthermore, scholars have also documented a thought-provoking phenomenon. Specifically, when consumers engage in the imaginations about certain product experiences that are at odds with their current or present patterns and experiences, new approaches of coping or interpretation tend to be developed and new mechanisms might occur (Albers et al., 2013). In other words, that is, such imaginations of unfamiliar or counterintuitive experiences might substantially alter consumers' attitudes and beliefs (Green & Brock, 2000). Mental imagery generated by images, texts, and/or any stimulus that can trigger consumer imagination have the potential in affecting consumers' evaluation of the product, especially under highly refined contexts. Particularly, under the catalytic and persuasive effects of mental imagery, consumers may abandon their pre-conceived or subconscious rational analysis or simply ignore the text information about the product (Petrova & Cialdini, 2018).

Escalas and Bettman (2017) attempted to explain this phenomenon; specifically, the authors argue that during the engagement of mental imagery, it is likely to significantly consume a considerable amount of mental resources. As a consequence, it engenders challenges and difficulties for consumers to reset their initial impressions generated by the mental imagery during product evaluation. Furthermore, the similar argument has been posited by Gavilan and Avello (2020). Supporting this vein of reasoning, she found that, when participants were instructed to imagine the experiences of consuming the product, they were less likely to make inferences based on a specific attribute of the product. Instead, they were more likely to process the information in a holistic manner, thereby increasing consumers' trust in the focal brand. One important take-away from this line of inquiry lies in that in advertising and branded communication to the target audience, the information regarding the comparisons with respect to competing products ought to be more effective under analytical processing,

however, not under the mental imagery processing (Thompson & Hamilton, 2006).

In the inquiries regarding mental imagery of uncertainty, recent scholarly advances have been achieved in distinguishing different types of mental simulations triggered by imagery, namely the process-oriented and the outcome-oriented process (Oettingen & Mayer, 2002; Pham & Taylor, 1999; Rivkin & Taylor, 1999). According to the findings, the activation of both mechanisms is targeted at 1) weakening people's argument strength over information and 2) persuading them to engage in the focal experience. Notably, the process-oriented mental simulation guides consumers to approach the outcome progressively, with an emphasis put on the *actions* needed to obtain the outcome. However, under the outcome-oriented mental stimulation, consumers are guided directly to surmise the *outcome* with the stimulation of the preceding event.

Another factor influencing the mental imagery lies in the interim distance in the imagination about future events, which is deemed as a pivotal variable that affects whether individuals engage in these two disparate pathways of mental stimulation. As Trope & Liberman (2003) accurately noted, consumers tend to change the way they mentally perceive and represent an event due to different interim distances of the event. That is, when making decisions upon imminent events, consumers would pay more attention to the process-oriented mental imagery (e.g. the product feasibility). On the other hand, when confronted with events that are still in distant expectation, consumers would predominantly pay more attention to the abstract features of the product (e.g. desirability). However, such attention patterns rooted in the interim distances of future events would lead to an evolving pattern of choice preferences over time. That is to say, when considering distant future needs, consumers are attracted to the more pleasant choices. However, as they draw closer to the time point of placing the order, they are more likely to turn to the more feasible choices.

Moving onto the impact of uncertainty-induced mental imagery in consumer research, an intriguing investigation offers valuable insights. In the experiments, the authors found that compared to certainty, pleasurable uncertainty tends to have a stronger stimulating effect on positive emotions (Lee & Qiu, 2009). That is, contradictory to the traditional view that certainty ought to be preferred, being exposed to positive uncertainty – such as winning yet unsure about the exact final prize – tends

to stimulate consumers to experience more intense positive emotions with a more long-term effect. More interestingly, in the face of uncertain prospects, consumers' mental imagery is likely to drive this effect, which is further contingent upon factors influencing the level of mental imagery elaboration, such as the number and/or characteristics of rewards. The findings of Study 2 confirmed this prediction. As found by the researchers, no matter whether the positive emotion was measured immediately after participants read the reward description, or after completing an additional task that took approximately 10 minutes, mental imagery was more likely to maintain positive emotions in uncertain prospects.

Taken together, both curiosity induction-resolution and the arousal of imagery in the context of missing information have advanced participants' further comprehension of experiential consumption (Hsee & Ruan, 2016). Compared with purchasing material products, consumers are more likely to experience enjoyment and satisfaction in the process of purchasing experiential products/services. This occurs because compared to material goods, experiential ones typically are more likely to be accompanied by an elevated level of uncertainty, which then could enable consumers to experience feelings that material goods preassembly would fail to provide. Hence, a potential pathway through which experiential purchase brings more happiness to consumers is by arousing their curiosity in the upcoming experiences. In turn, consumers would be more likely to resolve such curiosity through their actual participation and experience, thereby obtaining a sense of happiness.

Distinctly, affective experiences guide consumers' psychology and behaviors in an invisible and non-reflective manner, while at the same time, reflect the insights and goals of consumers. Given this, how do personal affective factors manifest themselves in uncertain contexts and what are the antecedent roles they play in behavioral intentions? The following section will offer a detailed review of relevant literature on these issues.

2.3.3. Fun, Excitement and Novelty

In light of the Excitation-Transfer Theory proposed by Zillmann (1983), it sheds light upon the existence of a sequential dependence in the expression of people's emotions. In other words, the excitation-transfer theory predicts that consumers'

reactions to a certain emotion can be aroused by situational factors. In the focal context of uncertainty, for instance, several studies have demonstrated that uncertainty with respect to positive potential outcomes tends to evoke consumers to experience positive affective states such as excitement and enjoyment (Nelson, Galak, & Vosgerau, 2008).

In a distinct context, Hsee et al. (2015) investigated the impact of the presence of stimuli on consumer decision-making, which lends support for the aforementioned excitement account. Specifically, in the experiment, participants were either exposed to stimuli (e.g., the clash sound, the images of insects appeared after information reception, and the touchpad hung on the wall incidentally emitted sound after being tapped) or no stimuli conditions (e.g., no sound at all), and subsequently were instructed to engage in certain actions (e.g., toss beans on the plate, click on the "send" button, and jump). The results showed that the presence of stimuli, such as sounds and images in the experiments, served as a certain stimulation that reinforces participants' preference for the behavioral responses. That is, under the stimulation, participants were more likely to repeat the behavior of tossing beans on the plate more than those in the silent condition, click on the "send" button, as well as jump.

In the inquiries of uncertainty, Ruan, Hsee and Lu (2018) tapped into the driving mechanisms – the reason why consumers are addicted to the quest of responses under uncertain stimuli. Specifically, in Study 1, participants were asked to engage in a game – where they were told to recognize animals. The authors claimed that compared to viewing the answer directly, participants significantly preferred to read the question and viewing the answer. In the following study, participants were instructed to guess the name of the city from a picture showing the image of the city (the name of the city was displayed in the upper left corner of the computer screen for 12 seconds). Again, the findings showed that participants who chose to hide the city name for the last 6 seconds reported to have a stronger hedonic experience. Combining them together, the findings shed light that the process of uncertainty creation and resolution can stimulate the potency for hedonic experience. Taken together, Ruan, Hsee and Lu (2018) documented a novel perspective through exploring the value of uncertainty and coined the "teasing effect" – consumers actively engage in activities involving uncertainty as the uncertainty offers hedonic experiences that are fun, exciting and novel.

2.3.4. Spiritual Consumption Experience

Last but not least, as consumers in the marketplace are becoming increasingly aware of the significance of meaningfulness, the development of contemporary consumption, to some extent, can be regarded as a transition towards spiritual consumption (Shaw & Thomson, 2013). Spiritual consumption, as defined as consumptions that seek spiritual meaningfulness and awareness (Rindfleish, 2005).

Accordingly, researchers have posited that engaging in consumption involving uncertainty contributes to an enhanced spiritual experience. Supporting this view, an in-depth interview conducted by researchers with 10 participants revealed that respondents expressed that the prospect of uncertainty is fascinating, and that experiencing uncertainty is a "journey" that offers opportunities for self-reflection and identity creation (Bruce, 2002). That is, probing into uncertainty has a substantial reinforcing effect on a more mindful attention to their own emotions. When respondents were put in uncertain contexts, their information-processing tends to re-direct their attention to the engagement with the present event, followed by a spiritual insight into the unknown, which eventually leads to the reduction of uncertainty through consumers' interpretation or sense-making.

2.4. Uncertainty and The Optimism Bias

Synthesizing extant findings, the effects of uncertainty seem to be associated with the enhanced optimism bias proposed by Bracha and Brown (2012). That is, individuals have an inherent tendency to overestimate the likelihood of positive/pleasant events, and/or to underestimate the likelihood of negative/unpleasant events. Based on previous research, optimism can be categorized into one of the two types, namely the *innate optimism* and the *acquired optimism*. Specifically, the innate optimism arises from an instinct closely related to one's own personality traits along with the current situation that he/she is confronted with. Consumers with such personality traits (i.e., with innate optimism) would immediately turn to the positive interpretation when faced with an uncertain outlook. In contrast, the acquired optimism speaks to a situationally activated optimism in a given context. In the presence of uncertainty, it highlights the potential of positive outcomes and therefore stimulates greater acquired optimism.

In explaining consumers' behaviors, decision-making can be viewed as a joint

collaboration of both, an affective process and a rational process. Decision-makers presumably engage in a careful evaluation of multiple options within the consideration set. However, at the same time, the affective experience one anticipates also play an undeniable role thereof. That is, when encountering of uncertainty, the missing information gap taps into a plausible future outlook of favorable outcomes, hence following the cognitive route of information processing. In the meanwhile, the uncertainty also exposes consumers to a hedonic experience (with a pleasant valence) that involves fun, excitement, curiosity, mental imagery and even possibly a spiritual consumption. From this perspective, uncertainty also elevates a more optimistic experience.

Extent literature on uncertainty hints at a contention: the positive experience of pursuing uncertain rewards strengthens consumers' behavioral motivation (Shen, Hsee, & Talloen, 2019). Abuhamdeh, Csikszentmihalyi, and Jalal (2015) echoed this view, and substantiated the claim that uncertainty endows greater excitement, enjoyment, and novelty into suspense, which in turn serves as a critical reinforcement force for consumers to experience a more rewarding consumption journey. Specifically, Abuhamdeh, Csikszentmihalyi, and Jalal (2015) intriguingly developed an experimental schema (Study 1) where participants were engaged in a zero-sum video game. The disparity between the participants and the opponents were manipulated to operationalize uncertainty, such that a greater disparity indicates less uncertainty and vice versa. The results showed that greater uncertainty during the video game led to significantly greater experience, albeit participants' perceived competence was low. In addition, this happens due to an elevated suspense. In the subsequent Study 2, the authors further provided evidence such that this effect is driven by an intrinsically motivating process. Participants actively chose to play games in which they previously scored high in suspense yet low in competence over the games where there was a smaller gap between the player (the participant) and the opponent.

Congenially, other researchers offered support for this view – the primary premise of uncertainty motivation lies in its optimism in predicting future outcomes. Goldsmith and Amir (2010) for example, empirically examined the boundary condition of uncertainty motivation, and demonstrated that, generally speaking, consumers typically place a positive expectation on uncertain rewards. On the other hand, after careful considerations, they tend to downgrade the favorableness of their evaluation

towards uncertain rewards.

Chapter 3: Hypotheses Development

3.1. Introduction

Having examined extant literature on uncertainty and its hedonic underpinning, a research gap has been identified, in that only scarce attention has been paid to a more fine-grained understanding of how different uncertainties in the marketplace affect consumer decision-making. Specifically, previous research predominantly showcases that uncertainty information tends to dampen consumers' purchase intent as it signals negative connotations. In contrast, the phenomena witnessed in the field suggest that uncertainty in certain circumstances could potentially lead to favorable outcomes, such as elevated purchase intent. Therefore, given that previous research fails to account for the positive effect of uncertainty and the inconsistent insights, this void in the literature motivates the present research to stimulate a more in-depth understanding thereof. In Chapter 3, we aim to develop hypotheses and accordingly, the conceptual model proposed by incorporating relevant variables of interest, such as different types of uncertainty, namely outcome uncertainty and probability uncertainty, curiosity and sensation-seeking as potential underlying mechanisms.

3.2. The Utility of Uncertainty in Consumer Decision-Making

Research in the marketing context has investigated the impact of uncertainty on consumer psychology and decision-making. For instance, Wilson et al. (2005) examined the interactive effect between consumers' emotions and purchasing behaviors under uncertainty. The authors found that, using uncertain hints significantly prolong consumers' experienced enjoyment and prompt them to automatically respond with emotions of greater intensity to unexpected events that are related to self-targets (Wilson et al., 2005).

Furthermore, to sustain the pivotal role of uncertainty in intermittent reinforcement, several studies identified the effect of the level of uncertain rewards on motivating people's behavioral responses. For instance, Hogarth and Villeval (2010) have conducted a research investigating participants' withdrawal and/or persistence

behaviors under programs with different levels of reinforcement. Specifically, participants assigned to each of the three conditions were given a monetary reward and were subsequently interrupted for the same unknown period of time. Comparing across three treatment conditions, the results showed that the intermittent reinforcement was more likely to lead to participants' greater persistence and higher effort than both continuous reinforcement and fixed reinforcement. In particular, once the uncertain reward was discontinued, participants in the continuous reinforcement condition showed a significantly lower level of engagement and the lack of focus thereof. Taken together, uncertainty significantly motivated consumers to manifest greater task persistence, accompanied by the increased performance.

It is important to note that, in most of the empirical studies, the "uncertainty" has been predominantly operationalized as a positive outlook under the experimental conditions. This thus poses a limitation on the findings thereof, in that the prolonging effect of uncertainty on positive emotions is restricted to the situations where participants are aware that the outcome of the future event is in their interest. Interestingly, however, extant literature investigating uncertainty predominantly tends to hint at the possibility that consumers are likely to be more optimistic when encountering uncertainty. For instance, Shen et al. (2019) find that, even when participants are aware that the uncertain outcome is in a negative/unfavorable state, they still indicate intent to engage in repeated purchase and patronage. In their experiments, the results showed that when being informed of the incentives of gaining more points when they finish running, participants were more likely to run for more kilometers. Moreover, insofar the extent to which the uncertain rewards are worse off than the certain condition within an acceptable range, participants were more likely to prefer the uncertain rewards over the certain one. Furthermore, studies 2 and 3 (Shen et al., 2019) documented the driving mechanism; when facing uncertainty in decision-making, the elimination of uncertainty, instead of the actual reward itself, tends to be more emotionally gratifying.

In examining the utility of uncertainty, Keplinger (2009) explored its impact on enjoyment, and has proposed that the impact of uncertainty on pleasure might lead to different magnitudes of enjoyment due to disparate resolution preferences regarding situational sources of enjoyment. Specifically, Knobloch-Westerwick and Keplinger (2008) put forth a tri-dimensional model in explaining the pleasure generated under the

attraction of mystery cues; the first of which being the pleasure evoked by uncertainty *directly*. That is, the higher the degree of uncertainty, the greater the ensuing enjoyment. For example, in the situation where readers of a novel assume an equal subjective probability of crimes by each suspect, their sense of enjoyment would be the strongest as a result of the equally distributed probability (high uncertainty). In the second model, taking the novel example again, the enjoyment might stem from readers' speculation and anticipation of the uncertain factors with the unfolding of the event, especially once they learned that they had made an incorrect judgment on a certain suspect, at which point the pleasant surprise would be unleashed to the greatest extent. Finally, the enjoyment induced by uncertainty lies in the final revelation of the true suspect corroborating the judgment of the readers. The higher the subjective probability of crime that readers see in a certain suspect (who happens to be identified as the true culprit in the end), the stronger their perceived enjoyment would be.

In addition to situational factors, individual difference factors seem to be at work as well, such as personality traits. For example, Knobloch-Westerwick and Keplinger (2006) found that participants' responses towards the mystery appeal was contingent upon not only their attitudes toward the mystery resolution, but also the levels of self-esteem. Specifically, when the recipients of information had a preconception of the future outcome, participants with higher levels of self-esteem tend to favor the resolution where their suspicion was disconfirmed, whereas those with low self-esteem appeared to be more troubled by the possibility of failure, and as a consequence, preferred the resolution that corroborates and confirms their anticipation (Knobloch-Westerwick & Keplinger, 2006).

3.3. Two Types of Uncertainty

In light of the preceding review of the literature, findings in this stream of research posit that the effect of uncertainty can be categorized into one of the two paths; one path taps into a more process-focused model, whereas the other speaks to an outcome-focused model. On the one hand, the process-focused model refers to the situation where individuals gain satisfaction and gratification through the utility of uncertainty resolution. Specifically, these consumers view uncertainty resolution as an intrinsically rewarding process. As such, resolving such uncertainty tends to induce favorable consumer responses. On the other hand, outcome-focused model refers to the situation where individuals make assumptions over an uncertain future. When engaging

in an outcome-focused model, consumers base their reference point for decision-making on the preference for uncertain information. As a result, their judgment of the outcome might not be confined to the current conditions or situation (Escalas & Luce, 2004).

Taken together, due to the nature of different decision-making models involving uncertainty, it is vital to examine the effect of different types of uncertainty. Supporting this assertion, Goldsmith and Amir suggested that the perceived value of uncertainty inducement should be examined in more detail to identify the critical reference point of uncertainty on people's risk assessment (Goldsmith & Amir, 2010). In the decision-making process, uncertainty might stem from two main sources; a consumer might have all options available, yet uncertainty arises from choosing between options. Alternatively, there might be missing information about all options, which results in one's uncertainty regarding the final outcome.

Accordingly, in this thesis, the researcher puts forth two types of uncertainty, namely *outcome uncertainty* and *probability uncertainty*. *Outcome uncertainty* refers to the extent to which one is uncertain about the outcome *given all available options* (Monosov, 2020; the former source of uncertainty mentioned above). For example, choice overload, a seminal phenomenon in the literature of decision-making, can be interpreted as a typical manifestation of outcome uncertainty (Chernev, Böckenholt, & Goodman, 2015). In contrast, *probability uncertainty* taps into a situation where individuals are required to make assumptions as *not all options are made available* (the latter source of uncertainty mentioned above). For instance, as described in the opening example of booking a mysterious vacation, consumers are not provided with potential options as travel destinations.

Considering the nature of different types of uncertainty, this thesis is interested in the interplay between outcome uncertainty and probability uncertainty. Specifically, this study assumes that the magnitude and types of unknown (missing) information can lead to disparity in people's overt behaviors in the way they respond to the uncertainty. In light of the aforementioned discussion regarding the utility of uncertainty, differential levels of outcome uncertainty signal the extent to which a consumer is able to maximize their utility of consumption. Compared to low outcome uncertainty, high outcome uncertainty implies that consumers can influence the outcome of a situation

depending on their choices. This assertion is also supported by previously reviewed theories and theoretical underpinnings (in Chapter 2) such as the information gap (Golman & Loewenstein, 2018), the hedonic value of uncertainty, and the utility of uncertainty in terms of greater optimism. This intangible utility induced by outcome uncertainty therefore ought to drive higher purchase intent for the focal product. This is formally hypothesized as follows;

Hypothesis 1: *High outcome uncertainty will be more likely to stimulate higher consumers' purchase intent than low outcome uncertainty.*

Next, this thesis introduces the moderating effect of the probability uncertainty. As portrayed above, compared to outcome uncertainty involving uncertainty arising from between-option trade-offs, probability uncertainty centers around not possessing adequate information to make a decision. As such, probability uncertainty (vs. outcome uncertainty) is more likely to alter consumers' mindsets and psychological makeup in decision-making. That is, the missing information in a decision-making process could potentially alter consumers' reference point in surmising future outcomes. Drawing from the literature across different disciplines such as psychological science, immigration studies, and research on aging, a lack of information, as reflected by incomplete answers, information deficit and missing information, significantly enacts individuals to display greater optimism in the decision-making process. This view is also consistent with previous research on the acquired optimism such that situational factors are at work, determining the extent to which consumers are likely to be optimistic. A lack of all information regarding available options could therefore enhance consumers' optimism tendency and activate a lay belief that associates "missing information" with "better outcomes." For instance, a recent study conducted to understand migrants' educational choices argued that their optimism thereof could stem from a lack of information asymmetries (Tjaden & Hunkler, 2017). Following the vein of reasoning, this thesis puts forth to probability uncertainty as a moderating factor. Specifically, it is hypothesized that, in comparison to low probability uncertainty, the presence of high probability uncertainty promotes consumers to prefer high outcome uncertainty than low outcome uncertainty. Stated formally, the hypothesis is formulated as follows;

Hypothesis 2: *The effect of outcome uncertainty will be moderated by probability uncertainty. Specifically, a), when probability uncertainty is high, high (vs. low) outcome uncertainty is more likely to lead to higher purchase intent. In contrast, b), when probability uncertainty is low, purchase intent is not affected by outcome uncertainty.*

3.4. The Mediating Effect of Sensation-Seeking

To account for the conditional effect of outcome uncertainty on purchase intent, depending on the probability uncertainty, this thesis herein introduces a mediator to explore the underlying mechanism, and examines the mediating effect of sensation-seeking. Sensation-seeking, as introduced and proposed in 1979 by the American psychologist Zuckerman, refers to the tendency to seek and explore novel stimuli from the external environment (2007). Consumers with a high sensation-seeking propensity presumably manifest stronger need for varied, novel, and complex stimuli in order to maintain an optimal level of sensory arousal. For example, Zuckerman, Bone, Neary, Mangelsdorf and Brustman (1972) found that compared with simple graphics, high sensation seekers prefer abstract paintings with intricate and ambiguous lines. A considerable amount of literature has speculated that people with high sensation-seeking levels would be more adventurous in uncertain scenarios across multiple realms. Congenially, Raju (1980) proposed that when it comes to consumer sensation-seeking, the presence of curiosity, the quest for variety, the existence of risks, as well as the interplay thereof are important precursors to consider.

For instance, consumers who attempt to adopt and practice meditation might quickly lose their interest and give up such activities after the initial sense of sensation wears off (i.e., variety is absent). The arousal of sensory experiences involves not only the engagement with novel objects/events, but also requires a sustained external sensory stimulation and variation. That is, consumers who demonstrate higher levels of stimulation preference (sensation-seeking) also show higher degrees of initiation, which enacts them to be in a state of variety-seeking until an exhilaration level consistent with their personal character is achieved. In addition, the presence of risks also plays a critical role in identifying and characterizing sensation-seeking tendency. Consumers displaying high levels of sensation-seeking tend to be more willing to take risks because 1) they place more weight on the actualization of greater rewards, and thus are less sensitive about risks, and 2) high sensation seekers are more prone to be

optimistic about the lay belief of "greater risks" are associated with "greater rewards" (Horvath & Zuckerman, 1993; Breivik, Sand, & Sookermany, 2019). For example, consumers often engage in extreme and intense sport activities – so as to challenge the limits of physical strength and gain a sense of accomplishment thereof and participate in a bet and/or a gamble in order to obtain the excitement.

Furthermore, to lend support for the optimism account, Weinstein (1980) puts forward that, to improve their perceived chance of actualizing the rewards, high sensation seekers predominantly hold an attitude of "optimistic bias" towards risks. In general, people tend to judge an activity as being less risky after they have accumulated non-traumatic experiences in it from multiple attempts. Nevertheless, for individuals with high levels of sensation-seeking, they tend to believe that they possess great controllability over the situation, and are less aversive towards unfamiliar experiences. Similarly, research in psychology documented congenial findings.

In the investigation of "the illusion of control", Langer (1975) showed that consumers are likely to manifest the judgment bias that arises from their unreasonable overestimation of the control over environmental and temporal outcomes, even in completely random or uncontrollable situations. Moreover, prior work has identified factors influencing the "illusion of control," including individual difference traits, for instance personality, cognitive style, and sensation-seeking tendency (Mesken, Hagenzieker, & Rothengatter, 2005). When it comes to sensation seekers, they are likely to have the tendency to overestimate their degree of control over outcomes and accidental events, thereby leading to higher optimism – high sensation seekers tend to believe that they would experience more positive events than others in a similar situation, even though such belief is completely unfounded.

Linking sensation-seeking to consumers' consumption decisions, scholars found a positive correlation between purchase decisions and sensation-seeking traits among consumers. Lepp and Gibson (2008) found that, for consumers with high (vs. low) sensation-seeking levels, vacation advertising involving an adventurous nature significantly reduced their experienced anxiety towards the perceived risk of adventurous destinations or traveling alone. Such reduced anxiety subsequently positively aroused interest among these travelers. In addition, in the wine-related tourism industry, sensation-seeking levels also play a dominant role in the purchase

motivation of wine tourist activities. Tourists of a high sensation-seeking tendency show a greater willingness of making purchases in terms of both shopping frequency and intent to participate in related activities. Thus, this leads to a moderation hypothesis:

Hypothesis 3: The effect of outcome uncertainty on purchase intent for high probability uncertainty is mediated by sensation seeking. Specifically, when probability uncertainty is high, high outcome uncertainty leads to higher level of sensation-seeking, which in turn increases purchase intent.

Based on the detailed review of the literature, and the aforementioned development of the predictions, this thesis put forth a conceptual framework regarding the effect of uncertainty. Given the extensive adoption and prevalence of the "blind boxes" marketing practices in the marketplace, this study attempts to explore the impact of uncertainty on consumers' hedonic experiences in consumption. Specifically, this thesis aims at investigating the interplay between outcome uncertainty and probability uncertainty. Furthermore, the present research introduces consumers' sensation-seeking as an underlying mechanism in explaining the effect of uncertainty (please refer to Figure 1).
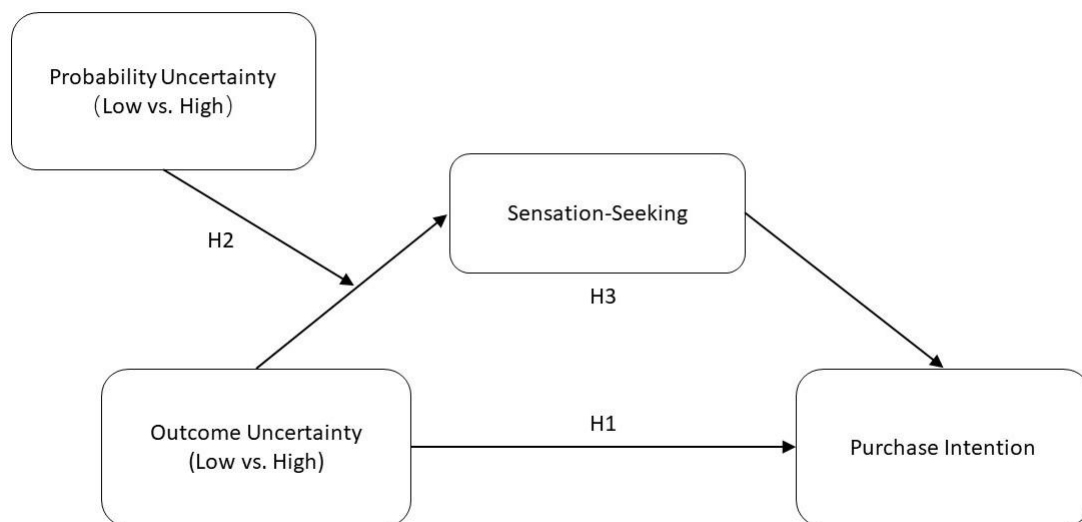
Figure 1.

Conceptual Model

Chapter 4: The Justification of Methodology

4.1. Aim of the Research

This research attempts to investigate the relationship between different types of uncertainty and consumers' purchase intent among those who reside in the US. More importantly, this research introduces and examines the role of sensation-seeking tendency in the proposed relationship. In this research thesis, three experimental studies have been conducted; in Study 1, the researcher aims at establishing the effect of different types of uncertainty, namely outcome uncertainty and probability uncertainty, on consumers' purchase intent by looking to their interaction effect. In Study 2, this research further introduces key variables that examine the underlying mechanism that drive the proposed interaction effect as found in Study 1. Specifically, Study 2 investigates the effect of two closely related constructs, including sensation-seeking and curiosity. The findings of Study 2 indicate that it is indeed sensation-seeking instead of curiosity that contributes to greater purchase intent for mysterious consumption. Taken together, the objective of this research thesis lies in the attempt to investigating whether uncertainty leads to significant differences in purchase intent. Specifically, this research explores different types of uncertainty – outcome uncertainty and probability uncertainty. Moreover, through looking at the mediating effect of sensation-seeking, this research aims at identifying the psychological process induced by uncertainty.

4.2. The General Approach

Given both the epistemological orientation (i.e., positivism vs. interpretivism) and ontological orientation (i.e., objectivism vs. constructionism), this section will discuss the methodological approach in addressing the focal research question. Employing a positivist empirical approach, it allows us to examine and identify the reasons/antecedents that determine (influence) the outcome.

Compared to qualitative approach, the use of quantitative methods offers several advantages, including but not limited to: 1) the findings being more objective (Carr, 1994) , 2) the insights provided being more likely to be replicated, and 3) through sampling the entire population, it allows the researchers to describe the characteristics, attitudes and behaviors of certain population. By using statistical data, it enables researchers to be more effective and efficient in drawing the conclusion. In addition,

using statistical and quantitative methods, the conclusions and findings established thereof tend to be more generalizable. Put differently, within certain domains of investigation, research using quantitative methods is more likely to be applied in a different sample, and context.

To establish the causal relationship between the variables of interest, this research uses a between-subjects experimental design (Rosenthal & Rosnow, 2008). Specifically, this approach allows researchers to identify the impact of independent variables on the dependent variable(s). In addition, in order to explore the interplay between different types of uncertainty, the between-subjects design helps the researchers to 1) minimize the order effect in different conditions and 2) reduce the longitudinal duration in the experimental session so as to enhance the veracity of the findings.

In the research, data collection will commence using online survey as a data distribution channel. Utilizing pre-designed survey via Qualtrics, data will be collected through responses from Amazon Mechanical Turk (Amazon MTurk), a prevalently adopted online crowdsourcing platform in academic and marketing research. Subsequently, raw data retrieved from Amazon MTurk will be downloaded to the researcher's computer and analyzed using SPSS, a statistics analysis software.

4.3. Questionnaire

In light of the preceding discussion, a structured questionnaire will be adopted as a main tool of data collection, which achieves a broad audience of participants, and at the same time, offers constructive insights regarding the variables of interest in the focal research. There are mainly three sections in the structured questionnaire, including 1) the experimental manipulation of the variables of interest, 2) the collection of participants' responses such as purchase intent using 7-point Likert scales ranging from "strongly disagree" to "strongly agree," and 3) participants' demographic information such as age, gender and income.

In this research thesis, there will be two experimental studies. Study 1 focuses on the interplay between two types of uncertainty – including outcome uncertainty and probability uncertainty – on participants' purchase intent. Moreover, Study 2 investigates the mediating effect of sensation-seeking on the proposed relationship as documented in Study 1. In addition, Study 2 also aims to rule out the alternative

explanation of curiosity. Across two studies, constructs (measured and/or manipulated) include: the manipulation of uncertainty (low vs. high), purchase intent (the focal dependent variable), sensation-seeking and curiosity (only in Study 2), and demographic information.

Regarding the different types of uncertainty, to encourage participants to be more immersed into the experimental scenario, actual visual stimuli have been used that in Study 1, actual animal toy pictures will be used and in Study 2, actual car model pictures will be adopted. Specifically, in the first experimental condition (high outcome uncertainty and high probability uncertainty), no product pictures will be given to participants; in condition 2 (low outcome uncertainty and high probability uncertainty), participants will be shown the stimuli of five toys and be informed that the actual product will be none of the shown toys; in condition 3 (high outcome uncertainty and low probability uncertainty), participants will be shown pictures of six toys and be informed that the final product will be one of the six toys; and finally in condition 4 (low outcome uncertainty and low probability uncertainty), participants will be shown six toys and be informed of the specific toy that they will get. As such, condition 4 features a conservative operationalization of low levels of both outcome uncertainty and probability uncertainty, in order to strengthen the experimental manipulation. Taken together, in the experiments, participants will be randomly assigned to one of the four experimental conditions and indicate their responses towards each.

4.4. Research Ethics

Given that this research requires the researchers to collect responses from human respondents, it requires the researcher to obtain ethics approval before the data collection commences. After confirming the experimental design, the researchers have applied for the ethics approval through the Auckland University of Technology Ethics Committee (AUTEC), ensuring that all study procedures and processes will align with legal requirements, moral and ethical standards. In this research, the researchers are interested in preferences from the participants regarding products in different uncertain scenarios, without any interest in their personal private and/or sensitive information. Furthermore, the researchers will ensure that all responses from the participants will be kept anonymous and confidential, and more importantly data will not be used in any other ways, which will be deleted after 7 years. In addition, demographic information, such as participants' age, gender and income will not be associated with names and

identifiable IDs. Based on the requirement by the AUTEC, an information sheet will be provided in each questionnaire so that participants are aware of the purpose of the study, their benefits and potential risks, if any. After rigorous review by the AUTEC, the ethics committee approved the focal research.

4.5. Survey Procedure

Having gained the ethics approval from the AUTEC, the survey will be designed on Qualtrics, and distributed through Amazon MTurk. Participants will be provided with a link so that they are able to participate in the studies. Regarding the participant selection criteria, the researchers aim to recruit participants who are adults who reside in the United States.

Each participant will be assigned to one of the four experimental conditions, featuring different levels of outcome and probability uncertainty. Right after the manipulation, they will be instructed to indicate their purchase intent (in Studies 1 and 2), sensation-seeking and curiosity (only in Study 2), as well as their demographic information (in Studies 1 and 2). The measurement scales are attached in the appendix in the thesis retrieved from previous empirical research.

After the collection of participants' responses, data will be analyzed using the statistics analysis software, SPSS. Detailed analyses carried out will be further elaborated in each study considering the need for specific analyses required.

4.6. Data Analysis

Specifically, the following data analyses have been carried out using SPSS:

- Frequency analysis for the distribution of variables, such as gender, and income;
- Descriptive analysis for determining the mean and standard deviations (SDs) of certain variables;
- Reliability analysis in order to examine whether the constructs measured achieve sufficient validity;
- Comparing means, such as one-way ANOVA to determine if there is significant difference between different groups, and;

- PROCESS Macro models to examine the proposed conceptual models using PROCESS model # 1 and model # 8.

Chapter 5: Experiment 1

5.1. Introduction

In light of the preceding theorization, this Chapter aims to empirically examine the proposed conceptual model (Figure 1). Specifically, this study tests the main effect of outcome uncertainty (H_1), and the interaction effect between outcome uncertainty and probability uncertainty on purchase intent (H_2).

5.2. Experimental Design and Procedures

Two hundred and one participants (M_{Age} = 39.12, SD = 12.29, 51.2% Female) recruited from Amazon MTurk participated in the study, who were randomly assigned to one of four conditions in a 2 (outcome uncertainty: low vs. high) × 2 (probability uncertainty: low vs. high) between-subject design.

Participants were first exposed to a cover story to conceal the purpose of this study as the investigation of consumers' attitudes towards toys. After obtaining participants' consent to participate, they were informed that they entered a blind box toy shop and were considering purchasing a toy. To manipulate outcome uncertainty and probability uncertainty, the packaging of the focal product has been operationalized so that the product entails one of four combinations of uncertainty, namely, low outcome uncertainty and low probability uncertainty, low outcome uncertainty and high probability uncertainty, high outcome uncertainty and low probability uncertainty, and high outcome uncertainty and high probability uncertainty (see Appendix 1 for different versions of product packaging). For example, participants in the high outcome uncertainty and low probability uncertainty condition were exposed to a packaging which did not portray details of the toy, such as colour and style.

After being exposed to product packaging, participants were asked to indicate their purchase intent towards the toy (the dependent variable) along a 7-point scale (1 = strongly disagree; and 7 = strongly disagree, Cronbach's α = .857; see Appendix 2 for all measurement used in the study).

Next, to assess the effectiveness of the manipulation, participants were instructed to indicate their agreement on outcome uncertainty ("If I purchased this product, I

would feel very uncertain about the outcome") and probability uncertainty ("If I purchased this product, I feel very uncertain about the probability that I will get a new type of toy animal model"). Finally, participants reported their demographic information, including gender, age, and income.

After completing the experiment, participants were thanked for their participation. Additionally, nominal monetary rewards for their participation were redeemed based on participation codes, as shown at the end of the survey questionnaire.

5.3 Data Analysis

Data collected in this study was analyzed using a statistical software (i.e., SPSS version 25) to examine the effect of outcome uncertainty and probability uncertainty on consumers' purchase intent. Specifically, the main effect of outcome uncertainty was tested using *one-way ANOVA*. In addition, the moderating effect was assessed using the *PROCESS Macro* in SPSS (model #1).

5.4 Results

5.4.1 Manipulation Check

Confirming the effectiveness of the manipulation of both outcome uncertainty and probability uncertainty, results of one-way ANOVA show that participants in the low outcome uncertainty condition reported significantly lower uncertainty regarding the outcome (M_{Low} = 4.90, SD = 1.63) than those in the high outcome uncertainty condition (M_{High} = 5.40, SD = 1.38, F (1, 199) = 5.49, p = .020; see Appendix 3 for ANOVA output).

Moreover, participants in the low probability uncertainty condition reported significantly lower uncertainty that they will get a new type of toy model (M_{Low} = 4.25, SD = 1.90) than those in the high probability uncertainty condition (M_{High} = 4.84, SD = 1.73, F (1, 199) = 5.35, p = .022; see Appendix 4 for ANOVA output).

5.4.2 The Main Effect

To examine the main effect of outcome uncertainty (H_1), the one-way ANOVA on purchase intent revealed that outcome uncertainty had a significant positive effect (M_{Low} = 4.43, SD = 1.61 vs. M_{High} = 4.84, SD = 1.19, F (1, 199) = 4.06, p = .045; see

Appendix 5 for ANOVA output). Therefore, H_1 is supported.

5.4.3   The Main Effect and The Moderation Role of Probability Uncertainty

Next, to test H_2, a moderation analysis was conducted (Model 1, 5,000 bootstrapped samples; Hayes, 2017), with outcome uncertainty as the independent variable (1 = low vs. 2 = high), purchase intent as the dependent variable (continuous variable) and probability uncertainty as the moderator (1 = low vs. 2 = high).

Again, there was a marginally significant main effect of outcome uncertainty (β = -1.11, t = -1.75, p = .083, $CI_{95\%}$: -2.37, .14), thereby further consolidating H_1. Moreover, the analysis yielded evidence supporting H_2. The interaction effect between probability uncertainty and outcome uncertainty on purchase intent was also significant (β = 1.10, t = 2.74, p = .007, $CI_{95\%}$: .31, 1.89; see Appendix 6 for the PROCESS output).

Looking into the detailed interaction pattern, the results show that, for participants in the low probability uncertainty condition, their purchase intent did not differ based on outcome uncertainty ($M_{\text{high outcome uncertainty}}$ = 4.87 vs. $M_{\text{low outcome uncertainty}}$ = 4.88; β = -.01, t = -.05, p = .963, $CI_{95\%}$: -.58, .55). On the other hand, for participants in the high probability uncertainty condition, high outcome uncertainty led to significantly higher purchase intent ($M_{\text{high outcome uncertainty}}$ = 4.82 vs. $M_{\text{low outcome uncertainty}}$ = 3.74; β = 1.09, t = 3.87, p < .001, $CI_{95\%}$: .53, 1.64; see Figure 2 for the interaction plot).

Figure 2.

Results of the Interaction Effect (Study 1)
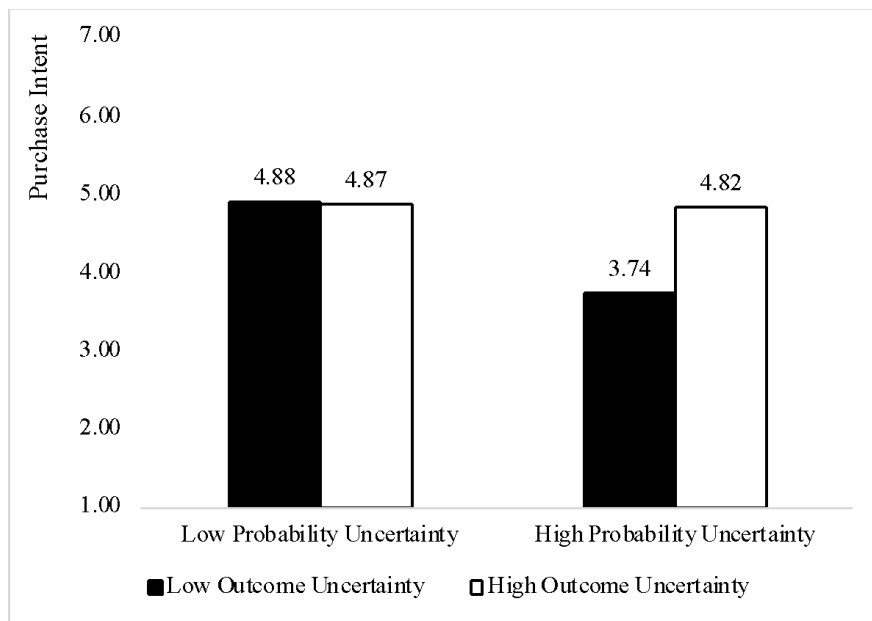
Table 1.

Participants' Demographic Information

		Study 1 (n = 201)	Study 2 (n = 210)
Gender	Male	98 (48.8%)	138 (65.7%)
	Female	103 (51.2%)	71 (33.8%)
	Prefer not to answer	0 (0%)	1 (0.5%)
Income	Below $20,000	26 (12.9%)	14 (6.7%)
	$20,000 to $29,999	19 (9.5%)	20 (9.5%)
	$30,000 to $39,999	20 (10.0%)	39 (18.6%)
	$40,000 to $49,999	46 (22.9%)	50 (23.8%)
	$50,000 to $59,999	34 (16.9%)	41 (19.5%)
	$60,000 to $69,999	21 (10.4%)	16 (7.6%)
	$70,000 or above	34 (16.9%)	29 (13.8%)
	Prefer not to answer	1 (0.5%)	1 (0.5%)

Chapter 6: Experiment 2

6.1. Introduction

Following the findings of Study 1, Study 2 attempts to 1) replicate the results of Study 1, including the main effect of the outcome uncertainty (H_1) and the interaction effect (H_2), and 2) verify the mediating effect of sensation-seeking (H_3). Additionally, Study 2 aims to rule out the alternative explanation of curiosity in order to further cement the underlying mechanism of the proposed mediator.

6.2. Experimental Design and Procedures

Two hundred and ten participants (M_{Age} = 34.04, SD = 8.44, 33.8% Female) recruited from Amazon MTurk participated in this current study, who were randomly assigned to one of four conditions in a 2 (outcome uncertainty: low vs. high) × 2 (probability uncertainty: low vs. high) between-subject design.

Participants were first exposed to the identical cover story as in Study 1. After obtaining participants' consent to participate, they were informed that they entered a blind box toy shop and were considering purchasing a toy car model instead of a toy animal model. The outcome uncertainty and probability uncertainty were manipulated using the same approach as in Study 1; participants were assigned to one of the four experimental conditions (see Appendix 7 for different versions of product packaging).

After being exposed to product packaging, participants were asked to indicate their purchase intent towards the toy animal model (1 = strongly disagree; and 7 = strongly disagree, Cronbach's α = .802; see Appendix 2 for all measurements used in the study). To examine the mediating role of sensation-seeking (H_2), we additionally assessed their sensation-seeking using a four-item scale (1 = strongly disagree; and 7 = strongly disagree, Cronbach's α = .787). In addition, to further cement the underlying mechanism, we measured participants' curiosity using a two-item scale (1 = strongly disagree; and 7 = strongly disagree, r = .48, p < .001).

Next, to assess the effectiveness of the manipulation, participants were instructed to indicate their agreement on outcome uncertainty ("If I purchased this product, I would feel very uncertain about the outcome") and probability uncertainty ("If I purchased this product, I feel very uncertain about the probability that I will get a new type of toy car model"). Finally, participants reported their demographic information,

including gender, age, and income.

After completing the experiment, participants were thanked for their participation. Additionally, nominal monetary rewards for their participation were redeemed based on participation codes, as shown at the end of the survey questionnaire.

6.3. Data Analysis

Data collected in this study was analyzed using a statistical software (i.e., SPSS version 25) to examine the effect of outcome uncertainty and probability uncertainty on consumers' purchase intent, as well as the mediating effect of sensation-seeking (H_3). Specifically, the main effect of outcome uncertainty was tested using *one-way ANOVA*. In addition, the moderating effect and the moderated mediation model was assessed using the *PROCESS Macro* in SPSS (model #1 and model #8 accordingly).

6.4. Results

6.4.1 Manipulation Check

Results of one-way ANOVA show that participants in the low outcome uncertainty condition reported significantly lower uncertainty regarding the outcome ($M_{Low} = 4.95$, SD = 1.49) than those in the high outcome uncertainty condition ($M_{High} = 5.39$, SD = 1.29, $F(1, 208) = 5.12$, $p = .025$; see Appendix 8 for ANOVA output).

Moreover, participants in the low probability uncertainty condition reported significantly lower uncertainty that they will get a new type of toy car model ($M_{Low} = 4.96$, SD = 1.49) than those in the high probability uncertainty condition ($M_{High} = 5.39$, SD = 1.46, $F(1, 208) = 4.30$, $p = .039$; see Appendix 9 for ANOVA output).

6.4.2 The Main Effect

The one-way ANOVA on purchase intent revealed a significant positive effect of outcome uncertainty ($M_{Low} = 4.64$, SD = 1.34 vs. $M_{High} = 5.02$, SD = 1.34, $F(1, 208) = 4.24$, $p = .041$; see Appendix 10 for ANOVA output). In addition, another one-way ANOVA with probability uncertainty revealed an insignificant effect on purchase intent ($M_{Low} = 4.96$, SD = 1.11 vs. $M_{High} = 4.67$, SD = 1.57, $F(1, 208) = 2.46$, $p = .118$; see Appendix 12 for ANOVA output). Therefore, H_1 is supported.

6.4.3 The Main Effect and The Moderation Role of Probability Uncertainty

Next, to test H_2, a moderation analysis was conducted (Model 1, 5,000

bootstrapped samples; Hayes, 2017), with outcome uncertainty as the independent variable (1 = low vs. 2 = high), purchase intent as the dependent variable (continuous variable) and probability uncertainty as the moderator (1 = low vs. 2 = high).

Again, there was a significant main effect of outcome uncertainty (β = -1.23, t = -2.19, p = .030, $CI_{95\%}$: -2.34, -.12), thereby further consolidating H_1. Moreover, the analysis yielded evidence supporting H_2. The interaction effect between probability uncertainty and outcome uncertainty on purchase intent was also significant (β = 1.11, t = 3.07, p = .002, $CI_{95\%}$: .40, 1.83; see Appendix 13 for the PROCESS output).

Looking into the detailed interaction pattern, the results show that, for participants in the low probability uncertainty condition, their purchase intent did not differ based on outcome uncertainty ($M_{\text{high outcome uncertainty}}$ = 4.90 vs. $M_{\text{low outcome uncertainty}}$ = 5.01; β = -.12, t = -.47, p = .642, $CI_{95\%}$: -.60, .37). On the other hand, for participants in the high probability uncertainty condition, high outcome uncertainty led to significantly higher purchase intent ($M_{\text{high outcome uncertainty}}$ = 5.13 vs. $M_{\text{low outcome uncertainty}}$ = 4.14; β = 1.00, t = 3.77, p < .001, $CI_{95\%}$: .48, 1.52; see Figure 3 for the interaction plot).

Figure 3.

Results of the Interaction Effect (Study 2)

7.00

6.00

5.00

4.00

3.00

2.00

1.00

Purchase Intent

5.01   4.90   5.13
                              4.14

Low Probability Uncertainty   High Probability Uncertainty

■ Low Outcome Uncertainty   □ High Outcome Uncertainty
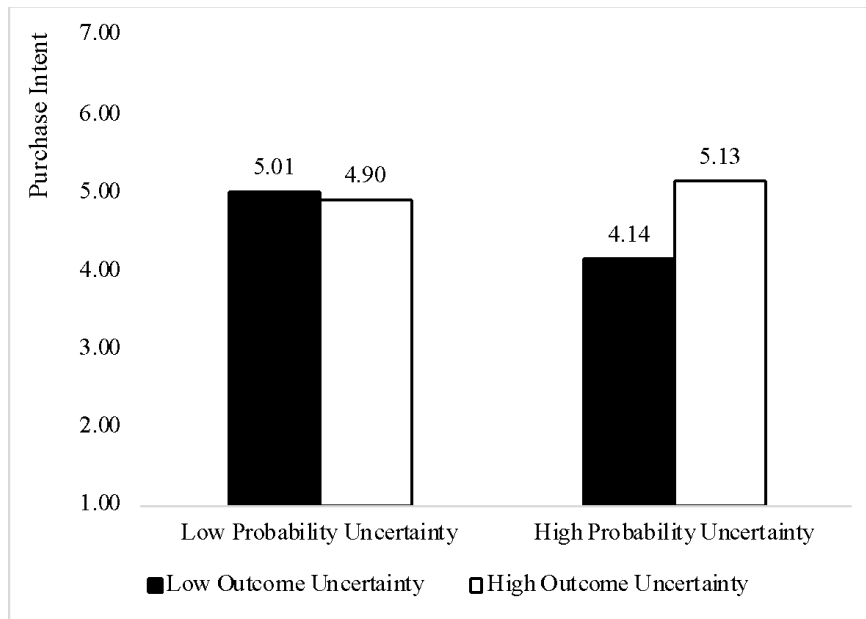
6.4.4   The Moderated Mediation Model

Finally, to assess H_3, a moderated mediation analysis has been conducted (Model 8, 5,000 bootstrapped samples). Building upon the model in the moderation analysis, mediating variables were added in the present analysis, including curiosity and sensation-seeking.

Supporting H_3, the analysis yielded a significant moderated mediation model through sensation-seeking (Moderated Mediation Index = .16, SE = .11, $CI_{95\%}$: .00, .43; see Appendix 14 for the PROCESS output). Specifically, for participants in the low probability uncertainty condition, the indirect effect of sensation-seeking was insignificant (β = -.02, SE = .05, $CI_{95\%}$: -.15, .08) whereas for those in the high probability uncertainty condition, sensation-seeking significantly mediated the relationship between outcome uncertainty and purchase intent (β = .14, SE = .09, $CI_{95\%}$: .01, .35). Moreover, ruling out the alternative explanation of curiosity, the results show an insignificant moderated mediation model (Moderated Mediation Index = .21, SE = .18, $CI_{95\%}$: -.15, .57).

Taken together, the results thus far demonstrate that high outcome uncertainty is likely to lead to higher purchase intent (H_1), and the strength of this relationship is further moderated by probability uncertainty (H_2); when the probability uncertainty is low, the positive effect of high outcome uncertainty is likely to be diminished.

Furthermore, the moderated mediation model sheds light upon the underlying mechanism driving greater purchase intent among those in the high probability uncertainty condition: the findings herein document that high outcome uncertainty enacts participants to engage in sensation-seeking, which consequently drives greater purchase intent.

Chapter 7: General Discussion

7.1. Introduction

Having presented the results of two experimental studies, this Chapter intends to elaborate the findings herein and discuss the insights compared to prior work – specifically, how this work extends previous literature, and how the current research is differentiated from other research in this line of inquiries. Moreover, the following section will discuss its theoretical contributions for scholars and practical implications for marketers and industry practitioners.

7.2. Summary of Findings and Discussion

Based on the information gap theory (Loewenstein, 2018), this thesis departs from the mainstream connotation that focuses on the negative impact of uncertainty on consumer psychology and decision-making. Instead, capitalizing on the hedonic value of uncertainty, information regarding outcome uncertainty is expected to have a positive effect on promoting greater purchase intent (*H1*), which is further moderated by probability uncertainty (*H2*). Moreover, this thesis introduced the mediating effect of sensation-seeking, which tapped into the reinforcement effect of uncertainty in enhancing the hedonic experiences (*H3*).

Supporting the hypotheses, the findings demonstrated that outcome uncertainty leads to higher purchase intent for the mysterious products. Interestingly, the empirical findings further showed a boundary condition – the probability uncertainty. That is, when the probability uncertainty is low (all available options are given), the likelihood of obtaining a new product is low, thus the expected utility of choosing options with greater outcome uncertainty seems to be minimal. In contrast, when the probability uncertainty is relatively high (missing information about potential results), consumers

are then motivated to opt for higher outcome uncertainty due to the potential of getting access to options that are novel. The findings documented herein can help scholars better understand and interpret insights from prior literature. For example, compared to previous research examining the impact of uncertainty predominantly through the lens of curiosity (see the "teasing effect" in Ruan, Hsee, & Lu, 2018), the present thesis successfully ruled out the alternative explanation of *curiosity* and established the causal driving mechanism of *sensation-seeking*. From this perspective, the findings herein challenged a mainstream claim that uncertainty can only be exclusively accounted for using curiosity. That is, this thesis offers researchers an alternative path in viewing the utility and psychological consequences of uncertainty; under certain circumstances, uncertainty might elevate greater curiosity, which in turn motivates more favorable responses. Nevertheless, there might be other parallel mediating driving factors at work, such as sensation-seeking as documented in the present work. As such, researchers ought to be more cautious in drawing their conclusions, as there may as well be possibilities of concluding a (*false*) full-mediation model.

In addition, the findings documented herein carry sufficient robustness and validity. First of all, two experimental studies presented in the thesis feature different product categories in that, in Study 1 participants were exposed to animal toys and Study 2 utilized toy car models as the focal product. The successful replication of the findings across two studies featuring different product categories demonstrates a satisfactory level of generalizability, such that the results can be potentially applied to other domains of consumption scenarios. Additionally, Study 2 successfully excluded *curiosity* as an alternative account, and the proposed model remained significant even after incorporating the parallel mediating effect of curiosity, thereby engendering further support for the causal relationship. The establishment of the underlying mechanism – sensation-seeking tendency – is significant because it sheds light upon the psychological process that drives consumers' patronage for "blind box" purchases. Moreover, the exclusion of the alternative explanation of *curiosity* further cements the empirical veracity of the findings as academics and the public often confuse sensation-seeking and curiosity as these two constructs share considerable conceptual overlap thereof. The findings herein, illustrate that it is sensation-seeking when encountering uncertainty – instead of curiosity – that contributes to greater preference towards uncertainty. Finally, this research has followed a rigorous process, including the

theorization, experimental design, data collection and analysis. By doing so, it allows the thesis to reach a reliable conclusion of causal relationships.

7.3. Theoretical Contributions

This thesis makes three important theoretical contributions. First of all, this research sheds light upon the downstream consequences of uncertainty in the context of consumer decision-making. Specifically, extant literature documented mixed findings regarding the effect of uncertainty. Some researchers identify uncertainty as a barrier in the decision-making process (Anderson, Carleton, Diefenbach, & Han, 2019) as information is deemed as a valuable source of input before one arrives at the final decisions. On the other hand, other scholars in this domain of inquiries are in favor of the assertion that uncertainty allows consumers to experience hedonic values in their consumption (Ruan, Hsee, & Lu, 2018). This thesis therefore joins the emerging research stream arguing the *positive* effect of uncertainty in understanding consumer behaviors instead of focusing on its *negative* connotations. Contrary to the traditional view of normative utility (the more information one has, the better the decision will be), this research shows that uncertainty carries positive and favorable implications for consumers. This is significant as it informs academics in disciplines, including but not limited to marketing, that the impact of uncertainty on consumer behavior remains, to some extent, an underexamined area. Therefore, this research thesis represents an invitations for scholarly attention to further investigate the implications of uncertainty.

Second, this research contributes to the research stream of hedonism in consumer decision-making. Acknowledging the importance of hedonic and experiential drivers in consumption, the present work highlights and empirically verifies the mediating role of sensation-seeking, not to mention showing the insignificant effect of curiosity. This is significant as although scholars are well aware of the value of hedonic drivers, it is imperative to differentiate sensation-seeking from other hedonic values and constructs. Specifically, according to Byman (2005), curiosity and sensation-seeking share considerable conceptual overlap because they both speak to the tendency of seeking stimulating, exciting and challenging experiences. Consequently, academics sometimes mistake sensation-seeking as part of the conceptualization of curiosity (Ainley, 1987; Collins, Litman, & Spielberger, 2004; Kashdan, Rose, & Fincham, 2004; Zuckerman, 1994). From this perspective, this thesis differentiated sensation-seeking

from curiosity via the statistical evidence of the mediation effects.

Last but not least, the findings of this research contribute to the literature on uncertainty by introducing two different types of uncertainty – outcome uncertainty and probability uncertainty. By portraying the interplay between these two types of uncertainty, this thesis offers valuable insights regarding *under what circumstances* outcome uncertainty poses a positive effect on consumers' purchase intent. The outcome uncertainty only exerts a positive effect when consumers are not sure about the available options to choose from; the presence of high probability uncertainty thus serves as a booster of the optimism bias. That is, when the probability uncertainty is relatively high, it is plausible for consumers to get new and novel outcomes. Therefore, consumers are more likely to prefer uncertainty over certain ones due to the elevated sensation-seeking tendency. On the other hand, when consumers are informed of all options, there is minimal uncertainty in terms of the outcome (i.e., consumers will get one of the known options). Consequently, consumers are prone to be indifferent towards different levels of outcome uncertainty.

7.4. Practical Implications

This thesis also offers valuable and fruitful insights for marketers and industry practitioners. First, businesses that attempt to step into the mysterious products and services can benefit from the findings herein. Recall that the positive effect of higher outcome uncertainty occurs when the probability uncertainty is relatively high (vs. low). To promote greater sales of the mysterious products, marketers ought to maximize the probability uncertainty to stimulate greater sensation-seeking tendency among potential consumers. Take the mysterious box as an example, consumers significantly prefer the uncertain option when they do not know what types of car models they would get. However, when all available options are given to consumers, they tend to be indifferent towards different levels of uncertainty. Therefore, when aiming at promoting products with high levels of imbedded uncertainty, marketers should provide less information to stimulate greater sensation-seeking, thereby encouraging consumers to "try their luck." Specifically, for businesses and marketers that invest in mysterious products and/or services, the findings herein ought to inform them regarding the optimal arrangement of uncertainty to achieve the maximum level of sales. Based on the findings, the full potential of capitalizing on higher outcome uncertainty can be only achieved if there is

a high level of probability uncertainty – when not all options are offered. As such, it might be beneficial for marketers, for example, to *mask* some products without revealing the final products available.

Second, the findings herein put forth the importance of sensation-seeking in facilitating greater patronage intent. Concurring with the extant literature, this thesis highlights that some consumers voluntarily seek new, novel and intense experiences, although such pursuit might pose substantial risks to these consumers. Therefore, moving beyond the present context of purchasing mysterious products, this research offers fruitful implications with greater implications. To encourage consumers to manifest greater approaching intent and behaviors, marketers might benefit from imbuing their marketing communications with cues that are exciting, novel or utilizing elements that emphasize adventures and thrills (Zuckerman, 1971). For instance, marketers in the tourism and hospitality industries often capitalize on the use of excitement, thrills and novelty to facilitate consumers' attention and interest. For example, a marketing campaign promoting a travel destination portrayed a narrative of cliff-jumping. In addition, this campaign includes semantics such as "your story starts here" and it starts "with a leap" (Newbold, 2017).

Chapter 8: Limitations, Future Research Directions and Conclusion

8.1. Introduction

In this Chapter, limitations of the present work will be discussed, including the operationalization of the dependent variable, data collection channels as well as testing alternative accounts. In addition, an agenda for future inquiries will be offered to stimulate more thought-provoking conversations and attention on the focal research topic.

8.2 Limitations and Future Research Directions

Although this thesis offers valuable insights and implications, it also unavoidably carries several limitations and sheds light upon directions for future inquiries. First, this research only focuses on consumers' purchase intent as the focal

dependent variable. Nevertheless, to promote greater generalizability of the findings, future studies are encouraged to incorporate other critical constructs in consumer research, such as consumers' attitudes towards the product/brand, the consequential outcome of consumers' purchase intent, as well as their post-purchase satisfaction (Tseng, 2017). According to the attitude-behavior gap theory (Padel & Foster, 2005), consumers' purchase intent does not always translate to their actual purchase behaviors. In addition, in this thesis, consumers' purchase intent was measured through self-reporting, which might entail measurement error, leading to the experimenter demand effect. As such, alternative techniques and operationalization are encouraged to capture consumers' responses in a more unbiased manner, for example, using real behavioral measure instead of relying on the self-reporting approach.

Second, due to the limitations posed by the COVID-19 pandemic on data collection, this thesis drew the conclusion with data collected through an online crowdsourcing platform (i.e., Amazon Mechanical Turk [Amazon MTurk]). Although studies have shown that the quality of data collected through Amazon MTurk is compatible with those collected from other sources, such as laboratory experiments (Chmielewski & Kucker, 2020), future research should attempt to replicate the findings here by incorporating diverse data collection channels and empirical settings. This is important as by doing so, it promotes both greater internal and external validity, thereby stimulating higher robustness of the findings.

Thirdly, due to the nature of hypothetical testing in online experiments, several relevant product attributes were not disclosed in the experimental scenario, such as prices, quality, and brands. To enhance the external and ecological validity of the findings herein, future studies are encouraged to incorporate key product attributes in their inquiries (Bezençon, Girardin, & Lunardo, 2020). In addition, the focal research focuses on toy models (e.g., animal models and car models) in the empirical testing, which mimics the phenomenon witnessed in the marketplace. Nevertheless, future research ought to investigate products in other domains and categories, or vary the involvement levels consumers might have with these products (Michaelidou & Dibb, 2008) in order to optimize the generalizability of the findings.

Finally, this thesis empirically examined the mediating effect of sensation-seeking and ruled out the alternative explanation of curiosity. Given the conceptual

similarities shared among constructs of hedonic values, such as mental imagery, fun, novelty, and excitement, scholars' attention is warranted to empirically differentiate these constructs. Alternatively, researchers might find it fruitful to incorporate more higher-order personality constructs including the Openness to Experiences (Byman, 2005).

8.3 Concluding Remarks

The prevalence of mysterious consumption has gradually permeated into our daily lives, hence highlighting the significance of investigating the effect of uncertainty. From the advertisement of insurance products, product warranty, to getting lotteries, marketers have witnessed a mixed implication of uncertainty. Sometimes, consumers avoid uncertainty to minimize the anticipated risks. Nevertheless, they prefer higher uncertainty at other occasions as it seems to offer greater hedonic experiences (e.g., purchasing a mysterious box without knowing the content).

In this thesis, the study proposed an interaction effect between different types of uncertainty. Specifically, higher (vs. lower) outcome uncertainty leads to greater purchase intent (Studies 1 & 2). Furthermore, this effect is only present when the probability uncertainty is high, but not when consumers are informed of all options (i.e., low probability uncertainty). In Study 2, the findings further showed that the positive effect of outcome uncertainty was driven by the situationally induced sensation-seeking tendency.

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Appendices

Appendix 1.

Experimental Scenario in Study 1

High outcome uncertainty and high probability uncertainty condition:

Imagine that you have entered a blind box toy shop and are ready to purchase a toy animal model. At this time, you see a blind box toy packed in a mysterious box on the counter. From the packaging of this mysterious box, you only know that it is a toy animal model; but you don't know any relevant details, such as its category or style (as shown below).

Imagine that you have entered a blind box toy shop and are ready to purchase a toy animal model. At this time, you see that there are 6 toy animal models on the packaging of a blind box toy. The toy animal model with a question mark is not one of the 5 known toy animal models (as shown below), and there is no information available about it.

Imagine that you have entered a blind box toy shop and are ready to purchase a toy animal model. At this time, you see that there are 6 toy animal models on the packaging of a blind box toy. The toy animal model in the box will be one of the 6 known toy animal models (as shown below).

Imagine that you have entered a blind box toy shop and are ready to purchase a toy animal model. At this time, you see that there are 6 toy animal models on the packaging of a blind box toy. The toy in the box is the animal model in the frame marked on the outside of the packaging (as shown below).

Appendix 2.

All measurement used in the Experiments

Purchase Intent (dependent variable; (Putrevu & Lord, 1994))

1. I might purchase this product in a blue [Study 1] (yellow [Study 2]) box with a question mark.

2. Whether I get a favorite toy animal model [Study 1] (toy car model [Study 2]) or not in this scenario, I might continue to purchase this product in a blue [Study 1] (yellow [Study 2]) box with a question mark.

3. I might recommend this product in a blue [Study 1] (yellow [Study 2]) box with a question mark to my friends and family.

Curiosity (alternative explanation; (Litman & Spielberger, 2003))

1. When I see the packaging of this product in a blue [Study 1] (yellow [Study 2]) box with a question mark, I want to explore what's inside.

2. Whether I get a favorite toy animal model [Study 1] (toy car model [Study 2]) or not in this scenario, I would like to find out more about this product in a blue [Study 1] (yellow [Study 2]) box with question mark because I want to get more new information.

Sensation-Seeking (mediator; (Zuckerman, 1996))

1. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.

2. I can't stand watching a movie I've seen before.

3. I sometimes like to do things that are a little frightening.

4. I like to explore a strange city or section of town by myself, even if it means getting lost.

Outcome Uncertainty (manipulation check of the independent variable)

If I purchased this product, I would feel very uncertain about the outcome.

Probability Uncertainty (manipulation check of the moderating variable)

If I purchased this product, I feel very uncertain about the probability that I will get a new type of toy animal model [Study 1] (toy car model [Study 2]).

Gender

Please indicate your gender:

1. Female
2. Male
3. Gender Diverse
4. Prefer not to answer

Age

What is your age?

Income

Please indicate your annual income:

1. Below $20,000
2. $20,000 – 29,999
3. $30,000 – 39,999
4. $40,000 – 49,999
5. $50,000 – 59,999
6. $60,000 – 69,999
7. $70,000 or above
8. I am not earning income
9. Prefer not to answer

Appendix 3.

Results of the Manipulation Check of Outcome Uncertainty (Study 1)

Descriptives

Q8 – If I purchased this product, I would feel very uncertain about the outcome.

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between–Component Variance
						Lower Bound	Upper Bound			
LOW		109	4.90	1.627	.156	4.59	5.21	1	7	
HIGH		92	5.40	1.375	.143	5.12	5.69	1	7	
Total		201	5.13	1.534	.108	4.92	5.34	1	7	
Model	Fixed Effects			1.517	.107	4.92	5.34			
	Random Effects				.252	1.93	8.33			.103

ANOVA

Q8 – If I purchased this product, I would feel very uncertain about the outcome.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.627	1	12.627	5.486	.020
Within Groups	458.009	199	2.302		
Total	470.637	200			

Appendix 4

Results of the Manipulation Check of Probability Uncertainty (Study 1)

Descriptives

Q9 – If I purchased this product, I feel very uncertain about the probability that I will get a new type of toy animal model.

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between–Component Variance
						Lower Bound	Upper Bound			
LOW		102	4.25	1.901	.188	3.87	4.62	1	7	
HIGH		99	4.84	1.730	.174	4.49	5.18	1	7	
Total		201	4.54	1.838	.130	4.28	4.79	1	7	
Model	Fixed Effects			1.819	.128	4.28	4.79			
	Random Effects				.297	.77	8.31			.143

ANOVA

Q9 – If I purchased this product, I feel very uncertain about the probability that I will get a new type of toy animal model.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.683	1	17.683	5.346	.022
Within Groups	658.287	199	3.308		
Total	675.970	200			

Appendix 5

Results of the Main Effect of Outcome Uncertainty (Study 1)

Descriptives

PI

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
LOW		109	4.4312	1.61354	.15455	4.1248	4.7375	1.00	6.67	
HIGH		92	4.8406	1.19060	.12413	4.5940	5.0871	1.00	7.00	
Total		201	4.6186	1.44661	.10204	4.4174	4.8198	1.00	7.00	
Model	Fixed Effects			1.43568	.10126	4.4189	4.8183			
	Random Effects				.20506	2.0130	7.2242			.06314

ANOVA

PI

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.362	1	8.362	4.057	.045
Within Groups	410.174	199	2.061		
Total	418.535	200			

Appendix 6

Results of the Moderation Analysis of Study 1

*************** PROCESS Procedure for SPSS Version 3.4.1 ***************

　　　Written by Andrew F. Hayes, Ph.D.　　　www.afhayes.co
　　Documentation available in Hayes (2018). www.guilford.com/p/hayes3

****
Model : 1
　Y : PI
　X : IV_OUT
　W : IV_PRO

Sample
Size: 201

****
OUTCOME VARIABLE:
 PI

Model Summary
R	R-sq	MSE	F	df1	df2	p
.3194	.1020	1.9078	7.4591	3.0000	197.0000	.0001

Model
	coeff	se	t	p	LLCI	ULCI
constant	7.1432	.9413	7.5887	.0000	5.2869	8.9995
IV_OUT	-1.1119	.6372	-1.7450	.0825	-2.3686	.1447
IV_PRO	-2.2459	.6166	-3.6425	.0003	-3.4618	-1.0299
Int_1	1.0985	.4004	2.7433	.0066	.3088	1.8881

Product terms key:
 Int_1　:　　IV_OUT　x　　IV_PRO

Test(s) of highest order unconditional interaction(s):
	R2-chng	F	df1	df2	p
X*W	.0343	7.5255	1.0000	197.0000	.0066

　Focal predict: IV_OUT　(X)
　　Mod var: IV_PRO　(W)

Conditional effects of the focal predictor at values of the moderator(s):

IV_PRO	Effect	se	t	p	LLCI	ULCI
1.0000	-.0135	.2862	-.0471	.9625	-.5778	.5509
2.0000	1.0850	.2801	3.8741	.0001	.5327	1.6373

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
  IV_OUT   IV_PRO    PI       .
BEGIN DATA.
    1.0000   1.0000   4.8838
    2.0000   1.0000   4.8704
    1.0000   2.0000   3.7364
    2.0000   2.0000   4.8214
END DATA.
GRAPH/SCATTERPLOT=
 IV_OUT   WITH   PI     BY     IV_PRO  .
```

********************* ANALYSIS NOTES AND ERRORS **********************

Level of confidence for all confidence intervals in output:
 95.0000

------ END MATRIX -----

Appendix 7

Experimental Scenario in Study 2

High outcome uncertainty and high probability uncertainty condition:

Imagine that you have entered a blind box toy shop and are ready to purchase a toy car model. At this time, you see a blind box toy packed in a mysterious box on the counter. From the packaging of this mysterious box, you only know that it is a toy car model; but you don't know any relevant details, such as its colour or style (as shown below).

Imagine that you have entered a blind box toy shop and are ready purchase a toy car model. At this time, you see that there are 6 toy car models on the packaging of a blind box toy. The toy car model with a question mark is not one of the 5 known toy car models (as shown below), and there is no information available about it.

High outcome uncertainty and low probability uncertainty condition:

Imagine that you have entered a blind box toy shop and are ready purchase a toy car model. At this time, you see that there are 6 toy car models on the packaging of a blind box toy. The toy car model in the box will be one of the 6 known toy car models (as shown below).
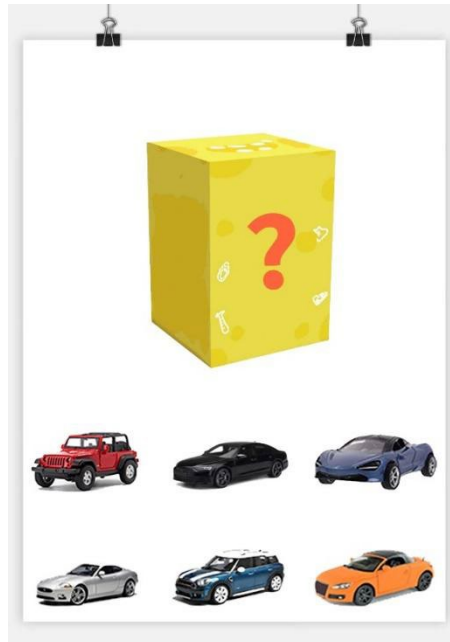
Imagine that you have entered a blind box toy shop and are ready purchase a toy car model. At this time, you see that there are 6 toy car models on the packaging of a blind box toy. The toy in the box is the car model in the frame marked on the outside of the packaging (as shown below).
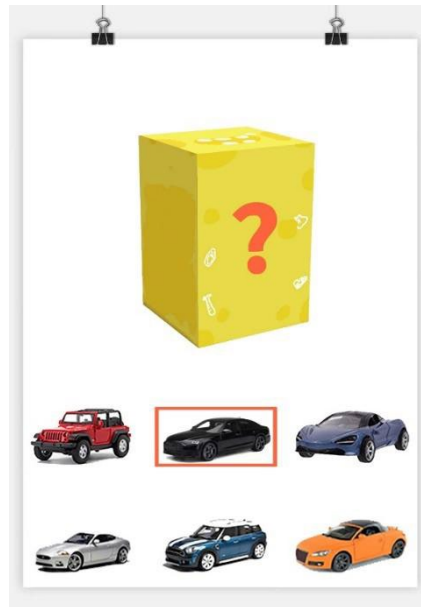
Appendix 8

Results of the Manipulation Check of Outcome Uncertainty (Study 2)

Descriptives

Q8 – About the outcome

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Low		107	4.95	1.488	.144	4.67	5.24	1	7	
High		103	5.39	1.285	.127	5.14	5.64	1	7	
Total		210	5.17	1.406	.097	4.98	5.36	1	7	
Model	Fixed Effects			1.392	.096	4.98	5.36			
	Random Effects				.218	2.40	7.93			.076

ANOVA

Q8 – About the outcome

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.934	1	9.934	5.124	.025
Within Groups	403.232	208	1.939		
Total	413.167	209			

Appendix 9

Results of the Manipulation Check of Probability Uncertainty (Study 2)

Descriptives

Q9 – Get new car model

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between–Component Variance
						Lower Bound	Upper Bound			
Low Probability Uncertainty		112	4.96	1.494	.141	4.68	5.24	1	7	
High Probability Uncertainty		98	5.39	1.455	.147	5.10	5.68	1	7	
Total		210	5.16	1.488	.103	4.96	5.36	1	7	
Model	Fixed Effects			1.476	.102	4.96	5.36			
	Random Effects				.212	2.47	7.86			.069

ANOVA

Q9 – Get new car model

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.373	1	9.373	4.302	.039
Within Groups	453.122	208	2.178		
Total	462.495	209			

Appendix 10

Results of the Main Effect of Outcome Uncertainty (Study 2)

Descriptives

Purchase_Intent

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Low		107	4.6355	1.33532	.12909	4.3796	4.8914	1.00	6.67	
High		103	5.0162	1.34341	.13237	4.7536	5.2787	1.00	7.00	
Total		210	4.8222	1.34963	.09313	4.6386	5.0058	1.00	7.00	
Model	Fixed Effects			1.33929	.09242	4.6400	5.0044			
	Random Effects				.19035	2.4036	7.2409			.05536

ANOVA

Purchase_Intent

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.605	1	7.605	4.240	.041
Within Groups	373.091	208	1.794		
Total	380.696	209			

Appendix 12

Results of the Main Effect of Probability Uncertainty (Study 2)

Descriptives

Purchase_Intent

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	Between-Component Variance
						Lower Bound	Upper Bound			
Low Probability Uncertainty		112	4.9583	1.10972	.10486	4.7505	5.1661	1.67	7.00	
High Probability Uncertainty		98	4.6667	1.57151	.15875	4.3516	4.9817	1.00	7.00	
Total		210	4.8222	1.34963	.09313	4.6386	5.0058	1.00	7.00	
Model	Fixed Effects			1.34495	.09281	4.6393	5.0052			
	Random Effects				.14589	2.9685	6.6760			.02523

ANOVA

Purchase_Intent

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.446	1	4.446	2.458	.118
Within Groups	376.250	208	1.809		
Total	380.696	209			

Appendix 13

Results of the Moderation Analysis of Study 2

Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.4.1 ***************

Written by Andrew F. Hayes, Ph.D.　　www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

****
Model : 1
  Y : Purchase
  X : IV_Outco
  W : IV_Proba

Sample
Size: 210

****
OUTCOME VARIABLE:
 Purchase

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2764	.0764	1.7069	5.6781	3.0000	206.0000	.0009

Model

	coeff	se	t	p	LLCI	ULCI
constant	7.1121	.8734	8.1430	.0000	5.3902	8.8341
IV_Outco	-1.2279	.5619	-2.1853	.0300	-2.3358	-.1201
IV_Proba	-1.9857	.5715	-3.4743	.0006	-3.1125	-.8589
Int_1	1.1124	.3625	3.0691	.0024	.3978	1.8271

Product terms key:
 Int_1　:　　IV_Outco x　　IV_Proba

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	.0422	9.4193	1.0000	206.0000	.0024

  Focal predict: IV_Outco (X)
    Mod var: IV_Proba (W)

Conditional effects of the focal predictor at values of the moderator(s):

IV_Proba	Effect	se	t	p	LLCI	ULCI
1.0000	-.1155	.2479	-.4659	.6417	-.6042	.3732
2.0000	.9969	.2644	3.7699	.0002	.4756	1.5183

Data for visualizing the conditional effect of the focal predictor:

Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
  IV_Outco  IV_Proba  Purchase  .
BEGIN DATA.
    1.0000    1.0000    5.0109
    2.0000    1.0000    4.8954
    1.0000    2.0000    4.1377
    2.0000    2.0000    5.1346
END DATA.
GRAPH/SCATTERPLOT=
 IV_Outco WITH    Purchase BY      IV_Proba .
```

********************** ANALYSIS NOTES AND ERRORS **********************

Level of confidence for all confidence intervals in output:
 95.0000

NOTE: Variables names longer than eight characters can produce incorrect output.
    Shorter variable names are recommended.

------ END MATRIX -----

Appendix 14

Results of the Moderation Mediation Analysis of Study 2

Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.4.1 ***************

      Written by Andrew F. Hayes, Ph.D.   www.afhayes.com
   Documentation available in Hayes (2018). www.guilford.com/p/hayes3

****
Model : 8
  Y : Purchase
  X : IV_Outco
 M1 : Sensatio
 M2 : Curiosit
  W : IV_Proba

Sample
Size: 210

****
OUTCOME VARIABLE:
 Sensatio

Model Summary
R	R-sq	MSE	F	df1	df2	p
.1848	.0341	1.7822	2.4270	3.0000	206.0000	.0666

Model
	coeff	se	t	p	LLCI	ULCI
constant	6.1832	.8925	6.9283	.0000	4.4237	7.9427
IV_Outco	-.8872	.5742	-1.5453	.1238	-2.0192	.2448
IV_Proba	-1.3516	.5840	-2.3144	.0216	-2.5030	-.2003
Int_1	.7852	.3704	2.1199	.0352	.0550	1.5154

Product terms key:
 Int_1 :   IV_Outco x   IV_Proba

Test(s) of highest order unconditional interaction(s):
	R2-chng	F	df1	df2	p
X*W	.0211	4.4941	1.0000	206.0000	.0352

  Focal predict: IV_Outco (X)
     Mod var: IV_Proba (W)

Conditional effects of the focal predictor at values of the moderator(s):

IV_Proba	Effect	se	t	p	LLCI	ULCI
1.0000	-.1021	.2533	-.4029	.6874	-.6015	.3973
2.0000	.6831	.2702	2.5280	.0122	.1504	1.2159

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
  IV_Outco   IV_Proba   Sensatio   .
BEGIN DATA.
    1.0000   1.0000   4.7295
    2.0000   1.0000   4.6275
    1.0000   2.0000   4.1630
    2.0000   2.0000   4.8462
END DATA.
GRAPH/SCATTERPLOT=
 IV_Outco WITH   Sensatio BY   IV_Proba .

****
OUTCOME VARIABLE:
 Curiosit

Model Summary
      R   R-sq   MSE   F   df1   df2   p
    .1416   .0200   1.4584   1.4040   3.0000   206.0000   .2427

Model
         coeff   se   t   p   LLCI   ULCI
constant   5.7197   .8073   7.0848   .0000   4.1280   7.3114
IV_Outco   -.3209   .5194   -.6179   .5373   -1.3449   .7031
IV_Proba   -.6172   .5283 -1.1683   .2441   -1.6587   .4244
Int_1   .4069   .3350   1.2145   .2259   -.2536   1.0675

Product terms key:
 Int_1   :   IV_Outco x   IV_Proba

Test(s) of highest order unconditional interaction(s):
     R2-chng   F   df1   df2   p
X*W   .0070   1.4750   1.0000   206.0000   .2259

   Focal predict: IV_Outco (X)
       Mod var: IV_Proba (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
  IV_Outco   IV_Proba   Curiosit   .
BEGIN DATA.
    1.0000   1.0000   5.1885
    2.0000   1.0000   5.2745
    1.0000   2.0000   4.9783
    2.0000   2.0000   5.4712
END DATA.
GRAPH/SCATTERPLOT=
 IV_Outco WITH   Curiosit BY   IV_Proba .

```
*************************************************************************
OUTCOME VARIABLE:
 Purchase

Model Summary
      R      R-sq     MSE      F       df1      df2       p
    .6307    .3977   1.1239   26.9448   5.0000  204.0000     .0000

Model
          coeff     se       t       p      LLCI     ULCI
constant   2.8113   .8270   3.3995   .0008   1.1808   4.4419
IV_Outco   -.8734   .4586  -1.9045   .0582  -1.7777    .0308
Sensatio    .2095   .0584   3.5895   .0004    .0944    .3246
Curiosit    .5254   .0645   8.1433   .0000    .3982    .6527
IV_Proba  -1.3782   .4700  -2.9324   .0037  -2.3049   -.4516
Int_1       .7341   .2975   2.4673   .0144    .1475   1.3208


Product terms key:
 Int_1   :      IV_Outco x      IV_Proba


Test(s) of highest order unconditional interaction(s):
     R2-chng      F       df1      df2       p
X*W     .0180   6.0876   1.0000  204.0000     .0144
----------
   Focal predict: IV_Outco (X)
        Mod var: IV_Proba (W)


Conditional effects of the focal predictor at values of the moderator(s):

  IV_Proba   Effect     se       t       p      LLCI     ULCI
   1.0000    -.1393   .2014   -.6918   .4899   -.5363    .2577
   2.0000     .5948   .2187   2.7195   .0071    .1636   1.0261


Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
  IV_Outco   IV_Proba   Purchase   .
BEGIN DATA.
    1.0000    1.0000    5.0093
    2.0000    1.0000    4.8700
    1.0000    2.0000    4.3652
    2.0000    2.0000    4.9601
END DATA.
GRAPH/SCATTERPLOT=
 IV_Outco WITH    Purchase BY      IV_Proba .

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y ******************

Conditional direct effect(s) of X on Y:
  IV_Proba   Effect     se       t       p      LLCI     ULCI
   1.0000    -.1393   .2014   -.6918   .4899   -.5363    .2577
```

```
   2.0000    .5948    .2187    2.7195    .0071    .1636    1.0261
```

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 IV_Outco -> Sensatio -> Purchase

```
  IV_Proba    Effect    BootSE   BootLLCI  BootULCI
   1.0000    -.0214    .0548    -.1450    .0814
   2.0000    .1431    .0882    .0129    .3496
```

Index of moderated mediation (difference between conditional indirect effects):
```
           Index    BootSE  BootLLCI  BootULCI
IV_Proba    .1645    .1104    .0046    .4312
```

 Pairwise contrasts between conditional indirect effects (Effect1 minus Effect2)
```
   Effect1   Effect2  Contrast    BootSE   BootLLCI  BootULCI
    .1431    -.0214    .1645    .1104    .0046    .4312
```

INDIRECT EFFECT:
 IV_Outco -> Curiosit -> Purchase

```
  IV_Proba    Effect    BootSE   BootLLCI  BootULCI
   1.0000    .0452    .1246    -.2014    .2910
   2.0000    .2590    .1312    .0014    .5148
```

Index of moderated mediation (difference between conditional indirect effects):
```
           Index    BootSE  BootLLCI  BootULCI
IV_Proba    .2138    .1811    -.1493    .5684
```

 Pairwise contrasts between conditional indirect effects (Effect1 minus Effect2)
```
   Effect1   Effect2  Contrast    BootSE   BootLLCI  BootULCI
    .2590    .0452    .2138    .1811    -.1493    .5684
```

********************* ANALYSIS NOTES AND ERRORS **********************

Level of confidence for all confidence intervals in output:
 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
 5000

NOTE: Variables names longer than eight characters can produce incorrect output.
     Shorter variable names are recommended.

------ END MATRIX -----

Appendix 15 - Ethics Approval

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

18 January 2022

Jungkeun Kim
Faculty of Business Economics and Law

Dear Jungkeun

Re Ethics Application: 21/429 The impact of mystery items on the evaluation of blind products and the moderating effect of sensation seeking

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 18 January 2025.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.
8. AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through http://www.aut.ac.nz/research/researchethics

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: Sandie.zys@gmail.com