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Destination Image and Tourist's Imagination: The Forgotten Component

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DESTINATION IMAGE AND TOURIST'S IMAGINATION: THE FORGOTTEN COMPONENT

by

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ABSTRACT

The objectives of this dissertation was to 1) develop a comprehensive scale to measure visitors' imagination, 2) investigate the structural relationship between imagination and tourism destination image (TDI) components of cognitive, affective, and conative, 3) compare and contrast the various qualities of vividness, richness, saliency, control, and spatial between imagination and prospection, and 4) study the impact of different information sources on the evolving process of prospection to imagination.

By conducting four different studies and seven data collection phases, the imagination scale was developed, validated, and utilized to test the proposed structural and differential hypotheses. In study 1, the phenomenology approach was employed and through a series of interviews, the internal experience of the imagination process was extracted. In study 2, which is composed of two focus groups, the potential manifest variables to measure imagination/prospection were developed and the structure of the questionnaire was designed. In study 3, through 3 data collection phases, two versions of long and short imagination scale questionnaire were validated and the structural relationships between imagination and destination image was investigated. In the final study, utilizing experimental design, hypotheses related to five qualities of imagination were compared to those of prospection. Finally, by adopting an exploratory approach, the impact of different information sources on imagination was investigated.

The results of this dissertation indicated that the imagination scale is a reliable and valid scale to be used in various hospitality and tourism consumption contexts. It shows a high discriminant validity with TDI and structurally moderates the inter-relationships of the TDI

components. In addition, findings of this dissertation support the theoretical discussions on the differences between imagination and prospection. Finally, the results revealed significant distinctions among image, video, and textual information sources regarding their impact on the quality of the mental image.

I dedicate this dissertation to

Professor Stephen Michael Kosslyn,
for his inspirational works on imagination

and

Professor Daniel Todd Gilbert,
for his illuminating thoughts on imagination

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LIST OF ACRONYMS/ABBREVIATIONS

AIC	Akaike Information Criterion
ANOVA	Analysis of Variance
AVE	Average Variance Extracted
BIC	Bayesian Information Criterion
CB-SEM	Covariance-Based Structural Equation Modeling
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CLF	Common Latent Factor
CMB	Common Method Bias
CR	Composite Reliability
DLPFC	Dorsolateral Prefrontal Cortex
DMO	Destination Management/Marketing Organization
EEG	Electroencephalography
EFA	Exploratory Factor Analysis
fMRI	Functional Magnetic Resonance Imaging
GFI	Goodness of Fit Index
HAM	Human Associative Memory
IAT	Implicit Association Test
IFI	Incremental Fit Index
IQ	Intelligence Quotient
MDS	Multidimensional Scaling

MIA	Multi-faceted Image Assessment
ML	Maximum Likelihood
NFI	Normative Fit Index
OMI	Octomodal Mental Imagery (Scale)
PCA	Principal Component Analysis
PCLOSE	ρ-value of Close Fit
PLS	Partial Least Square
QMI	Questionnaire upon Mental Imagery
REI	Richness Experiential Index
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SCT	Scene Construction Theory
SDS	Semantic Differential Scale
SEM	Structural Equation Modeling
SRMR	Standardized Root Mean Square Residual
ST	Simulation Theory
TAM	Tricomponent Attitudinal Model
TDI	Tourism Destination Image
TLI	Tucker-Lewis Index
TPB	Theory of Planned Behavior
TT	Theory Theory
VB-SEM	Variance-Based Structural Equation Modeling
VVIQ	Visual Imagery Questionnaire

CHAPTER 1: INTRODUCTION

"[…] *Come with me and you'll be*
In a world of pure imagination
Take a look and you'll see
Into your imagination

We'll begin with a spin
Traveling in the world of my creation
What we'll see will defy Explanation

If you want to view paradise
Simply look around and view it
Anything you want to, do it
Want to change the world,
there's nothing to it

There is no life I know
To compare with pure imagination
Living there, you'll be free
If you truly wish to be"

Willy Wonka & the Chocolate Factory 1971.

1.1. Background

Gilbert and Wilson (2007) showed that human beings could forefeel and preview the hedonic consumptions which will take place in the future by simulating the events in their minds. Memory is the building block of prospection and imagination, and the brain uses both incoming information and stored information to simulate the feelings of pleasure and pain (Gilbert & Wilson, 2007). These findings on imagination and prospection exert remarkable influences on tourism studies. Tourism, as a hedonic consumption, is one of the areas of which imagination and prospection can play important roles by influencing visitors'/non-visitors' decision-making

process. Tourism literature supports the importance of imagination's role in tourism consumption (Su, 2010). Su (2010) claimed that tourism consumption resides in unending negotiations concerning tourists' imagination, the economic and cultural wealth, and the rooted norms and values of destinations. Tourism marketers, (un)knowingly and intentionally, pursued prospection for a long time; they used stories, images, and desirable exotic imaginaries of otherness to sell people dreams of infinite destinations, and accommodations to discover and experience (Salazar, 2012). As explained by Salazar (2012, p. 866):

> "*Prospective tourists are invited to imagine themselves in a paradisiacal environment, a vanished Eden, where the local landscape and population are to be consumed through observation, embodied sensation, and imagination. If anything, tourism is part of the 'image production industry', in which identities of destinations and their inhabitants are endlessly (re)invented, (re)produced, (re)captured and (re)created in a bid to obtain a piece of the lucrative tourism pie*".

Not all simulations, however, result in similar experiences which a person might expect. The error is always a part of prospection; the occurrence of error in prospection depends upon the similarity of contextual factors as well as the closeness of the simulation to perception (Gilbert & Wilson, 2007). Although experiences are similar, an error in prospection might result in an entirely different perception. This is where tourists who are more or less similar, experience similar vacations and places differently (Lengkeek, 2000).

The discussion above on imagination and mental image underlines the fact that a research stem which can highly benefit from is tourism destination image (TDI) studies. Destination image has been extensively investigated in tourism research; in fact, it is believed that findings of these research studies are major driving forces of tourism academic research (Gallarza, Saura, & García, 2002; Pike, 2002). TDI studies practices different approaches concerning paradigms, research

methods, and theoretical backgrounds. A major approach is to employ the concept of 'image' as it is utilized in the marketing discipline. This approach shapes the mainstream research in TDI studies. These mainstream studies practice an attitudinal approach as they inspect three famous attitudinal dimensions of cognitive, affective, and conative (or at least two of the main attitudinal constructs of cognitive and affective). That being said, it is difficult to distinguish and, in fact, make a distinction among studies titled as 'tourism destination image' and studies which investigate 'attitude toward a tourism destination' and/or 'tourist's perception of a destination' (Lai & Li, 2016).

1.2. Problem Statement

Due to the complexity and multidimensionality of the TDI construct, in tourism studies, the findings of this major research stem are divergent due to heterogeneous paradigms and methodology varieties, and hence, the knowledge produced does not conduce to a holistic image of the construct (Stepchenkova & Mills, 2010). Not all reasons, however, are epistemological; in fact, the ontology of the TDI construct is not well articulated either. From definitional and conceptual perspectives, Lai and Li (2015) pointed that three vagueness issues of internal, external, and foundational exist in TDI studies.

Internal vagueness is the uncertainty about the nature of the TDI construct as well as the confusion and poor understanding of its meaning. It is conceivable to argue that the dearth of studies on the impact of mental image and imagination on TDI is due to the existence of internal vagueness.

External vagueness occurs when the concept of TDI is confused with other mental concepts. In fact, since there are no borders to prevent this confusion and there is a substantial

amount of overlap between TDI and constructs of perceptions, attitudes, dreams, hallucinations, and imagination (Lai & Li, 2016). This is perhaps the reason as to why there is a lack of discussion to discriminate TDI from other constructs such as attitudes and perception.

Finally, foundational vagueness is about the inherent ambiguity of the mental image (or imagery) construct. Foundational vagueness deals with the existential aspect of the image; in other words, whether the image exists or not (Lai & Li, 2016).

Theoretical debates, also known as analog-propositional, have a long history in the mental imagery debates (Thomas, 2014). Quasi-pictorial theory, unlike description theory, provides different explanations for the imagination process; these various descriptions are not only different but also contradictory (Kosslyn, 1996). There are no empirical findings as to which of the above-mentioned imaginary theories are successful in explaining destination imaginary and mental image. Most of the TDI studies are developed based on the seminal work of Boulding (1956). In the introduction of his book, Boulding (1956, p.3) mentioned:

> "*AS I SIT AT MY DESK, I know where I am. I see before me a window; beyond that some trees; beyond that the red roofs of the campus of Stanford University; beyond them the trees and the rooftops which mark the town of Palo Alto; beyond them the bare golden hills of the Hamilton Range. I know, however, more than I see.*"

Despite the strong presence of imagination in Boulding (1956)'s writing, the imagination aspect of destinations' image is missing in the mainstream TDI studies. This issue might be due to the fact that TDI studies follow the marketing definition of image which is defined as the consumer's overall impression of a product, brand, or store (Stern, Zinkhan, & Jaju, 2001). The concept of image is even problematic in the marketing discipline. There are many inconsistencies in definitions, measurements, and findings of marketing image studies which are the result of

unsolved ontological and epistemological issues (Stern et al., 2001). Interestingly, even in the marketing discipline, very few studies have looked at the concept of 'imagination'. More surprisingly, these studies have not scrutinized the concept of imagination from the consumer behavior point of view but rather have adopted the organizational perspective (Erevelles, Horton, & Fukawa, 2007).

1.3. Purpose of Study

This study investigates the role of mental image in TDI measurement. The primary aim of this research is to examine (1) the existence of mental image in the minds of (none)visitors, following the principles of quasi-pictorial theory, (2) the relationship between tourist imagination and perceived TDI, and (3) the effects of imagination and mental image dimensions on tourism consumption. Unlike cognitive, affective, and conative aspects of the TDI, which have been developed and established well during the past 50 years of studying TDI, there is no established scale to measure the variable of 'imagination' per se in the context of a tourism destination. Hence, by taking tourist imagination into account, the current study sheds light on hedonic consumption in general and tourism consumption at destination level in particular.

Based on the purpose of the study, the five research objectives of this research are:

a) To design a scale to measure individuals' imagination of tourism destinations.
b) To suggest a conceptual structure for imagination: A hierarchy of concepts making up the imagination construct.
c) To identify the measurement theory of the imagination construct.
d) To compare and contrast the imagination and prospection of visitors and non-visitors.

e) To investigate the structural composition of TDI following the addition of the imagination construct as a moderator.

f) To explore the impact of information exposure on the evolution procedure of prospection to imagination.

1.4. Significance of Study

The current study identifies a gap in TDI research with regards to the concept of imagination (i.e., mental image dimensions). To be more specific, this study signifies the absence of the salient concept of imagination in TDI studies. Previous studies have underscored the importance of distinguishing between a description of an image and the inductive claims about its nature (Sartre, 2004). As of today, the vast majority of studies are about the consequences of the mental imagination process rather than the mental image itself. Even the few studies that have investigated the characteristic of the mental image are mostly restricted to neuropsychological research. To be more specific, none of these studies has been conducted within the tourism field of study. Also, few studies (if at all) have investigated the process of formation, inspection, and transformation of the mental image in the consumer behavior research area with an emphasis on hedonic consumption.

As Cherifi, Smith, Maitland, and Stevenson (2014) indicate, image formation studies are very few compared to other subject matters in TDI research. Accepting the fact that adopting the attitudinal approach will only reveal parts of the TDI story, gaining a holistic knowledge about TDI is not possible as one must know how the image forms and what the mental reference points are for shaping these attitudes (Echtner & Ritchie, 1991).

In the current study, we propose that there is no imagination or prospection without the mental image. Hence, the focus of this study is 'mental image' and its concise description to measure and test its relationship with other perceptual constructs. This study shows that imagination and prospection play significant roles in visitors' perception of TDI. In fact, what has been measured for the past 30+ years in TDI studies is only part of the story (nevertheless, an important part) since tourist's imagination has been neglected. Also, this study proposes a scale to measure visitor's imagination towards a particular destination. This scale is not only complementary of existent TDI scales; but can also be employed separately to investigate the relationship of tourist imagination with common constructs of tourism studies. The findings of this study are useful for scholars who are interested in TDI formation and for practitioners who might be interested in manipulating and modifying 'the current destination image' to the image they desire the destination to have.

1.5. Definition of Key Terms

- *Image*: is "the perceptions, beliefs, impressions, ideas and understanding one holds of objects, people, events or places" (Gartner, 2000b, p. 295).
- *Destination*: is defined as a geographic unit, distinct from origin or market (visitors residents), which refers to a place that tourists intend to spend their time away from home. The destination can be a single location (or even an attraction) or a set of multi-destinations as part of a tour package; it can be a city, a region, a state or province, a country, or even a continent (Cho, 2000).
- *Cognitive destination image*: is the belief that a tourist holds about a particular destination based on his evaluation of the relevant attributes (Xie & Lee, 2013).

- *Affective destination image*: is the aspect of TDI dealing with one's values, feelings, and motivations (Baloglu & McCleary, 1999). It is about tourists' intuition and their gut feeling about a destination.
- *Conative destination image*: is the behavioral aspect and the action side of a TDI (Tasci, 2009). The conative image is about tourists' willingness to visit a destination, and spreading the positive word of mouth and recommending a destination to others.
- *Destination image (A new comprehensive approach)*: "a voluntary, multisensory, primarily picture-like, qualia-arousing, conscious, and quasi-perceptual mental (i.e., private, nonspatial, and intentional) experience held by tourists about a destination. This experience overlaps and/or parallels the other mental experiences of tourists, including their sensation, perception, mental representation, cognitive map, consciousness, memory, and attitude of the destination" (Lai & Li, 2016, p. 1074).
- *Imagination*: is defined as a complex cognitive process and the capacity of human beings to form a mental representation of the objects, persons, and social events not immediately presented to the senses (Singer, 2000). This definition is retrospective in nature, meaning that imagination is based on memory recalls that are built upon previous experience.
- *Prospection*: prospection includes the same mental, cognitive process as imagination, which forms a mental representation of the objects, persons, and social events which are not immediately presented to the senses. Their difference, however, is that prospection is related to being prospective, whereas imagination is related to being retrospective. In fact, simulation is the key to prospection; human beings, unlike other species, can simulate the experiences which have never been occurred to them (Gilbert & Wilson, 2007). That being said, being prospective does not necessarily detach prospection from memory and perception.

As a matter of fact, memory and perception are critical elements in prospection since they are used to synthesize virtual events and situations.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

In this chapter, the literature of TDI is discussed extensively, the gap in mainstream TDI studies is explored, and finally, the potential impact of the mental image on the structure of TDI components is argued. It is worth taking into consideration that the references are selected purposefully, i.e. appropriate for the study's argument on the missing component (mental image) of TDI studies. The inclusion criterion, when sampling the existence studies, was based on the importance of TDI role; meaning that if a study mostly discussed TDI, it was included. This approach, however, left out many valuable studies as they were considered irrelevant to the topic of this study. Studies which investigated TDI in mediating and moderating roles (e.g., Veasna, Wu, & Huang, 2013), studies which approached TDI from a purely marketing point of view, i.e. brand image (e.g., Hosany, Ekinci, & Uysal, 2007), and studies which focused on information sources, personal motivation, and generally exogenous factors' influence on TDI (e.g., Beerli & Martín, 2004) are examples of studies which got excluded in the sampling process.

This chapter follows the subsequent logical pattern: in "Destination Image" section, key terms and their importance in tourism studies have been defined and discussed. The section includes two sub-sections namely "Destination Image Components" and "Destination Image Typology". The sub-section on destination image components describes the three traditional components of cognitive, affective, and conative and their interrelationships. This subsection is highly significant since the structure of TDI studies including this dissertation heavily depends on the aforementioned components. The destination image typology sub-section is developed to

create a comprehensive ontological foundation of TDI. Different image types are discussed, and image formation process is explained in this sub-section.

The second section of this chapter is named "Destination Image Epistemology". The purpose of this section is to carefully investigate the knowledge structure of TDI studies. It includes different paradigms that tourism scholars employ to reveal the shades of truth on aspects of TDI. This section has two subsections of "Mainstream Studies" and "Unconventional Studies". Mainstream studies make up the majority of the TDI literature that usually follow logical positivism[1] and several other similar paradigms. The impact of these studies are non-negligible in TDI knowledge development, however, they follow a standard structured measurement method[2] of image measurement, which resulted in neglecting the mental image component of TDI literature. Unconventional studies, on the other hand, are more recent, have less portion of knowledge structure, and are innovative regarding the methodology and measurements used. Mostly, they follow constructivism[3] and several other interpretive-based paradigms. It could be interpreted from the study of Platenkamp and Botterill (2013), however, that the main problem with these studies is their lack of fit to the accumulative nature of the scientific studies as their findings are so divergent.

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[1] Also known as logical empiricism or neo-positivism, inspired by revolutions in logic and mathematics, and mathematical physics. The aim of logical empiricism was to create a revolutionary scientific paradigm to purge endless controversies of traditional metaphysics (Kaplan, 1968). Logical empiricism verifies the knowledge either based on mathematical (formal) analytic (deduction) or empirical observation (Friedman, 1998).

[2] In survey researches, questionnaire is the principal instrument of data collection and is a set of standardized questions, often called items (manifest variables). In order to collect individual data about different subjects, items follow a fixed scheme (Trobia, 2008).

[3] An antirealist approach toward philosophy of science denotes that scientific knowledge is created by scientists and is not made by the world (reality) (Downes, 1998).

Debates on the paradigm shift in tourism studies in general and TDI studies, in particular, are controversial. For example, to avoid the absolutism[4] and universalism[5] of the positivistic paradigms and to not fall into the trap of truth loss of the constructivism paradigm, Platenkamp and Botterill (2013) suggest the concept of critical realism[6]. In order to avoid the inadequacies of the positivism paradigm mentioned above and based on the arguments of the 'unconventional studies' which will be thoroughly discussed, this study will follow the post-positivism[7] paradigm (Clark, 1998). To do so, the study will conform the ontology of positivism/ scientific realism (i.e. stand-alone truth) and epistemology of realism by using objective quantitative methods. Also, the qualitative techniques which do not contradict the empirical approach of post-positivism will be considered in the study design as well.

By the end of the second section, the argument of the missing component is completed and hence, section three is dedicated to "Mental Imagery". Mental imagery starts with the sub-section of "Imagination", in which, key terms and definitions are explained. "Prospection" is the following subsection in which the differences between imagination and prospection are explained to have a clear understanding of how they are different concerning tourism consumption. The third sub-section is "Mental Image Typology", which similar to the destination image typology sub-section of destination image section, is developed to create a comprehensive ontological foundation of imagination studies. The mental imagery section is concluded by the sub-section of

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[4] Treating the knowledge in an absolute way by excluding irrationalities from reality.
[5] General (all-inclusive) rules that are context-free and can be applied universally.
[6] "Critical realism sees the objects of natural and social scientific knowledge as independent of our minds, but at the same time rejects simple 'one to one' links between beliefs and reality" (Platenkamp & Botterill, 2013, p. 112). Critical realism is a paradigm which could be located between positivism and interpretivism.
[7] Critical realism is more in accordance with post-positivism rather than positivism. Critical realism can be considered as one form of post-positivism presence in social sciences.

"Imagery Debates", which summarizes the key discussions of imagery and imagination scholars. As imagery debates depict, there are serious disconfirmations of paradoxical theories in explaining imagery. However, more recent findings are in favor of depictive (quasi-pictorial) representation theory[8].

Section four "Theoretical Foundation" starts with an in-depth explanation of the depictive (quasi-pictorial) representation theory. To do so, the subsection of "Protomodel" is entirely devoted to the brain mechanisms of imagination as explained by depictive representation theory. "Sensory Modals" is the title of the second sub-section of theoretical foundation, and explains different aspects of imagination since, in most of the cases, imagination uses the same mechanism of perception. The first two subsections of the theoretical foundation section are useful in imagination measurement scale development, which will be discussed more in detail in chapter three. Finally, theoretical foundations ends with the sub-section of "Rational & Hypotheses". In this sub-section, the hypotheses, which are developed, based on previous literature, arguments, and definitions, are explained in detail. Apart from imagination measurement and mental image dimensions, this dissertation tries to show the impact of the mental image component on the TDI construct. This goal will be accomplished by testing the hypotheses developed in the last sub-section of chapter two.

[8] One of the two major imagery debates which claims the picture-like mental representations in imagination/ prospection processes (Gendler, 2013).

2.2. Destination Image

The image is defined as "the perceptions, beliefs, impressions, ideas and understanding one holds of objects, people, events or places" (Gartner, 2000a, p. 295). It is a simplified, condensed version of a person's assumption about reality. The image is an important concept in economy and marketing as human behavior, and consumption is based on image rather than objective reality (Baloglu & McCleary, 1999). The concept of image is more important in service industries such as tourism in which there is simultaneous production and consumption of amorphous mass experience (Gartner, 2000a).

The concept of destination is rather a vague concept. The destination is defined as a geographic unit, distinct from origin or market, which refers to a place that tourists intend to spend their time over away from home (Cho, 2000). The destination can be a single location (or even an attraction) or a set of multi-destinations as part of a tour package (Cho, 2000). Analyzing the literature revealed that countries are the most dominant perceptions of the destination concept. Fifty-six out of 143 articles used 'country' as the destination followed by states (27), cities (26), resort areas (23), and provinces (11) (Pike, 2002). Destination image definition is the definition of the concept of image applied to touristic places. Place images are comprised of cognitive, affective and conative components. These components are hierarchically interrelated (Gartner, 2000a; Tasci, 2009). The following subsection will discuss the components mentioned above in details.

2.2.1. Destination Image Components

The cognitive/ perceptual component is the sum of attitudes, beliefs, and knowledge about the destination (Baloglu & McCleary, 1999; Tasci, 2009; White, 2004). The cognitive destination

image is the belief that a tourist holds about a particular destination based on his evaluation of the relevant attributes (Xie & Lee, 2013). The cognitive component of TDI is usually conceptualized by four aspects of the natural environment, built environment, socially-responsible environment, and local people (Xie & Lee, 2013). Cognitive component compared to the affective component is more observable and measurable (Xie & Lee, 2013), and represents the knowledge of the place (S. Kim & Yoon, 2003). The cognitive component of TDI can be functional/ tangible like landscape and monuments, or psychological/abstract like a destinations' hospitality and atmosphere. Nevertheless, in both types of cognitive component, the dependency to destination attributes is prominent (San Martín & Del Bosque, 2008).

The affective component is dealing with one's values, feelings, and motivations (Baloglu & McCleary, 1999; White, 2004). TDI studies were limited to cognitive evaluation of destination attributes for a long time. The Common knowledge is that the cognitive component of the image predicts the affective component. In other words, affective evaluation depends on cognitive evaluation (Baloglu & Brinberg, 1997; San Martín & Del Bosque, 2008; Xie & Lee, 2013). Baloglu and Brinberg (1997), for the first time, suggested using Russel's affective space structure to measure the affective component of TDI. Russel suggested that the scale should be used for directly perceived places and should not be employed for places that are not directly perceivable such as cities and countries. However, Baloglu and Brinberg (1997) suggested that the scale (i.e., Russel's affective space structure) is equally valid for tourism destinations as well. This scale is heavily employed in the literature of TDI since then.

Finally, the conative component is the action side and the behavioral aspects of a TDI (Tasci, 2009; White, 2004). The conative component is the outcome of the sequential (hierarchical) nature of TDI components proposed by Gartner (1993) (Agapito, Oom do Valle, &

da Costa Mendes, 2013). Agapito et al. (2013) suggested that the impact of the cognitive component on the conative component is stronger when mediated by affective component. However, not all studies considered the sequential nature of the relationships. Some studies suggested that cognitive and affective components simultaneously predict conative component (Stylos, Vassiliadis, Bellou, & Andronikidis, 2016). In an analogy between the Theory of Planned Behavior (TPB) (Ajzen, 1991) and TDI components, one may argue that cognitive and affective components are the attitude components, and the conative component is the behavioral intention. While this argument is true for most of TDI studies, some scholars still consider behavioral intention as a separate variable than conative component (Stylos et al., 2016). There is still no consensus whether the conative component is the same as behavioral intention or it is a separate construct.

Considering the three components of TDI, which is traditionally known as Tricomponent Attitudinal Model (TAM), this construct (i.e., TDI) is rather an attitudinal construct as it contains the same components (at least two components of affective and cognitive) as attitude (Huang & Gross, 2010). That said, having the same structure creates some problems in terms of achieving discriminant validity when measuring TDI and attitude simultaneously. Moreover, using the term "destination attitude" interchangeably with destination image (Chen, Ji, & Funk, 2014) is another consequence of neglecting the component of the mental image from TDI studies. However, the absence of a proper definition for TDI and the composition of destination makes the usage of the term 'destination attitude' as the equivalent of 'destination image' (White, 2005) is valid. According to Tasci (2009), apart from cognitive, affective and conative aspects of TDI called image components, there are attributes of destination properties called image dimensions. In the

literature of TDI, however, dimension and component are used interchangeably. Yet again, it is possible to argue that attributes of TDI are the cognitive component of TDI.

2.2.2. Destination Image Typology

According to Tasci (2009), there are different types of TDI in tourism studies: Projected vs. received image, Organic vs. induced image, and Primary vs. secondary image.

Projected vs. received image: the projected image is the image that a Destination Management Organization (DMO) is willing to develop, while the received image is the image that is already formed in the mind of (potential) tourists. The equivalence terminologies used for projected and perceived image is ideal vs. actual image.

Organic vs. induced image: the organic image is composed of sources in addition to commercial and touristic elements, such as word of mouth, from family and friends, general media, education, popular culture and actual visitation. The induced image is the result of targeting potential tourists by promotional materials as well as the advertisements produced by the DMO.

Primary vs. secondary image: the primary image is formed as a result of one's visit of a destination, and the secondary image is formed as a result of external information sources such as media.

Naïve vs. reevaluated image: their equivalent terminologies are primary and secondary image. The naive image includes both organic and projected image which a potential tourist develops about a destination; revaluated image is the one that a visitor develops from the naïve image after visiting the destination.

Attribute vs. holistic image: the attribute image is one's attitude about different properties of the destination that sums up and makes up the holistic image. However, Gartner (1989) asserted

that the holistic image might be different from the attributes considered all together, the holistic image demonstrates the synergic effect of TDI, which is more than the sum of the attributes (Tasci, 2009).

Initial definitions of TDI like the one presented earlier in the section, "destination image", are not ontologically all-inclusive with regards to the concept of "image". Moreover, these definitions are supply-side oriented and have barely considered the consumer aspect of the image. In tourism encyclopedia, destination image is also defined as "the mental picture promoters are trying to instill within a target audience" (Gartner, 2000a, p. 296). Unfortunately, this definition is neglected in most of the mainstream research because it is difficult to systematically and quantitatively investigate the concept of "mental image" with the existent scales which are attitudinal oriented. Recently, a comprehensive literature review by Lai and Li (2015) supports the claim that TDI ontology in mainstream research studies have been downsized to only an attitudinal construct. In other words, Lai and Li (2015) state that TDI is a mental representation and mental image is the reference point that shapes one's attitude toward a destination. In their conclusion, Lai and Li (2015, p.1074), suggested a new conceptual definition to cover the ontological shortfalls of the traditional definitions of TDI:

> "*A voluntary, multisensory, primarily picture-like, qualiaarousing, conscious, and quasi-perceptual mental (i.e., private, nonspatial, and intentional) experience held by tourists about a destination. This experience overlaps and/or parallels the other mental experiences of tourists, including their sensation, perception, mental representation, cognitive map, consciousness, memory, and attitude of the destination.*"

2.3. Destination Image Epistemology

Given the multidimensionality and complexity of TDI as well as the different components used in TDI measurement, Stepchenkova and Mills (2010) indicated that the knowledge produced is not conducive to assessing the holistic nature of TDI construct. The same claim holds true for the image formation process as there is still no solid consensus on how the mechanism of the image formation works in TDI context (Gallarza et al., 2002). Moreover, it seems that the choice of methodology to study TDI is influential on the results, and simultaneous tests are required to reveal the sources of potential bias (Stepchenkova & Mills, 2010). The literature suggests that destinations identify their current image and the contributing factors in order to project a desired TDI or change the existed one (MacKay & Fesenmaier, 1997).

2.3.1. Mainstream Studies

TDI studies began to appear in the 1970s. TDI studies focus mostly on how potential and actual tourists visualize, think, judge, and feel about certain destinations based on the attributes of these destinations (Tasci, 2009). In survey design, which is the most dominant way of investigating TDI, researchers usually develop the components' scale to measure TDI based on the attributes. Studies mostly use the Likert and bipolar scales to evaluate different components (mainly cognitive) of TDI (Stepchenkova & Mills, 2010). The general procedure is to measure the subjects' perceptions about the object of destination(s) with respect to certain characteristics and attributes (Gallarza et al., 2002). In a review of TDI studies from 1973 to 2000, Pike (2002) indicated that travel context is not explicit in TDI studies and only 23 out of 142 papers considered the context explicitly. Both Qualitative (63) and quantitative (80) approaches were both utilized when analyzing TDI. Factor analysis (41), t-test (21), perceptual mapping (21), analyze of mean

and variance (20), cluster analysis (14), importance-performance analysis (9), repertory grid (8), mapping techniques (3), constant sum (2), and conjoint analysis (1) were among the most popular quantitative techniques utilized (Pike, 2002). Although, trends of TDI studies show that the tendency to employ qualitative methods is on the rise, new quantitative methods are being developed and introduced (Stepchenkova & Mills, 2010). Despite the long debates through four decades of TDI studies, there is still a lack of consensus on the meaning, definition, and measurement of TDI among scholars due to the complexity, subjectivity, and elusive nature of the concept (Stepchenkova & Mills, 2010).

Echtner and Ritchie (1991) and Echtner and Ritchie (1993) provided a framework for four components of TDI that should be considered when designing the measurement method of TDI; this framework is shown in figure 1. It is noteworthy to mention that the term 'component' (i.e. functional/ psychological characteristics, attributes and holistic) does not contain the same meaning as destination components.

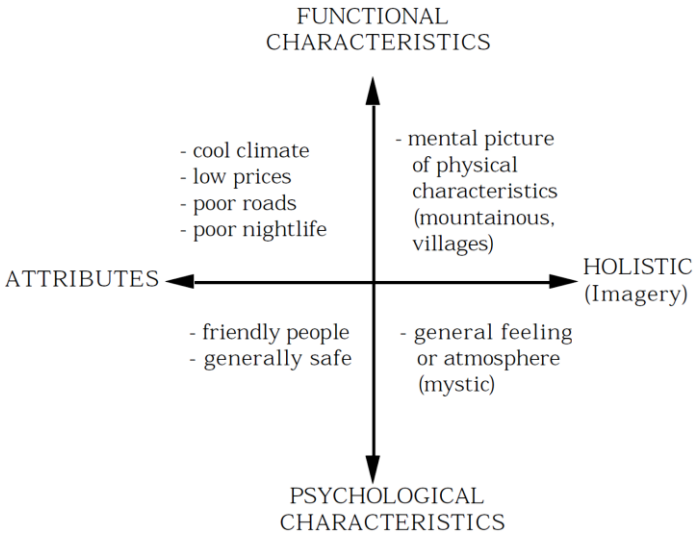

Figure 1: A framework for Components of the TDI, Adopted from Echtner and Ritchie (1993)

According to Echtner and Ritchie (1991), TDI measurement methodologies can capture both functional and psychological characteristics. Based on previous studies (San Martín & Del Bosque, 2008), the cognitive component may measure both functional and psychological attributes while affective component measure holistic psychological characteristics. However, in mainstream studies, no previous study has attempted to measure the functional, holistic image. Even studies claiming to measure the holistic image usually use single item measures, which basically measures the overall perception rather than the holistic image (See, Stylos et al., 2016).

Although the pictorial element (mental picture) of TDI concept has been addressed in the TDI literature a long time ago (See, MacKay & Fesenmaier, 1997), mainstream studies have failed to include it in TDI studies. So far, mainstream studies have only focused on attitudinal components (which are easier to measure in survey format) of TDI.

2.3.2. Unconventional Studies

Existing scales of TDI measurement are all attribute-based while a tourist imagination may capture the effect of the holistic image. Imagery analysis is more interpretive in nature and is less utilized compared to structured surveys (Stepchenkova & Mills, 2010). Unlike mainstream studies, which follow structured surveys, unconventional studies use open-ended questions more frequently (Ryan & Cave, 2005). Most of the previous studies focused on the cognitive and affective components of TDI by examining the attributes (See, Agapito et al., 2013; San Martín & Del Bosque, 2008).

To date, few studies, have investigated the pictorial elements of TDI concept. For those that did, most followed the Gaze theory of Urry (1990) about how TDI is manifested through media content, which affects the public perceptions of places (Stepchenkova & Mills, 2010). In

other words, most of these studies focused on how tourists view the destination through camera lenses by analyzing the photos taken by tourists on weblogs and social media. On the other hand, other studies focused on the destination efforts to create the desired image by analyzing the postcards, weblogs, social media, and advertisements (e.g., Hunter, 2013; MacKay & Fesenmaier, 1997; Stepchenkova, Kim, & Kirilenko, 2014). As a result, it can be concluded that these studies do not investigate the mental image of tourists as a single entity, but rather they investigate the collective memory of the public about a specific destination. For example, although Xiao and Mair (2006) elicited tourists' negative and positive images of China using the discourse/ narrative analysis based on 35 articles from international newspapers, the extracted constructs are all attitudinal, and the image component is absent. Another example is the repertory grid technique employed by Embacher and Buttle (1989) to analyze the image of Austria. This technique enables the researcher to categorize the elements (countries) and the extracted constructs (image), but again, the image is all about attitudinal constructs. Also, to study the projected image of the Hunan (China), Hunter (2013) conducted a content and semiotic analysis using a sample of 995 photographs gathered from 257 websites. Although this analysis is purely based on pictorial analysis, there are a few problems which should be considered: (1) based on unit of analysis (i.e. the images), tourist is not the agent here because the act of imagining does not occur, (2) the image is more collective, and (3) the image is not a mental image. There are similar studies which have used pictorial analysis of the webpages, brochures (e.g., Hunter, 2012; Singh & Lee, 2009), travel magazines (e.g., C. H. C. Hsu & Song, 2013), or photos and postcards (e.g., Hunter, 2012; Milman, 2011). However, they all share the same issues stated above.

There are studies that have used actual pictures (rather than mental picture) in the measurement process (visual studies) and have asked participants to rate them, find the correct

image, recall from memory, and do other mental tasks involving mental effort (See, Hunter & Suh, 2007; Lai, 2014; Pan, 2011). While these studies have some useful applications in TDI studies, using their techniques might not be useful for studying mental image since the picture (and/or movie) has manipulative effects on participants' mental image and memory.

In one of the few attempts to investigate the missing component of TDI, Huang and Gross (2010) employed Multi-faceted Image Assessment (MIA)[9] framework to explore Australia's TDI. The benefit of using MIA is that the researcher can investigate the multi-sensory image features besides the cognitive and affective components. Their result showed that while there was no difference between past visitors and non-visitors regarding cognitive and affective destination image, past visitors showed more multi-sensory clues compared to non-visitors (Huang & Gross, 2010). Using MIA framework is not limited to only qualitative studies; Son and Pearce (2005) used the survey method to measure the cognitive and affective components of TDI and utilized the two methods of image rating and open-end question from 365 participants in the form of self-administered questionnaires to measure the multi-sensory image features. Li and Stepchenkova (2012) conducted a study examining the actual image of the destination (US). They used the network analysis, which was developed based on the theories of Human Associative Memory (HAM)[10] (Teichert & Schöntag, 2010). The advantage of using the network analysis is that it is easy to show the associations and the dynamic inter-relationships of the image components. However, the method is highly dependent on symbolic values of TDI and ignores the qualities and

[9] In addition to traditional destination image components (i.e. cognitive, affective, and sometimes conative), Multi-faceted image assessment (MIA) framework assumes that destination image includes multi-sensory component (Huang & Gross, 2010).

[10] The Human Associative Memory (HAM) model considers the human memory as a network of interconnected informational nodes that activate each other in relevant contexts (Teichert & Schöntag, 2010).

properties of the mental image such as vividness, control (autonomy), richness, etc. In the second part of their study, Stepchenkova and Li (2012) expanded their novel method of studying image based on the realm of biodiversity in natural sciences. Concepts such as Richness (it is different from richness in imagination studies), Evenness, and Dominance were introduced to measure the diversity of TDI. Stepchenkova and Li (2012) defined these diversity indices as follow: "image richness S, the number of distinct images that a certain group holds about a destination; (2) image evenness E, which reflects how many individuals from a particular group share these distinct images; and (3) Simpson's 1/D, a measure that reflects both richness and evenness of TDI. Taken together, these three indicators effectively describe TDI pool of a particular market segment, or group of people, from various aspects and provide a succinct summary of its diversity" (Stepchenkova & Li, 2012, p. 691). Furthermore, Stepchenkova and Li (2012) discussed that distribution pattern of image terms could also be used as another dimension of the image when comparing and contrasting TDI. Their assumption in using the distribution as another dimension is that linguistic structure of TDI may follow the power law distribution ($y = \alpha x^k$)[11] (Stepchenkova & Li, 2012).

In another effort to incorporate the missing component of the mental image into TDI measurement, White (2004) denoted that tourism studies are overwhelmed with the definition of the image as a construct. He stated that tourism studies should investigate the existing differences among the image construct and other constructs such as perception and attitude. For example, he

[11] The Power law distribution is a functional relationship between two given quantities, where relative change in one quantity results in proportional relative change in other. In destination image context, it "describes relationship between distinct image rank (the most frequent image is first, etc.) and frequency of mention of that image" (Stepchenkova & Li, 2012, p. 690).

asked three questions of: “what is your perception of London as a tourist destination?”, “what is your attitude towards London as a tourist destination?”, and “what image comes to mind when you think of London as a tourist destination?” ; arguing that these questions provide various insights into London as a destination (White, 2004). White (2004), in his article, discussed the imagery concept and concluded that image construct might differ from attitude, belief, judgment, and perceptual/ cognitive constructs. A year later, in another study, White (2005) tried to examine the differences he argued for in the context of the imagery debate. However, he failed to provide enough evidence to show that there is a difference between image and perception. He concluded that these constructs (specifically perception/ cognition and image) were not significantly different (White, 2005). Nevertheless, he measured the construct of the image while the image dimensions were neglected: Vividness was not included, and the questions only relied upon the word “image”. In addition, few open-ended questions were utilized, and only the constructivist paradigm was taken into account (White, 2005). White (2005) study design casts serious doubts on his findings and makes the study questionable concerning any possible bias involved in the reported results.

The image is mainly formed by stimulus and personal factors (Baloglu & McCleary, 1999). Using people as image formation agents has been receiving lots of attention recently (Stepchenkova & Mills, 2010). Imagination becomes important when the tourist enters the equation. Lengkeek (2000) argues that since Kant's Copernican revolution, there is no direct reflection of reality; rather imagination extends the reality through synthesizing the perception of experience. As a result, the reality is not only the truth or essence of the experience, but it is also the twisted phenomenon manipulated by imagination. Yang, He, and Gu (2012) criticized the self-report measures which rely on the explicit cognitive process and measure explicit perceived image.

They argued that individuals, simultaneously, might have unconscious, implicit cognition of an object.

Imagery is the center of the thought processing system linked to memory and motivation that represent higher order thought process (White, 2004). The strength of imagery perspective on TDI studies is two folded. First, pictures present the product (destination) as a whole and they communicate the attributes, characteristics, concepts, values, and ideas of the destination (MacKay & Fesenmaier, 1997). Second, pictorial stimuli are better recalled, and they have impacts on attitudes, beliefs, and affections (MacKay & Fesenmaier, 1997). Echtner and Ritchie (1991) utilized the imagery[12] techniques in their study to analyze TDI. They pointed out that imagery processing is related to a more holistic (gestalt) representation of the image. In addition, they indicated that in mental picturing, sight is not the only sensory dimension included but imagery can also include any of the senses such as taste, smell, sight, sound, and touch.

Table 1 summarizes the 51 most salient pieces of relevant literature including 38 original research, 6 reviews, 4 books, 2 research notes, and 1 commentary from 1956 to 2018. Among these pieces, 18 are conceptual, 19 are empirical, 4 are qualitative, and the rest are either mixed-method or have used other approaches. These studies are selected based on the subjective evaluation of the author from perspectives of both TDI and mental imagery evolution. In addition to searching the index websites such as Scopus, the four articles of Pike (2002), Stepchenkova and Mills (2010), Tasci and Gartner (2007), and Tasci, Gartner, and Cavusgil (2007) were

[12] A field of psychology and a distinct way of processing and storing multisensory information in working memory. Imagery is all about image formation and image measurement (Echtner & Ritchie, 1991).

employed to identify the relevant critical studies. The five above-mentioned studies were selected due to their conceptual and operational ground breaking impact in TDI literature.

Table 1: Summary of Influential Studies from TDI and Mental Imagery Perspectives

Author(s) (Year)	Type	Source	Approach	Contribution
Boulding (1956)	Book	-	Conceptual	The oldest source that introduced the concept of image to social science literature in a systematic way.
Reynolds (1965)	Original Research	California Management Review	Conceptual	Among the early studies of image which elaborated the concept of image and its formation to marketing literature.
Gunn (1972)	Book	-	Conceptual	This book offered a taxonomy of different types of destination image in tourism studies for the very first time by discussing the formation and evolution of TDI. In later editions of this book, the role of information source in TDI was also discussed for the very first time.
Gearing, Swart, & Var (1974)	Original Research	Journal of Travel Research	Quantitative/ Expert opinion	Developed the attribute-base methodology to measure touristic attractiveness. In later studies, destination attractiveness got translated to destination image and the attribute-base method became the foundation of cognitive destination image.
Hunt (1975)	Original Research	Journal of Travel Research	Empirical	Among the early studies that introduced the concept of image to tourism literature.
Lawson & Band-Bovy (1977)	Book	-	Conceptual	The first conceptualization of TDI that included both concepts of imagination and emotion in the definition of the TDI construct.
Palmer (1978)	Original Research	Environment and Planning A: Economy and Space	Empirical	Discussed the multi-facet nature of image by utilizing the repertory-grid test, principle component analysis, and multidimensional scaling (MDS).
Jaffe & Nebenzahl (1984)	Original Research	Journal of Marketing Research	Empirical	Discussed the questionnaire design of destination image studies in general and the adoption of bipolar semantic differential scale (SDS) and Likert-type scales in such studies in particular.

Author(s) (Year)	Type	Source	Approach	Contribution
Dichter (1985)	Commentary	Journal of Consumer Marketing	Conceptual	Among the early studies of image that comprehensively discussed the cocnept of image as the total impression of an entity (i.e., one's perception of the entity and its surroundings).
Fridgen (1987)	Original Research	Leisure Sciences	Empirical	Among the first studies that investigated perceived image of tourism regions with cognitive mapping technique. Later studies expanded the cognitive mapping technique to more elaborated techniques such as mental mapping, brand mapping, and concept mapping which are not not soley spatial memory- based but are associative memory based as well.
Botterill & Crompton (1987)	Research Note	Annals of Tourism Research	Qualitative	From the phenomenological perspective, this study contributed to the literature of destination image by including the cocnept of photographic image. This piece is among the first studies with a focus on image component of destination image.
K. Chon (1990)	Review	The Tourist Review	Conceptual	This study is the first known systematic review paper regarding the role and place of TDI in tourism literature.
Reilly (1990)	Original Research	Journal of Travel Research	Qualitative/ Other	For the very first time, suggested free elicitation of descriptive adjectives to explain image as an alternative approach to MDS and SDS.
Echtner & Ritchie (1991)	Original Research	Journal of tourism studies	Conceptual	The very first study that provided a comprehensive discussion around the ontological and epistemological issues of destination image definition, conceptualization, operationalization, and measurement. This study was also the first to emphasize the importance of 'imagery processing' and 'working memory' in TDI studies. This study, took the unidimensional attribute-based TDI and expanded it to two dimensions of attribute/holistic and functional/psychological (Figure 1). Finally, this article suggested the third dimension of "unique/common" to be added to the two dimensional systems mentioned above.

Author(s) (Year)	Type	Source	Approach	Contribution
Fakeye & Crompton (1991)	Original Research	Journal of Travel Research	Empirical	This study focused on the evolution of TDI. It is the very first study that included the concept of prospection as part of TDI evolution process. In addition, this study is the first to mention the abstraction level of the image as a mental construct.
Echtner & Ritchie (1993)	Original Research	Journal of Travel Research	Conceptual/ Empirical	Through an elaborate description of structured and unstructured measurement of image, this study illustrated the development stages of an item-based scale for TDI studies.
Gartner (1994)	Original Research	Journal of Travel & Tourism Marketing	Conceptual	Among the very first studies that suggested the hierarchical tricomponents models of TDI (cognitive-affective-conative). This article, furthermore, expanded the taxonomy of TDI offered by Gunn (1972).
Mazanec (1994)	Original Research	The Tourist Review	Empirical	For the very first time, discussed the issues of reductionist approaches to study image. To solve the issue, this study introduced the self-organizing maps, as a neurocomputing methodological solution, to be used instead of other techniques (e.g. questionnaire) to overcome the issue of reductionism.
Milman & Pizam (1995)	Original Research	Journal of Travel Research	Empirical	The very first study that discussed the role of awareness and familiarity in TDI studies.
Dann (1996)	Original Research	Journal of Travel & Tourism Marketing	Qualitative	This study transformed the fourth quadrant of psychological and holistic continua of TDI multi-facet model to affective component by utilizing linguistic content of mental image.
Fesenmaier & MacKay (1996)	Original Research	The Tourist Review	Conceptual/ Other	By using a poststructuralist interpretive method (i.e., deconstruction), this study underscored the role of TDI's symbolic elements in consumers' decision-making process. The study is among the first that touched upon the subject of visual imagery.
Baloglu & Brinberg (1997)	Original Research	Journal of Travel Research	Empirical	The very first structured study in tourism literature that attempted to measure the affective component of TDI by utilizing the affective space structure model.
MacKay & Fesenmaier (1997)	Original Research	Annals of Tourism Research	Empirical	This piece of research investigated the visual aspects (i.e., symbolic, experiential, and structural) of destination image. One of the

Author(s) (Year)	Type	Source	Approach	Contribution
				main contributions of this study is that the authors offered a theory which they named it 'image theory'. In this study, destination image is conceptualized as a tridimensional system in which two set of inputs (i.e., individual and marketer) forms the image of a destination. The visual marketer input in the study was conceptualized with three dimensions of uniqueness, texture, and attractiveness.
Jenkins (1999)	Original Research	International Journal of Tourism Research	Conceptual	This article followed the same paradigm as Echtner & Ritchie (1991) did, and suggested that a comprehensive investigation of TDI is only possible if both qualitative and quantitative approaches are employed together. The conceptualization of this study, later on, got translated to sequential exploratory mixed-method design in pragmatist research approaches.
Baloglu & McCleary (1999)	Original Research	Annals of Tourism Research	Empirical/ Other	This study offered a framework for TDI formation from the perspective of both stimulus and personal factors.
Perdue (2000)	Original Research	Tourism Analysis	Empirical	The very first study to call for more investigation into the intervening role of consumer confidence, resulted from consumer information processing mechanism, on TDI perception.
Pike (2002)	Review	Tourism Management	Conceptual	Comprehensively and systematically analyzed and discussed the origins, evolutions, trends and future orientation of TDI. This study concluded that the successful operationalization of TDI has not been achieved, and there are no alternatives for the largely criticized multi-attribute model.
Gallarza et al. (2002)	Review	Annals of Tourism Research	Conceptual	Comprehensively reviewed the TDI literature, and offered a conceptual framework for TDI. This study is among the very first to indicate that TDI is a complex system with multiple, relativistic, and dynamic nature.
White (2004)	Original Research	International Journal of Contemporary	Conceptual	For the very first time, this study pointed out the problematic conceptualization of 'image' by stating that it does not have any discriminant validity with other abstract

Author(s) (Year)	Type	Source	Approach	Contribution
		Hospitality Management		concepts such as perception and attitude in tourism literature. This study was also the very first to point out the absense of imagination in conceptualization of TDI.
R. Govers & Go (2005)	Original Research	Information Technology & Tourism	Qualitative	Among the early studies that investigated the reflection of TDI in online and virtual environments such as websites, weblogs, social media, online forums, etc.
Son & Pearce (2005)	Original Research	Journal of Travel & Tourism Marketing	Empirical/ Qualitative	For the very first time, introduced the concept of multi-sensory image to TDI literature. Nevertheless, the multi-sensory aspect was analyzed qualitatively and unstructured.
Deslandes, Goldsmith, Bonn, & Joseph (2006)	Original Research	Tourism Review International	Empirical	The very first study to address the measurement validity and reliability issues of three different TDI scales by utilizing the multitrait-multimethod matrix (MTMM).
Tasci et al. (2007)	Review	Journal of Hospitality & Tourism Research	Conceptual	Following the footsteps of Pike (2002) and Echtner & Ritchie (1991), this article tracked the evolution of TDI both conceptually and operationally. The complex nature of TDI is also discussed in addition to adoption of the system approach to investigate TDI. The evolution of TDI literature methodologies from quantitative to qualitative and from qualitative to mixed-method is demonstrated in this study.
Robert Govers, Go, & Kumar (2007)	Original Research	Annals of Tourism Research	Empirical/ Mixed	This study took the cognitive mapping of TDI to the realm of virtual TDI by adopting the phenomenographic post-positivist perspective and employing the artificial neural network analysis for unstructured texts. This article, furthermore, for the very first time, reported the mental imagery content of tourism's experiential nature.
Tasci & Gartner (2007)	Review	Journal of Travel Research	Conceptual	Attempted to comprehensively conceptualize the theory of image and TDI.
C.-T. Lin & Huang (2009)	Original Research	Expert Systems with Applications	Empirical	Among the very first studies that employed the appraoches of big data analytics and data mining for TDI investigation.
Tasci (2009)	Original Research	Tourism Review International	Conceptual	Following the footprints of Gunn (1972) and Echtner & Ritchie (1991), the author offered a

Author(s) (Year)	Type	Source	Approach	Contribution
				comprehensive semantic analysis of TDI terminology.
Stepchenkova & Mills (2010)	Review	Journal of Hospitality Marketing & Management	Meta-Analysis	This study reviews the literature of TDI from 2000 to 2007. The leading role of interdisciplinary studies, introduction of new methodologies, increase in qualitative research volume, and extension of TDI into web environment are among the most important trends that emerged from the review analysis.
Su (2010)	Original Research	Tourism Geographies	Mixed	Although not a direct part of TDI literature, this study is the very first to discuss the role of imagination in tourism consumption in general and TDI in particular.
X. Li & Stepchenkova (2012)	Original Research	Journal of Travel Research	Empirical	This research is an update on mapping studies of TDI which was first introduced by by Fridgen (1987). This study added to the litearure of collective mental image by focusing on associative memory rather than spatial memory.
Salazar (2012)	Original Research	Annals of Tourism Research	Conceptual	Although not a direct part of TDI literature, this study provides the second serious discussion in tourism literature related to the role imagination in TDI. The conceptual framework of tourism imaginaries is the main outcome of this study. Multiple connections between tourism and imagination were discussed as a powerful deconstruction tool for ideological, political, social, and cultural clichés.
Stepchenkova & Li (2012)	Original Research	Journal of Travel Research	Empirical/ Qualitative	By adopting an interdisciplinary approach, the biological concepts of richness, evenness, and dominance were applied to the qualitative aspect of image formation. The power law distribution of image component was one of the critical findings of this article as it implies the complex system of TDI.
Yang et al. (2012)	Original Research	Tourism Management	Empirical	From the methodological stand point, this study introduced the implicit association test (IAT) as a new approach to measure the implicit cognition aspect of TDI. This article showed that the implicit and explicit aspects of cognition towards the same destination might be different.

Author(s) (Year)	Type	Source	Approach	Contribution
Dolnicar & Grün (2013)	Original Research	Journal of Travel Research	Empirical	Following Deslandes, Goldsmith, Bonn, & Joseph (2006), this study investigated the validity of scales employed to measure TDI. Six different types of scales including multiple choice, dichotomous nominal (binary yes/no), bipolar 5-point likert, bipolar 7-point likert, 7-point semantic differential (SDS), and unipolar 7-point likert were examined. While in terms of concurrent validity, no statistically significant differences were found among the six aforementioned scales, the binary format showed the highest test-retest reliability (stability).
Lean, Staiff, & Waterton (2014)	Book	-	Conceptual	This book took on a multidisciplinary and socio-cultural perspective, and discussed the various subjects of mobile identities, imagination in travel literature, media, representation, poem, science-fiction, fantasy, desire, and daydreaming in relation to physical and non-physical travel. Although part of travel literature, this study is not directly related to TDI.
Stepchenkova & Li (2014)	Original Research	Annals of Tourism Research	Empirical	Expanding on their previous publications of Stepchenkova & Li (2012), the authors borrowed the concept of 'top-of-mind brand association' from the marketing literature, and applied it to the TDI context.
S.-B. Kim, Kim, & Bolls (2014)	Original Research	Annals of Tourism Research	Empirical	The very first study in tourism literature to employ the psychophysiological measures of heart rate and skin conductance in order to investigate the mental imagery processing of individuals.
Xiong, Hashim, & Murphy (2015)	Research Note	Tourism Management Perspectives	Qualitative	Following the footprint of Son & Pearce (2005), this study investigated the multisensory image aspect of TDI.
Lai & Li, (2016)	Original Research	Journal of Travel Research	Conceptual	Comprehensively investigated the conceptual issues of TDI and identified multiple vagueness issues of its conceptualization. The paper is concluded with a new conceptual definition that calrifies most of the previous internal and external vagueness of TDI conceptualization.

Author(s) (Year)	Type	Source	Approach	Contribution
Tasci, Khalilzadeh, & Uysal (2017)	Original Research	Current Issues in Tourism	Empirical	For the very first time, social network analysis (SNA) is employed in mapping TDI. One of the most important contributions of this article is that network analysis, specially multi-partite networks (e.g., bipartite), can be employed to eliminate the issues of reductionist appraoch pointed out by Mazanec (1994).
Bastiaansen et al., (2018)	Original Research	Journal of Destination Marketing & Management	Empirical	The very first study to employ Electroencephalography (EEG) in TDI studies. Individuals were shown some motion pictures about the destination of interest and their unconscious/emotional responses to destination stimuli got analyzed in this study.

2.4. Mental Imagery

According to Kosslyn (1996), imagery is essential in many human activities, and it is a basic form of cognition. The literature suggested that visualization of the referents of a set of word predicts the ability to learn them (Paivio, 1971). These findings along with other experiments indicated that images are internal representations of the externally related objects (Kosslyn, 1996). Some philosophers suggested the act of imagination rises emotional and behavioral responses (Gendler, 2013). In tourism destination research, affective and conative components of TDI can be explicit examples of such responses.

Traditionally, there are five roles of imagination, which were the subject of some significant discussions among scientists: Imagination to understand other minds, to cultivate moral understanding and sensibility, to reconfigure responses, to plan and to make counterfactual reasoning, and finally to provide knowledge of possibility (Gendler, 2013). The last two (i.e. counterfactual reasoning planning and knowledge of possibility) are important in consumer decision-making.

2.4.1. Imagination

In the psychology literature, imagination is defined as a complex cognitive process and the capacity of human beings to form a mental representation of the objects, persons, and social events not immediately presented to the senses (Singer, 2000; Strickland, 2001). This definition is retrospective in nature, meaning that imagination is based on memory recalls that are built upon previous experience.

Recent research on mental simulation and imagination (also prospection) has been focused on four main areas of the relationship between imagination and memory: The notion of false memory, the role of imagination in mental simulation, the role of imagination in enabling empathy and perspective taking, and finally the role of imagination in counterfactual reasoning and planning for the future (Gendler, 2013). Mullally and Maguire (2013) explained that memory, imagination, and prediction are not distinct cognitive functions but are close links in their underlying processes. According to Scene Construction theory (SCT)[13], episodic memory, navigation, fictional scenes imagination and future imagination (even perhaps dreaming and mind-wandering) encompass many processes that rely on hippocampus for the reconstruction of spatially coherent scenes (Mullally & Maguire, 2013). All of these areas are important and debatable in the context of hedonic consumption. They may affect the belief system and attitude towards a particular behavior in consumers. As Markman, Klein, and Suhr (2009, p. VII) pointed out:

[13] Scene construction theory (SCT) claims that a "set of brain areas, and the hippocampus in particular, facilitates the construction of complex spatial contexts or scenes into which event details are bound, and this scene construction process is common to episodic memory, imagination, and navigation" (Mullally, Hassabis, & Maguire, 2012, p. 5646).

> "*According to Decety and Stevens, simulation of movement precedes and plans for upcoming physical action and activates the same cortical and subcortical structures that are responsible for motor execution. Moreover, they argue, motor simulation provides a "gateway to human social understanding" by allowing the motor system to resonate when it perceives the actions, emotions, and sensations of others*."

2.4.2. Prospection

While prospection includes the same mental process as imagination, prospection is more of prospective. Being prospective rather than retrospective is the key to prospection. Simulation is another keyword in prospection. According to Simulation theory (ST)[14], the attribution of mental state, through different mechanisms such as imagination and prospection, is shaped by the process of replication and emulation of the mental state (Gendler, 2013). In hedonic consumption, prospection is the ability to pre-experience the future by simulating the incident or the object in mind (Gilbert & Wilson, 2007).

The coexistence of imagination and perception makes it difficult to differentiate them as separate human faculties. For such reason, most imagination studies consider imagination as an implicit state. However, psychologists agree that imagination and prospection happen in the absence of the object or experience with an intentional context while the external stimuli are a necessity to launch the process in perception. Relating the absence or the presence of the object or experience to the imagination and prospection leads to an obvious conclusion. Imagination is the function of visualization of past experience which has already occurred and ended while prospection is the visualization of the future experience that has never happened in the past.

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[14] Simulation theory (ST) is one of the two major theories of human mind-reading (the other one is theory theory (TT)). ST suggests that people predict and calculate others' mental processes using their own mental mechanism (Gallese & Goldman, 1998).

Imagination and prospection are two important concepts when it comes to hospitality and tourism products such as services and experiences. The consumer's cognitive process, in the context of tourism and hospitality services consumption, is comprised of abundant moments of imagination and prospection. Each individual will have a unique appraisal of mental imagery while making decisions and consuming the service and experiences offered by these industries.

2.4.3. Typology

Primarily, imagination is divided into three categories of creative imagination, sensory imagination, and recreative imagination. Creative imagination is the unexpected combination of ideas usually in an unconventional way which is comprised of six characteristics, namely Exploration, Concentration, Intuition, Novelty, Productivity, and Sensibility. Exploration is the ability of individuals to explore the unknown. Concentration is the ability of individuals to formalize ideas through focus. Intuition is the ability of individuals to make immediate associations to the target. Novelty is the ability of individuals to create uncommon ideas. Productivity refers to the number of ideas a person creates, and finally, Sensibility refers to the ability of individuals to evoke feeling and make sense out of ideas (Y. Hsu, Chang, & Liang, 2013). Sensory imagination is a similar experience as the perception in the absence of stimuli. Sensory imagination is dependent on the sensoray modalities, and it will be explained in a separate section (sensory modals) Recreative imagination is the ability to experience or think differently about something (Gendler, 2013). Recreative imagination is also named as Reproductive imagination (Y. Hsu et al., 2013). Reproductive imagination is composed of four characteristics, namely Crystallisation, Dialectics, Effectiveness, and Transformation. Crystallisation is the ability of individuals to explain abstract ideas with concrete examples. Dialectics is the ability of individuals

to improve the ideas by analyzing them thoroughly and logically. Effectiveness is referred to generating effective ideas and finally, Transformation refers to the ability of individuals to perform tasks based on the knowledge they have about the topic (Y. Hsu et al., 2013). Although recreative imagination typology might be useful for creating a measurement scale to measure imagination, fundamental issues arise as sensory imagination is totally ignored since sensory modality is an essential part of the mental image. Based on the definitions and the constructs' structure, a valid argument would be that sensory and creative imaginations exist in both imagination and prospection while reproductive imagination is only limited to imagination.

Another categorization also exists in the literature of imagination, which is relatively unexplored. Imagination in terms of structure and content is divided into three categories of propositional imagination, objectual imagination, and active imagination. Propositional imagination is imagining something/an object in a particular position. Objectual imagination is the representation of a real or make-believe entity or situation, and active imagination is the representation of a sort of activity or experience (Gendler, 2013).

2.4.4. Imagery Debates

Although both Plato and Aristotle stated that images are deceptive and astray in nature, Aristotle saw them as essential in human cognition (Thomas, 2014). It is possible to argue that, based on imagination definitions, mental image plays a vital role in mind cognitive faculties. Although it is argued that imagination, unlike perception, is under the control of one's will (Thomas, 2014), the process of mental image analysis follows the similar procedures as perception (Kosslyn, 1996). Studies mostly have focused on people's imagination capacity and their imagination ability as an implicit state of the mental process; in other words, they have not

investigated the actual image formed in people's minds (O'Connor & Aardema, 2005). Although mental images may form on any of the sensory modalities, visual imagery has been the focus of studies and debates in imagination (Gendler, 2013).

Now the question here is whether a visual mental image is picture-like in the structure or not? There are different theories in mental imagery trying to answer this question. Mental imagery is discussed as far as human beings were trying to understand the cognitive process (Thomas, 2014). Mental imagery plays a pivotal role both in memory and motivation because it is the reconstruction of actual perception which has happened in the past as well as the anticipation of a desired or a feared future experience (Thomas, 2014). Imagination is referred to the mental representation of different sensory modalities such as visual, feel, smell, sound, or flavor of something. Quasi-perceptual nature of an experience shown by using sensory verbs (Thomas, 2014) is the indicator of an active imagery.

Many theories have tried to explain mental imagery. Some of the most famous theories are quasi-pictorial, description/propositional, and perceptual activity. All these three theories can be classified as simulative theories. However, they have distinct characteristics. For example, quasi-pictorial is considered as a computational model while perceptual activity is counted as an enactive theory. Other theories also contributed partially to imagery; as such, dynamical systems can be named (Thomas, 2014). Some of the major arguments about mental imagery in modern philosophy and psychology are originated in the image theory of linguistic meanings, which indicate that there is a picture-like mental image. Although for concrete nouns (e.g., tree, snake, etc.), this approach works well, in term of representing certain linguistic expressions such as logical expressions (e.g., wind is blowing faster), there are serious critics to this theory (Thomas, 2014).

A major milestone in imaginary studies was when Kosslyn and his collaborators provided experimental evidence of visual images by mental scanning (Kosslyn, Ball, & Reiser, 1978). Their findings revealed some of the important spatial properties of the mental images, which resulted in the quasi-pictorial theory of mental imagery. Later on by the introduction of the description theory, series of debates known as Analog-propositional debates took place that led to tremendous improvements in the knowledge of mental imagery (Thomas, 2014). These debates are also known as picture-description debates, and sometimes as imagery debates. Propositional representation (description) indicated that mental image as a "mental sentence", contains unambiguous meaning of an assertion, and relations, which is called predicate. The relations ties more than one or more entities, which is called arguments. Propositional representations are symbols rather than everyday languages (like English), but, they can be represented in the form of plain languages as well, e.g. a ball sitting on a box (Kosslyn, 1996). The propositional or description theory elaborates upon the mental representation in the form of linguistic description of visual scenes (Thomas, 2014). On the contrary, depictive representation (quasi-pictorial) is a type of picture specifying the space and points of configurations along with location and spatial properties purely functional (Kosslyn, 1996). Depictive representations convey meanings through resemblance to the objects. However, the analog side of the debates or quasi-pictorial theory is focused on spatial relationships between objects in mental representation (Thomas, 2014). The quasi-pictorial theory is a computational model of the mental image as a digitalized picture within a simulation program (Kosslyn, 1996). Quasi-pictures are not exactly the same as photos or pictures that someone can hang on the wall as it is only a simplistic and implausible conception! Nevertheless, they are similar to pictures, although an individual is not needed to have inside eye to see these mental representations, they have similar properties of true pictures (Kosslyn et al., 1978). On the other hand, unlike quasi-

pictorial theory, description theory and Pylyshyn proposed an alternative non-pictorial representation of the visual scene. He claims mental images are structural descriptions formed about a visual concept (Pylyshyn, 1973). Anderson (1979) offered a formal proof that the two main contending theories are empirically equivalent. He suggested that one can always formulate a propositional structure to mimic a depictive one (Kosslyn, 1996). Finally, perceptual activity theory indicated that the end-product of the perception is not an inner image or description, rather, it is the ongoing activity of schema-guided perceptual exploration of the environment (Thomas, 1999). Some psychologists are in favor of the perceptual activity theory; according to them, although this theory does not include computational mentalism, it is possible to model it (Thomas, 1999). In addition, although Kosslyn et al. explained that comparing the mental image to real image is for the simplicity purpose only, there are still debates as to why the mental image is not an image-like entity (Nishizaka, 2003). Nevertheless, it does not matter whether the mental image is a scannable real image, or it is just a mental process with no particular place or entity in a time unit; it should be bear in mind that mental image has image-like sensory properties which are descriptive and explainable in natural languages.

2.5. Theoretical Foundation

The present study, due to the adopted methods, can measure the mental image for both quasi-pictorial and description theories. It is imperative to consider both of the above-mentioned theories since Richardson in 1969 proposed there may not be a universal human cognition. Some people may record their experience as an image while others may record it as words (proposition) (White, 2004). That said, most of the perceptions can be measured through questionnaires

considering the similar mechanism shared between imagination and perception. Hence, the questionnaire developed for the current research is useful and effective for both ways.

It is worth pointing out that in the present study, the theory adopted to explain the process of imagination and its subsystems is based on the depictive representation theory as not only imagery relies on cortex's topographically organized regions (Kosslyn, 1996) but also recent findings and imagery studies have depicted there is enough evidence to believe that picture-like mental image exists (Kosslyn, Ganis, & Thompson, 2010). Having said that, all of these theories share a commonality, which leads to many hybrid combinations of previous theories. Two of the most agreed commonalities are perception and mental representation. Perception plays an important role in all of the theories mentioned so far, and the mental representation is a multidimensional (sensory modalities) phenomenon. Indeed, numerous researchers denoted that the same part of the brain is active in both visual perception and visual mental imagery. Moreover, neuropsychological data indicated that imagery and perception share processing mechanism (Kosslyn, 1996).

2.5.1. Protomodel

The mechanism of the retina (low-level vision) can be described in remarkably more precise details unlike higher cortical processing, which is responsible for visual memory (high-level vision) as it is less known compared to low-level vision.

High-level vision relies on previously stored information about the properties of objects and events and is responsible for creating and utilizing mental imagery (Kosslyn, 1996) while low-level visual processing is driven purely by stimulus input and uses sensory input to locate edges, detect motion, register depth, and so on.

Kosslyn (1996) in his book, "*Image and brain: the resolution of the imagery debate*", provides a protomodel for visual perception. The model is supported by numerous studies and claims a visual mental image follows the same process of visual perception by activating the visual buffer. The source of activation in the visual mental image is not external sensory input (or it can be called stimuli); it is generated by mental priming based on the information retrieved from visual memory. Kosslyn (1996) protomodel of visual perception/mental imagery is shown in Figure 2.

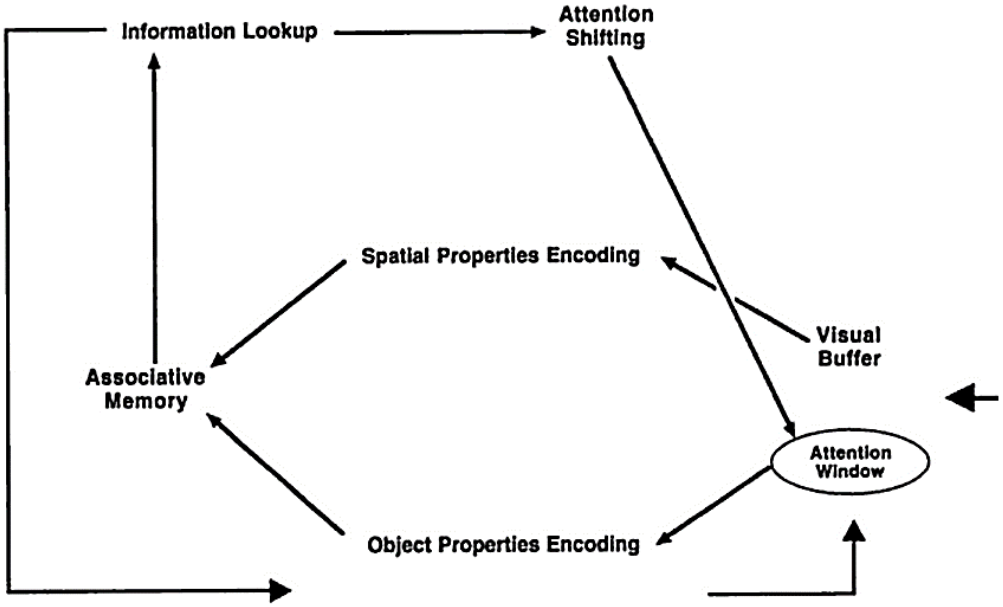

Figure 2: Protomodel of Visual Perception/Mental Imagery Adopted from Kosslyn (1996)

There are several subsystems during the construction of a mental image in the imagination process. As it is demonstrated in Figure 2, the high-level visual system is decomposed into seven subsystems. The first subsystem, the visual buffer, is a spatially organized structure in the occipital lobe that provides the input to the rest of the high-level visual system. Perceptual and mental images are patterns of activation in this structure. The visual buffer is similar to a reflection of reality; the reality contains so much information that cannot be processed at the same time. Hence, the second subsystem, the attention window, selects the configuration of activity in one region of

the visual buffer for further processing and then goes to another region. In the third subsystem, information in the attention window is sent to two cortical visual systems of spatial properties encoding and object properties encoding. The ventral system is responsible for encoding object properties such as shape, color, and texture and is located in the inferior temporal lobes. Stored representations of such information (i.e. shape, color, and texture) can also be activated to prime the ventral system to encode an expected property or to generate a mental image. The fourth subsystem (Dorsal system) is responsible for spatial properties encoding such as location, size, and orientation, and is located in the posterior parietal lobes (Kosslyn, 1996). In the fifth subsystem, information about object properties and spatial properties come together in an associative memory, which most likely relies on tissues of the posterior, superior temporal regions. If the input of the associative memory does not link to a single representation, the best-matching representation is used to guide a search. To initiate this search, at the sixth subsystem, the information lookup subsystem, located in the dorsolateral prefrontal cortex (DLPFC), accesses the information about a distinctive part or characteristic of the most activated object stored in the associative memory. Finally, the seventh subsystem (attention shifting), located in frontal, parietal, and subcortical regions, uses the repreented location or the characteristic of the object to direct the attention window to the appropriate location (Kosslyn, 1996). At the same time, the ventral system is priming the parts or the characteristic that have already been seen. New information is then encoded and matched to the stored information. This cycle will be repeated until the object is identified (Kosslyn, 1996).

2.5.2. Sensory Modals

Like all other cognitive activities, mental imagery is not a single function; it stems from the collection of brain functions working together. In addition, there are different types of imagery; each using similar processes to modality perceptions. Imagery involves and affects both the motor system and the body just as much as the actual perceptual experience (Kosslyn et al., 2010). As discussed in previous sections, mental images are internal representations of modality perceptions in the absence of the subject. The brain responds to the lack of observable stimuli by relying on the information stored in memory (Kosslyn et al., 2010). Nevertheless, the mental image is not only a simple recall of previously perceived objects or experiences, but it is also synthesized combinations and modifications of previously stored perceptual information in a novel way (Kosslyn et al., 2010).

The image is not only in visual form, but it includes auditory and kinesthetic forms (Kosslyn et al., 2010). Some sources have divided these forms even to smaller categories of visual, auditory, cutaneous kinesthetic, gustatory, olfactory, and organic (Betts, 1909). However, not all forms of imagery emerge in response to the act of imagination, and their emergence depends on the subject of the imagination (Kosslyn et al., 2010).

Visual imagery, which is the most common studied modality, is the judgments of the shape or the color of objects. Also, it includes some mental tasks such as image rotation, pattern finding, and the length, width, and heights evaluations. Studies have shown that this form of imagery relies on actual images. The early visual cortex activation is not likely to be the result of the activation of other areas, but it is systematically related to spatial properties of the imaged object (Kosslyn et al., 2010). Multiple studies have failed to find the activation in the early visual cortex. Kosslyn et al. (2010) suggested three reasons for this failure: 1. high-resolution, detailed tasks are more

likely to activate the early visual cortex, 2. spatial task requirements are less likely to activate the early visual cortex, and 3. using more sensitive neuroimaging techniques may increase the chance of detecting the activation early visual cortex.

The auditory form is not as frequently studied as other forms of imagery, and most of the studies about auditory are about music images. Previous studies have shown that at least, some of the neural structures that play a key role in pitch discrimination in perception also play a comparable role in imagery.

Kinesthetic or motor imagery is the third form of imagery and refers to the imagination of movement or performing specific acts. Despite the fact that time and space in mental imagery are pliant (Gilbert & Wilson, 2007), studies have shown that people can give a remarkably comparable time estimation to the actual time for a specific task of motor imagery (Kosslyn et al., 2010). In addition to motor commands, kinesthetic representation becomes activated in motor imagery as well.

Motor imagery relies on the same cortex that controls the body movement and just like the other imageries, relies on a distinct mechanism. Nevertheless, visual imagery is often accompanied by motor imagery (Kosslyn et al., 2010).

2.5.3. Rational & Hypotheses

This study examines the hypotheses that are developed based on conceptual definitions, logical explanations, and literature review of the related concepts. In order to keep the consistency of hypotheses' numberings, the following coding scheme is developed: "a", "b", "c", "d", and "e" are assigned to variables "vividness", "control (autonomy)", "richness", "salience", and "spatial properties" respectively; "1" and "2" are assigned to the variables "visitation" and "knowledge"

respectively; "1×2" is allocated to the interaction between "visitation" and "knowledge (familiarity)"; and finally, "3" to "5" are assigned to structural moderation effects.

The first assumption, which this study is built upon, is that imagination does exist and it exists based on the mental image, which is a multidimensional construct that can be measured with a questionnaire based on the psychometric analysis. Following the quasi-pictorial theory, multiple properties are assigned to the picture-like mental image. Vividness, richness, autonomy, salience and spatial properties are among the main image properties which have been studied extensively in imagination literature. Sometimes the borders of these properties are not easily distinguishable. This matter specifically holds true for vividness, richness, and salience as they overlap the most and so are used interchangeably. For example, Hassabis, Kumaran, Vann, and Maguire (2007) indicated that richness, as an experiential index, is composed of several subcomponents (e.g., spatial coherence, spatial reference, and perceived salience). In another study, Kihlstrom, Glisky, Peterson, and Harvey (1991) considered the concepts of vividness and richness the same and only used the term "vividness". Theoretically, however, it is possible to distinguish these concepts: Richness is more about the content and details of imagination and mental image, whereas vividness is more about the clarity and sharpness of the mental image, yet salience is related to solidarity and stability of mental image (Hassabis et al., 2007; Robin & Moscovitch, 2014).

Although all sensory modalities are included in imagination literature, visual modality heavily dominates others. Betts (1909) Mental Imagery (QMI) is the only scale developed for all modalities of visual, auditory, cutaneous kinesthetic, gustatory, olfactory, and organic. Vividness is either measured as a single global item measure (Robin & Moscovitch, 2014) or as a latent construct with multiple items (in visual imagery questionnaire (VVIQ) developed by Marks (1973)). The concept of vividness as used in VVIQ has only been employed in the visual realm,

but it can also be used in other modalities such as auditory since, in some cases, a positive correlation has been reported among different modalities (Kihlstrom et al., 1991).

Concerning familiarity (knowledge), Robin and Moscovitch (2014) indicated that familiarity, precisely, spatial contextual familiarity is a critical factor in imagination richness and vividness. In his study, he showed that the vividness and richness of the imagination and prospection of people who were familiar with attractions were significantly higher than those who were not familiar with the attractions.

In the tourism literature, TDI is not only relevant to tourists and visitors; TDI of non-visitors is also critical especially in image formation studies which are less common compared to other subjects of TDI research (Cherifi et al., 2014). The simulation process in prospection explained by Gilbert and Wilson (2007) is supported in Cherifi et al. (2014) study. Cherifi et al. (2014) suggested that non-visitors imagine a destination that they have never been to by mentally comparing it to the closest places which they have previously visited. Cherifi et al. (2014) found that the image of non-visitors is persistent to change; they explained that the content of the first mental image, which individuals acquire in their early life, is different from person to person, but the common characteristic among these mental images is their pertinacious to change. Cherifi et al. (2014)'s finding about the persistence of non-visitors' TDI is in close agreement with the "control (autonomy)" concept in mental imagery discussed by Gordon (1949). According to Gordon (1949), imagery is divided into two distinct types of controlled and autonomous. She explained that autonomous imagery is independent from other functions, is resistant to change, and tends to become stereotyped more often compared to controlled imagery, which is well-integrated with other functions (e.g., thoughts, emotions, and perceptions) and the totality of psychic process (Gordon, 1949). It is possible to argue that people with more knowledge and

familiarity of a destination (which can be the result of several sources such as media, self-interest, or common knowledge) can not only create a clearer and brighter (sharp) mental image than those with less knowledge and familiarity but also can have more autonomy over the image compared to less knowledgeable and less familiar individuals. The argument might be correct since the information that can be recalled from memory to build the image is more abundant for people with more knowledge about a particular destination. The same argument can be employed with regards to people who have previously visited a destination and those who never have been to the destination. Hence:

H_{1a}: *The mental image of previous and current visitors to a destination is more vivid than the mental image of those who have never visited the destination.*
H_{2a}: *The mental image of people who are more knowledgeable about the destination is more vivid than the mental image of those who are less knowledgeable.*
H_{1b}: *Current and previous visitors to a destination exhibit higher levels of autonomy over their imagination than those who have never visited the destination.*
H_{2b}: *People who have more knowledge of the destination show higher levels of autonomy over their imagination than those with less knowledge.*
$H_{1\times2a}$: *knowledgeable visitors have higher image vividness compared to others.*
$H_{1\times2b}$: *knowledgeable visitors have more autonomy over the image compared to the others.*

Richness and salience of image compared to vividness and autonomy are relatively newer concepts in imagination studies (Hassabis et al., 2007). Hassabis et al. (2007) revealed that patients with hippocampal amnesia[15] have difficulties imagining new experiences and show significantly lower richness compared to regular people. Although Hassabis et al. (2007) could not find any differences with regards to salience, they showed that images for these patients are more

[15] Amnesia is severe memory loss with retained cognitive abilities resulting from significant brain damages in different brain regions including a circuit which comprises the hippocampus, the diencephalon and the fibers connecting them (Spiers, Maguire, & Burgess, 2001).

fragmented compared to regular people. In addition, showed that people who are more familiar with specific attractions demonstrate significantly more enriched imagination compared to people who are less familiar with the same attractions. Since prospection is all about imagining an experience that has never happened before, it is possible to argue that richness of visitors and non-visitors or people with different levels of knowledge about the destination is significantly different. Therefore, this study suggests the following hypotheses:

H_{1c}: *The mental image of previous and current visitors to a destination is richer compared to the mental image of those who have never visited the destination.*
H_{2c}: *The mental image of people who are more knowledgeable about the destination is richer compared to the mental image of those who are less knowledgeable.*
H_{1d}: *The mental image of previous and current visitors to a destination is more salient compared to the mental image of those who have never visited the destination.*
H_{2d}: *The mental image of people who are more knowledgeable about the destination is more salient compared to the mental image of those who are less knowledgeable.*
$H_{1\times2c}$: *knowledgeable visitors show a richer image compared to the others.*
$H_{1\times2d}$: *knowledgeable visitors show a more salient image compared to the others.*

The idea that spatial properties play a crucial role in mental image construction has been recently emphasized in different studies (See for review, Hassabis et al., 2007; Robin & Moscovitch, 2014). Spatial properties influence the imagination process in three different ways: 1) through spatial memory, 2) through episodic memory, and 3) through the imagination of future events (prospection, in the case of no familiarity). Spatial properties show high correlations with vividness and richness. People who are less familiar with the context tend to use little spatial information in their description of the scene, and often, their descriptions lack details (richness) and vividness (Robin & Moscovitch, 2014). The interrelation between spatial properties and richness is so high that studies like Hassabis et al. (2007) consider spatial properties as a subcomponent of richness experiential index. Spatial properties usually appear in two main forms

of spatial references and spatial coherence. Spatial reference is about spatial details and spatial information in imagination description, whereas spatial coherence is about the spatial integrity of the mental image (Hassabis et al., 2007). Spatial coherence is closely related to the salience of the mental image as well as the fragmentation degree of the mental image. Based on this evidence, it is possible to argue that visitors and people who are more familiar (knowledge) with a destination demonstrate stronger spatial properties compared to non-visitors and less familiar people. Therefore, this study proposes the following hypotheses:

H_{1e}: *The mental image of previous and current visitors to a destination is stronger regarding spatial properties compared to the mental image of those who have never visited the destination.*

H_{2e}: *The mental image of people who are more knowledgeable about a destination is stronger regarding spatial properties compared to the mental image of those who are less knowledgeable.*

$H_{1\times2e}$: *knowledgeable visitors show stronger spatial properties in their mental image compared to the others.*

As previously discussed, Yang et al. (2012) showed that in situations where explicit cognitive evaluation of two competing destinations are equal, implicit cognitive evaluation could be different. To measure implicit cognitive, Yang et al. (2012) employed Implicit Association Test (IAT), which is based on response latency[16], as an indirect measure of social cognition. Since their method is based on response time, one may argue that the difference in participants' response time can be due to the clarity of the mental image. A person with a clear mental image of a destination needs less time to respond since his/her cognitive evaluation confidence is high while

[16] Response latency is usually measured with the percentage of correct responses and the amount of time it takes to respond (in milliseconds).(Greenwald, McGhee, & Schwartz, 1998). In response latency, the shorter time is associated with more positive implicit cognition (Yang et al., 2012).

a person with a blurred mental image has less confidence and hence needs more time to make a judgment. If assume that this claim is true, the difference in explicit and implicit cognitive evaluations can be due to the moderation effect of the mental image on the structural relationships of cognitive, affective, and conative destination image. The literature suggests a sequential (hierarchical) structure for the interrelationships of TDI components (Agapito et al., 2013). Hence, the current study will investigate the following hypotheses (Figure 3):

H_3: *Mental image positively moderates the positive relationship between the cognitive destination image and the conative destination image.*
H_4: *Mental image positively moderates the positive relationship between the affective destination image and the conative destination image.*
H_5: *Mental image positively moderates the positive relationship between the cognitive destination image and the affective destination image.*

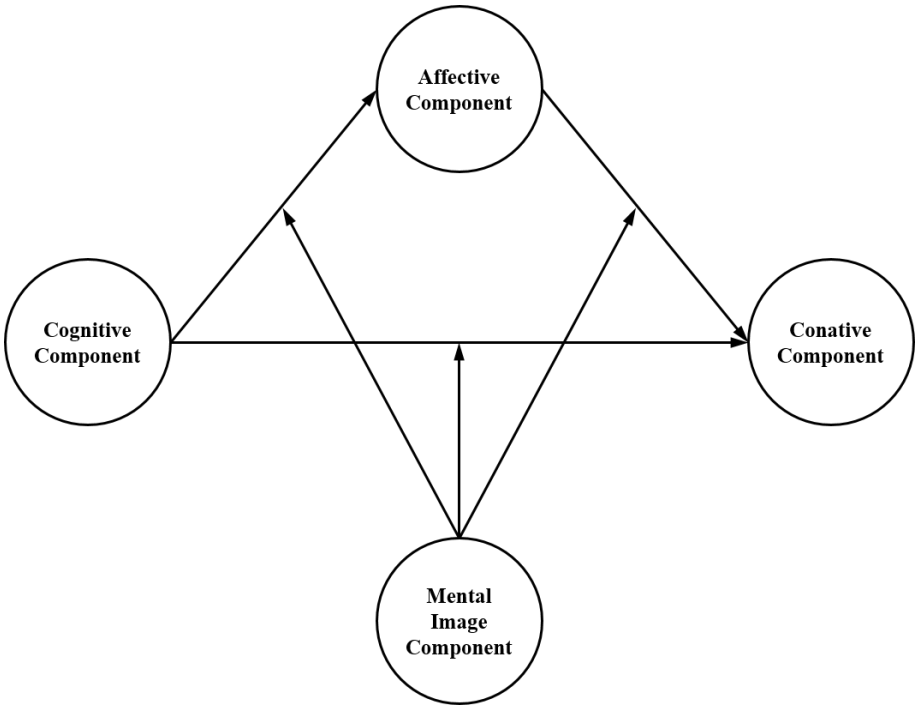

Figure 3: The Conceptual Model for the Moderation Effect of Imagination on TAM of TDI

CHAPTER 3: METHODOLOGY

3.1. Introduction

After a careful review of the literature in Chapter 2, Chapter 3 operationalizes the research agenda. Concepts and measurements are explained in detail throughout the chapter. Chapter 3 establishes and identifies the study's scales and pinpoints its boundaries. The chapter starts with the "Research Design" section, explaining the study's approach towards imagination and TDI. This section justifies the need for multiple studies, which are intended to 1) identify the overlooked aspects of TDI and 2) design a scale to measure destination mental image. The next section, entitled "Operational Definition", provides the reader with further clarifications of the definitions of concepts and constructs, and the way in which they are measured to facilitate their operationalization. The next section, "Instrument Design", explains the process by which the imagination scale was designed. This section includes two studies: Phenomenon Crystallization (Study 1) and Item Generation (Study 2). The outcome of the first two studies was a questionnaire designed to measure a tourist's mental image of a destination. The next section of this chapter is dedicated to a third study, "Pilot Study", which purified and tested the measurement properties, validity, and reliability of the imagination scale. Finally, the last section of this chapter, entitled "The Experiment", presents a study that was an experiment designed to test the dissertation's hypotheses, previously elucidated in Chapter 2.

3.2. Research Design

This study adopted the mixed method design as explained in Creswell (2009), using a combination of qualitative and quantitative approaches. Specifically, the sequential exploratory design type (b) (See, Creswell, 2009) was chosen for the purpose of this study due to two reasons. The quantitative study (experimental design) was necessary to test the hypotheses on structural relations of imagination's constructs, and to test the relationship between imagination and TDI. On the other hand, as there is no scale for imagination measurement, this study required 1) a qualitative-quantitative phase to design a scale, and 2) test the reliability and validity of the designed scale. It should be noted, however, that this study was not exploratory in general; the exploratory approach was required for the survey design section only. The sequential exploratory design type (b) is composed of five steps: 1) qualitative data collection, 2) qualitative data analysis, 3) quantitative data collection, 4) quantitative data analysis, and 5) interpretation of the entire analysis. Following the claim that one of the major components of TDI is missing in TDI studies, we aimed to define the measurement of the mental image. No instrument has been developed in tourism studies to measure the mental image of a destination; we adopted the qualitative approach to gain a more in-depth knowledge of the imagination phenomenon in the context of destinations. Another reason for choosing the qualitative approach was that surveys developed in psychology for imagination measurement are not updated because psychologists (specifically neuropsychologists) no longer use questionnaires and as an alternative use new techniques such as fMRI[17]. The results of the qualitative phase were utilized in the quantitative phase to test the

[17] Functional magnetic resonance imaging or functional MRI (fMRI) is a neuroimaging technique that uses MRI technology to measure the activity of the brain through blood flow change detection.

properties of the designed instrument and to test the hypotheses proposed by the current dissertation. The principles and directions of basic scientific research which seek new knowledge about a psychological phenomenon were followed, with the hope of establishing a theoretical explanation of the phenomenon, as well as investigating the nature of the relationships between variables (D. C. Miller & Salkind, 2002). Following the principles of research design explained above, four studies were designed: Study 1 (Phenomenon Crystallization), Study 2 (Item Generation), Study 3 (Pilot Study), and Study 4 (The Experiment). Before each study is explained in detail in the following sections, an operational definition is proposed in order to identify measurements, boundaries, assumptions, and temporal properties of variables and constructs.

3.3. Operational Definition

In the conceptual definition proposed by Lai and Li (2015), six characteristics to measure TDI were mentioned, and four of these characteristics – 'sensation', 'perception', 'cognitive map', and specifically 'attitude of the destination' – have been the focus of traditional and mainstream TDI studies. These four characteristics are well-studied constructs and are measured employing existing scale items. Generally speaking, TDI, as an attitudinal construct, is comprised of three main components, cognitive, affective, and conative, which have also been studied in detail in previous studies.

Mental representation, consciousness, and memory in definition, however, are characteristics actually related to destination imagination that have rarely been studied (if at all) in mainstream research. Adopting the conceptual definition of TDI by Lai and Li (2015), as well as the process of mental imagery (Kosslyn, 1996; Kosslyn et al., 2010), the current study developed the following operational definition:

Destination mental image is primarily a picture-like multisensory, multimodal higher-order latent construct with dynamic spatial properties related to a particular destination.

When designing the QMI, one of the earliest and the most successful attempts to measure imagery, Betts (1909) employed five sensory imaginations – visual, auditory, tactile, gustatory, and olfactory – along with the self-body image (organic) and kinesthetic imagination. Similarly, Kosslyn et al. (2010) described the three most common imagery modalities – visual, auditory, and motor imagery – in which the latter possesses many commonalities with kinesthetic sensory imagery. Over a century of studying imagery, multiple properties have been added to 'mental image'. Among these properties, control (autonomy) over the image (Gordon, 1949), vividness of the image (Marks, 1973), sense of presence or narrative perspective (Hassabis et al., 2007; Rice, 2007), spatial coherence, spatial reference, and vantage point (Hassabis et al., 2007; Rice, 2007), richness and detailed content (Hassabis et al., 2007; X. Li & Stepchenkova, 2012), and salience (Hassabis et al., 2007) are the most important, and hence were considered in Studies 1 and 2 (especially 2) when developing the questionnaire.

The above-mentioned mental image properties' operational definitions are as follow. Control (autonomy) over the image is defined as the amount of intentional changes that one can apply to their mental image of a phenomenon. Usually, initial images are autonomous and resistant to change. The vividness of the image is the level of clearness and sharpness (brightness) in one's constructed mental image. The sense of presence (i.e. narrative perspective) refers to the storyline of one's imagination. In other words, who is the storyteller? Is the person who is imagining an experience see himself/herself as part of the experience or not?

Spatial properties of imagination has a close relationships with richness, salience and sense of presence, and is composed of two main components: Spatial reference, which is the presence of spatial information in the constructed mental image, and spatial coherence, which is the integrity and coherency of mental image and deals with the fragmentation degree of an imagination process. Spatial properties are linked to the relative and absolute spatial relationships among the imagined elements of humans, incidents, and objects with or without reference and vantage points. The vantage point is the equivalent of bird's-eye view. In other words, it points out to where the storyteller is standing in the mental image of which he/she has created; does he/she see himself within the story or does he/she see himself as if they are watching the objects from a rooftop?

Richness is about the abundance and frequency of information and details in the content of imagination. Imagination content can be assumed as a multidimensional construct with multiple components such as the presence of entities, the presence of thoughts/emotions, and sensory descriptions. The presence of entities in imagination refers to the countable units of human subjects, objects, elements, incidents, etc. The sensory description refers to visual, auditory, tactile, gustatory, olfactory, and motor imagery modalities. Thought and emotion presence refers to human subjects' cognitive and affective processes such as pleasantness, happiness, etc. Finally, salience is about the degree and extent of which the mental image is noticeable. Salience is a close concept to spatial coherence and acts like a bridging concept among spatial properties, vividness, and richness of mental image.

Independent variables related to the hypotheses were knowledge and visitation. Visitation was defined as the number of previous visits to the destination. If the answer to visitation was zero, it indicated that the study participant had not previously visited the destination. Conversely, if the response to the number of past visitations was equal to one or more than one, the participant

was considered a visitor. It should be noted that business visitors – people who either stayed at a hotel or participated in meetings and did not go sightseeing, who were in transit at the airport, or who did not have any touristic intentions – were not counted as people with previous visit experience. Same-day visitors, however, although not 'tourists', were included in the study sample, since they also visited a place and gained knowledge about it. Moreover, the visits had to be recent; to be more precise, visits occurring more than two years ago were excluded from the analysis due to the increased likelihood of false memories[18].

Knowledge of the destination was defined as any form of information, which concerned the destination. The information could be in the form of a study, narrative, picture, media, etc. Previous knowledge (familiarity) is essential to the imagination. Four 'conditions' could have occurred depending on the factors of 'knowledge' and 'past visitation', but only three were possible. Obviously, if the study participant had not been to the destination, he/she was not considered to be knowledgeable. Conversely, if the study respondent had not visited the destination but had heard about it via any medium (e.g., friends and family, media), the person was considered to be knowledgeable. Additionally, if the study participant had previously visited the destination, it meant that he/she possessed some knowledge about the destination. The fourth condition, that a person had visited a place but did not possess any knowledge about it, was considered impossible.

To the best of the researcher's knowledge, no study has ever discussed the construct-order, dimensionality, and measurement theory of the mental image, either as a manifest variable or as a

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[18] False memories is an important subject in tourism studies (See Braun-LaTour, Grinley, & Loftus, 2006, for review), and are defined as: "[…] either remembering events that never happened, or remembering them quite differently from the way they happened […]" (Roediger & McDermott, 1995, p. 803).

latent construct. Hence, after the second study (Item Generation), and after combining the results of the first two studies with the literature within the boundaries of the technical definition, the researcher discussed the construct and structural properties of the destination mental image.

3.4. Instrument Design

Since no solid scales have been developed to measure destination imagination specifically, the current study developed a scale for this purpose. Questionnaire design is as much an art as it is a science; however, there is no scientific process to follow to guarantee an ideal questionnaire (Malhotra, 2005). Nevertheless, there are some guidelines, which researchers can follow to avoid major pitfalls. Presented below are the steps designed for the purpose of the current study based on the researcher's personal experiences from different research projects, as well as published resources such as Viswanathan (2005), Brace (2004), Malhotra (2005), Sireci (2005), and Juni (2007):

1) A careful investigation of the existing literature is necessary for the researcher to develop relevant knowledge of the study topic.
2) The qualitative procedure should be implemented to produce a more in-depth knowledge, if required, before starting the survey scale design.
3) The questionnaire should only focus on the information, which the questionnaire is designed to obtain.
4) Potential respondents' abilities should be considered to avoid using unnecessary technical terminologies in order to prevent receiving incorrect information as the result of the respondent's lack of education, experience, etc.

5) A potential respondent's willingness should be considered to avoid unnecessary sensitive questions and correspondingly high "no response" rates.
6) Question types should be considered in the design process. Although unstructured (open-ended) questions provide freedom to extract richer data compared to structured (closed) questions, they also have some drawbacks. The main downside of open-ended questions is that their analysis is limited and most of the inferential statistical techniques are not applicable. Subjective coding, error, and bias in variance reduction, and a lack of logical connections are among the other significant shortcomings.
7) The level of measurement of variables (i.e., categorical nominal, categorical ordinal, discrete intervals, continuous intervals, and continuous ratio) should be considered, since different levels of measurement capture different levels of variance per variable.
8) Although a 7-point Likert scale is capable of capturing more variance than a 5-point Likert scale, the latter is much easier for respondents to understand. Moreover, scales with equal points but different designs (e.g., a 5-point Likert scale vs. a 5-point semantic bipolar scale) have different reliabilities. In addition, scales with even points (e.g., 10-point Likert scale) or odd points (e.g., 5-point Likert scale) impact measurement results differently by including/excluding the neutral point. Finally, including 'Not Applicable' in a scale exerts considerable influence on the measurement results, since participants can eliminate themselves and not answer specific items.
9) Simple, unambiguous words should be used in questions.
10) Questions should be framed carefully to avoid leading the participants
11) Different types of errors and biases, such as social desirability bias and common method bias, should be taken into account.

12) The order of questions can influence the quality of data obtained. Hence, fundamental questions should be presented first, and classification and identification questions such as demographics should follow (unless demographics are used to filter categories since they are the primary purpose of the study).
13) A decision should be made as to whether the variable will be measured as a single-global item manifest variable or as a latent construct with multiple manifest variables.
14) The measurement theory should be taken into consideration. Formative[19] and reflective[20] measurement theories are useful if they are employed correctly.
15) If latent constructs are included, the latency order of the construct should be specified.
16) The questionnaire should go through various screening and pre-testing stages to test for different types of validities and reliabilities.

Based on the steps above, and for the purpose of the current research, two studies were designed to create the imagination scale, which specifically measured destination imagination. The purpose of the first study (Phenomenon Crystallization) was to produce in-depth knowledge of the destination imagination process. The purpose of the second study (Item Generation) was to generate items required for the survey design, based on previous literature and the first study.

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[19] In formative measurement theory, the latent variable (emergent construct) is a composite variable which is formed by the manifest variables. In this theory, manifest variables, usually, have the least correlations and are non-substitutable (i.e. any changes in manifest variables changes the nature of the composite variable). In other words, in formative measurement theory, the directionality of the cause and effect relationships are from manifest variables as independent variables to the respective latent variables as dependent variables (Hair et al., 2010).
[20] In reflective measurement theory, the latent variable (latent construct) is a common variable which reflects in the manifest variables. In this theory, manifest variables should be highly correlated and substitutable (i.e. any changes in manifest variables do not change the nature of the common variable, and hence manifest variables can be added or dropped). To be more specific, in reflective measurement theory, directionality of the cause and effect relationships are from latent variables as independent variables to the respective manifest variables as dependent variables (Hair et al., 2010).

3.4.1. Study 1 (Phenomenon Crystallization)

Phenomenology is both philosophy and method of inquiry. It started as a philosophical movement by concentrating on the essence and nature of an individual's experience from the point of view of the person who lived that experience (Connelly, 2010). Phenomenological psychology[21] was adopted for Study 1 to gain a deeper understanding of the process of imagination and mental image. The phenomenological study is useful when the subject of interest is the meaning of a lived experience of human beings. Structures of consciousness[22] and intentionality of the experience are the primary focus and essence of the experience being extracted. Following the reductionist[23] approach (D. C. Miller & Salkind, 2002), through the phenomenon of mental image, Study 1 attempted to reach the essence of the intentional inner experience (i.e., imagination). Any phenomenon which is the subject of a phenomenology study usually encompasses the 'inward consciousness'[24] and the 'outward appearance'[25] components. Although imagination contains the inward consciousness element, it lacks the outward appearance. Since the individual experience was the center of attention and the investigator was investigating the meaning of an individual's experience, the outward appearance was not the most important component in the psychological approach (Langdridge, 2007; D. C. Miller & Salkind, 2002). As

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[21] "Phenomenological psychology is concerned first and foremost with understanding individual's lived experience of the world: a 'return to the things themselves'. There is not one phenomenological psychology, however, but rather a family of methods with a common phenomenological philosophical foundation" (Langdridge, 2007, p.7).
[22] The structures in which the state of being awake and aware of one's surroundings play significant role.
[23] Generally speaking, considering that phenomenology is an interpretivist approach, it is anti-reductionism. That being said, the reduction technique is practiced in phenomenology. By conducting the reduction technique, the knower reduces one's experience to its essence by eliminating the dangling and redundant concepts around the main subject.
[24] The inner reflection of the experience on the consciousness of self.
[25] The outer reflection of the experience on the behavior and appearance of self.

a matter of fact, as Sartre (2004) indicated in his book, phenomenological psychology is the backbone of imagination studies.

Ten individuals were interviewed for Study 1. The sample was selected purposefully based on the objective of this study. As shown in Appendix A, different subjects of imagination were investigated by randomly assigning the participants to one of the four groups of known object, unknown object, known city, and unknown city. It should be noted, however, that these four groups were not included for comparison purposes, rather to encompass various situations related to both imagination and prospection with different levels of abstraction (i.e., object: low abstraction, city: high abstraction). Subjects with no useful information (e.g., participants who reported being unable to form any kind of mental image) were dropped from the analysis and substituted with new informant subjects. Unlike grounded theory, no saturation point is needed in phenomenological studies, and therefore sample size was not an issue (D. C. Miller & Salkind, 2002; Moustakas, 1994). The data were collected through face-to-face, informal, interactive interviews. The interview protocol is provided in appendix A. The central question to answer was: How do people perceive and describe their experience of imagination? Two of the common questions in imagination phenomenology studies were pursued in Study 1: "What is it like, phenomenologically, to imagine?" and "What is the essential nature of the imagination experience?" (Wiltsher, 2012, p. N/A). To answer these two questions, the subjects were asked to explain, in detail, how they imagined a destination. As indicated by Heider (2003, p. III), "Phenomenology emphasizes the honoring of the pure possibility of phenomena and of 'what is'. The phenomenological method facilitates an open, unbiased way of being and seeing phenomena as a psychological process that begins in the imagination." The "what is" question is, therefore, fundamental in the phenomenology psychology of imagination. Hence, the question of "What is

a mental image?" was asked from the study participants. However, since asking the question directly was not possible , follow up questions about the content of their imagination were asked for all modalities: visual, auditory, tactile, gustatory, olfactory, and kinesthetic. The content was in accordance with the modality being questioned (e.g., asking about the color(s) in a visual sensory). The semi-structured interviews started with general conversational questions and continued toward more structured questions about sub-mechanisms of imagination. When asking more directed interview questions, it was ensured that the epoch[26] process was not jeopardized. Finally, the last question, which Study 1 answered, concerned the intentionality[27] of the imagination experience. Wiltsher (2012) suggested that unlike the common belief that imagination consists of multiple intentional experiences, imagination as a whole experience is an intentional phenomenon synthesized from a range of unintentional parts.

The guidelines for the data analysis stage were obtained from Moustakas (1994). To start, the recorded interviews were transcribed. The end goal was to reach the 'real meaning and essences' of the phenomenon. In order to achieve that purpose, a textual description was needed; meaning that the process of clustering various themes should have been explained. The structural description (i.e., themes' relationships), as well as the integration of structures and textures, together form the meanings of an experience. To extract themes, the analysis process started with phenomenological reduction: the relevant data and statements were horizonalized,[28] and equal

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[26] Setting aside prejudgments and opening the research interview with an unbiased, receptive presence (Moustakas, 1994).

[27] Intentionality of the imagination experience is related to one's consciousness. In a conscious experience situation, the elements of imagination are under the imaginer's control, whereas, in a subconscious experience situation, the imaginer cannot change the elements because the imagination process is out of his/her control.

[28] "The perceptions that emerge from angles of looking Husserl calls horizons. In the horizonalization of perceptions every perception counts; every perception adds something important to the experience" (Moustakas, 1994, p.53).

values were obtained (i.e., no hierarchical relationship exists). The meaning units were then extracted from the horizonalized statements and were clustered into themes after eliminating overlapping and repetitive statements.

3.4.2. Study 2 (Item Generation)

Study 2 involved two focus groups[29] to design the imagination scale. As the literature indicates, focus groups are useful in the early stages of research, specifically to create criteria for measurement purposes (Stewart, Shamdasani, & Rook, 2007). The goal of this study was to create a final list of items (manifest variables) to be used in the questionnaire. The results of the first study (Phenomenon Crystallization) and two focus groups were used to design the imagination scale.

The procedure for both focus groups was developed based on guidelines provided by Stewart et al. (2007) (Figure 4). Instead of experts, regular and potential visitors were recruited as the sample of this study in order to reduce potential biases. To be more specific, due to the knowledge of experts on the subject matter, their cognitive competency to imagine a place may be different than that of ordinary people. Hence, as one of the objectives of this study was to develop a general scale for imagination, recruiting ordinary people was deemed more appropriate. Each focus group was composed of 6 to 10 potential and active visitors (tourists). The participants of the first focus group were mainly focused on the results of the interview analysis, and imagination qualities such as color, vividness, details, and familiarity level. Appendix B provides the protocol

[29] Focus group sessions are a qualitative research technique is mostly used when crucial understandings of psychological and behavioral foundations are required (Folch-Lyon & Trost, 1981).

of the first focus group. The second focus group was recruited to help determine the structure and conceptualization of the imagination emergent construct. Accordingly, Ph.D. students participated in the second focus group to brainstorm the results of the phenomenology study (study 1) and the first focus group.

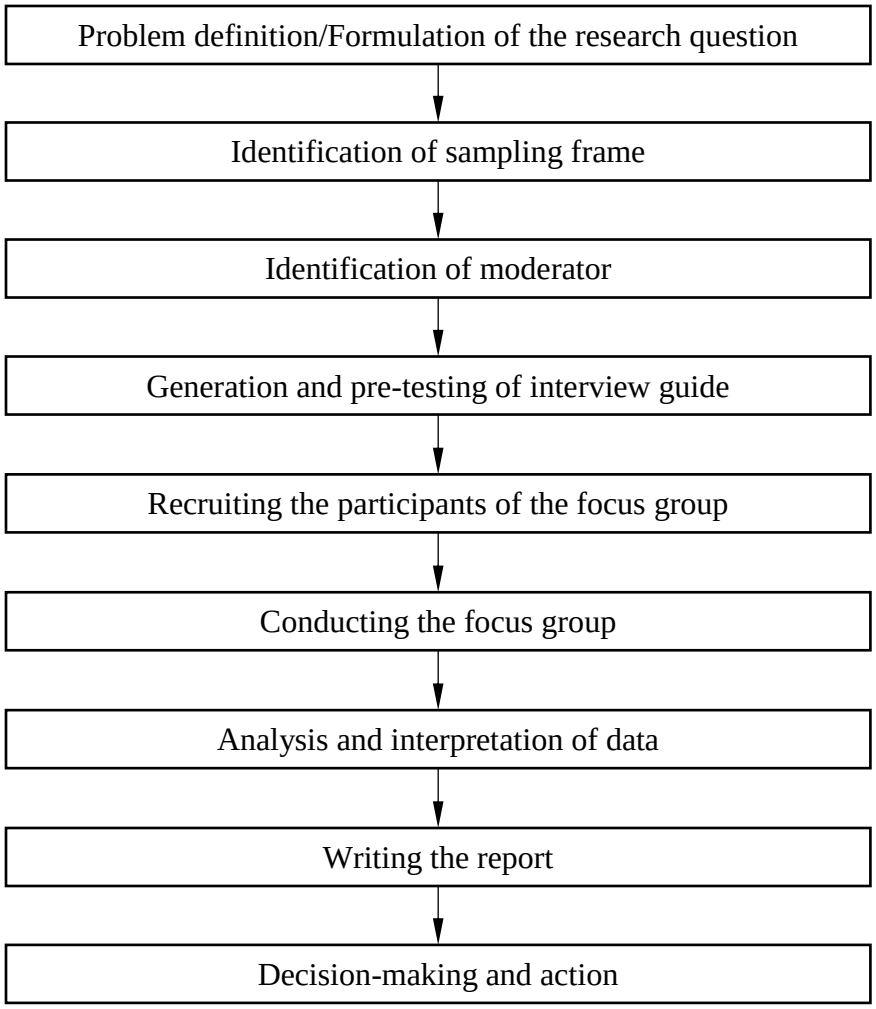

Figure 4: Steps of focus group study adopted from Stewart et al. (2007)

To encourage participation, each participant in the first focus group was compensated with a sum of $20. Focus group sessions were moderated by an expert in the subject matter. The interview protocol for the first focus groups, unlike in Study 1, was more structured and built upon

the results of the first study (appendix B). The interview consisted of general questions regarding destination imagination and was followed by questions that were emerged based on the phenomenology analysis. Using content analysis[30], both focus groups were carefully analyzed to create the initial list of the items for the imagination questionnaire. The initial list of the items is presented in appendix C (105 items).

3.5. Study 3 (Pilot Study)

The purpose of the pilot study (Study 3) was mainly to confirm the measurement properties of the imagination scale. The pilot study was conducted in three phases of Relevance (Phase I), Validity & Reliability (Phase II), and Structural Relationships (Phase III). In the first phase (Relevance), the Q-sorting technique was utilized, and seventy undergraduate students were recruited to 1) assign the initial extracted items to predefined constructs and 2) sort them from the most relevant to the least relevant. The outcome of the relevance phase was the two versions of short and long imagination questionnaires (Appendix D) which the former was used in phases 1 and 2 and the latter was used in the final (3rd) phase.

The second phase of Validity & Reliability was mainly designed to check the properties of the imagination questionnaire. Accordingly, the properties of construct composition, construct order, construct validity, measurement validity, reliability, and item analysis were analyzed based upon the responses of three hundred and fourteen Amazon Mechanical Turk workers who took the

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[30] "Content analysis is a technique for analyzing a body of text. It treats the elements of the body of text as empirical entities. It establishes and documents aspects of their characteristics and the relationships between them. In doing so, it enables investigators to ask and systematically answer research questions about the manner in which the ideas and information contained in that body are conceived or expressed. The elements may be words, idioms, sentences, paragraphs, articles, papers, or similar units of text comprising a larger body." (G. J. Miller & Yang, 2008, p. 689)

long questionnaire. Since imagination and TDI are generic constructs, the population of interest for this study included any individual with the ability to imagine. Individuals with memory decay, damaged hippocampus, and any damage (or birth defects) in brain which affects one's capacity to form a mental image were excluded from this study. Participants may or may not have visited or been familiar with (possessed knowledge) the subject (destination) chosen for the study. Twenty-four destinations were used as the context of imagination in testing the long questionnaire. The collected data of the second phase was divided into two samples. One sample was used to conduct an Exploratory Factor Analysis (EFA) to refine the questionnaire and test the initial loadings. The second sample was used to carry out a Confirmatory Factor Analysis (CFA) to test the hypothesized loadings and the structure of the measurement model. Five types of validities of face, content, internal, ecological, and concurrent criterion along with construct validity composed of nomological and measurement (i.e., convergent and discriminant (divergent)) validities were investigated to ensure the overall validity of the imagination questionnaire (Hair, Black, Babin, & Anderson, 2010; Juni, 2007; Jupp, 2006; Knapp, 2008; Rupp & Pant, 2007; Sawilowsky, 2007; Sireci, 2005). In addition, construct- and item- level reliabilities were carefully analyzed. In order to complete the questionnaire validation process, common method bias (CMB) and invariance check analyses were conducted on the long version of the imagination questionnaire. Two tests of Harman's single-factor and common latent factor were employed to test for the existence of CMB (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Three categories of configural, residual, and measurement invariances were also tested for demographic variables. The measurement invariance was separately evaluated by checking for the invariances of metric, scaler, factor variance, and factor covariance (Hair et al., 2010).

Finally, in the third phase (Structural Relationship), the short version of the imagination questionnaire was combined with the TDI questionnaire. Since TAM was employed to measure TDI, three scales were developed to combine with short imagination questionnaire. A cognitive image scale was developed based on the works of Stylos and Andronikidis (2013), San Martín and Del Bosque (2008), and Stylos et al. (2016). An affective image scale was developed based on the works of Russell, Ward, and Pratt (1981), Baloglu and Brinberg (1997), San Martín and Del Bosque (2008), and Stylos et al. (2016). Finally, a conative image scale was developed based on the work of Stylos et al. (2016). Regression-based conditional process analysis of moderated mediation model (model 59) was employed (Hayes, 2013) to test the structural hypotheses of H_3, H_4, and H_5. The conceptual model of structural hypotheses demonstrated in figure 3 is operationalized in figure 5 as shown below.

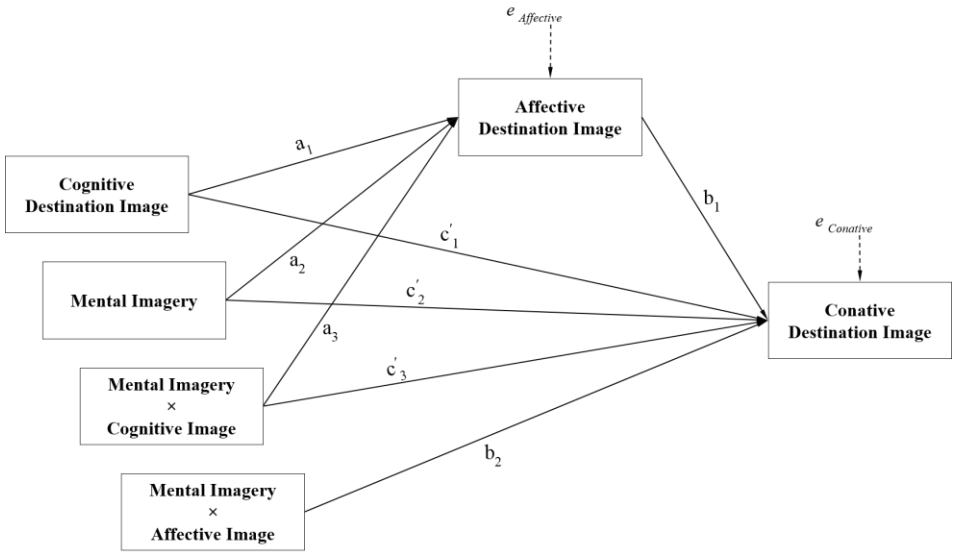

Figure 5: The Operational Model for the Moderation Effect of Imagination on TAM of TDI

Based on the operationalization of figure 5, three structural hypotheses can be formalized as below. These two regression models were estimated in the next chapter (Chapter 4).

$$Affective = i_{Affective} + a_1 Cognitive + a_2 Imagination + a_3 CognitivImagination + e_{Affective}$$

$$Conative = i_{Conative} + c_1' Cognitive + c_2' Imagination + b_1 Affective + c_3' CognitiveImagination + b_2 AffectiveImagination + e_{Conative}$$

3.6. Study 4 (The Experiment)

After the refinement of the imagination scale, the survey was used in an experimental setting to test the differential hypotheses of this dissertation and test the impact of familiarity and visits on visitors' imaginations. Furthermore, to have a clearer understanding of prospection and its differences with imagination, the impact of information exposure on mental imagery of potential visitors was investigated by adopting an exploratory approach. Stated differently, prospection (pre-exposure) of individuals with no previous visit experience and no priori knowledge of a destination was measured and compared to the imagination (post-exposure) of the same individuals after they were exposed to various information sources.

For the experiment, student sampling was used to minimize the sample demographic variations. The same criteria for participant inclusion and sampling process explained in Study 3 (Pilot Study) were employed in the experimental design. Experimental groups were designed based on two criteria: knowledge and visitation. Hence, participants were assigned to one of six groups (Figure 6).

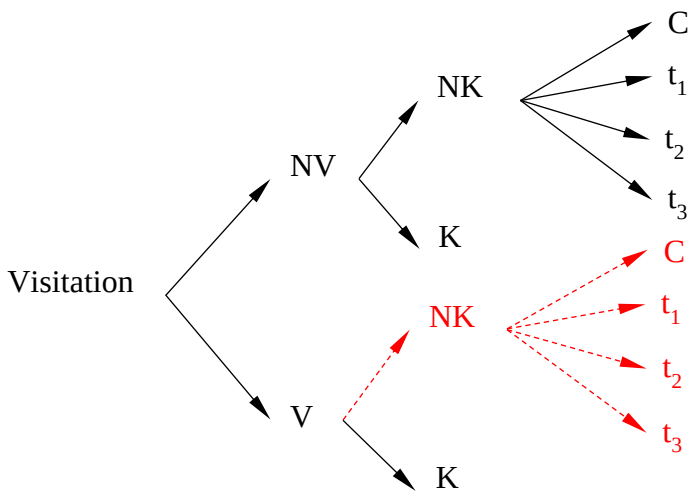

Figure 6: Grouping Diagram (NV: No Visit; V: Visit; NK: No Knowledge; K: Knowledge; C: Control Group; t: Treatment), Red Dashed Lines and Conditions are Not Possible. t_1: Textual Information Source, t_2: Pictorial Information Source, t_3: Video Clip Information Source

The design and assignment practices were conducted as follows. First, participants were randomly assigned to one of the three categories of knowledgeable visitors, knowledgeable non-visitors, and non-knowledgeable non-visitors (control group). The condition of non-knowledgeable visitors was considered as *impossible* because with visit comes knowledge. To compare the imagination differences of the above-mentioned three groups, participants were, then, asked to select one destination, out of the 24 destinations available, based on the properties of the category to which they were randomly assigned, and answer the questions. It should be noted that transit visitors who only had changed their flight in the destination of interest were excluded from the knowledgeable visitor conditions as they do not fit the category of 'visitors' It is also worth mentioning that the control group was divided into four groups among which three of them received treatments for further analysis. However, the group who had received no treatments was used for this phase of the experiment (i.e., comparing the three groups).

Concurrent with the first part of the experiment, as previously mentioned, the initial control group was further divided into four groups. One group did not receive any treatments and remained as control group. Participants in the second group received written (textual) information (t_1) about the destination. Participants in the third group received pictorial information (t_2) about the destination, and those in the fourth group received video clip information (t_3) about the destination. For those subjects who were under the effect of the three different treatments, a pre-post within subject procedure was applied. In other words, subjects were first tested on their prospection of a destination before receiving the treatment (information exposure). Next, they received the arranged treatment, and finally, they answered the same set of questions (imagination) again about the same destination as that of prospection phase (Figure 6).

Considering an effect size of f = 0.25 (medium effect), α error probability of 0.05, test power (1-β) of 0.8, and repeated measure correlation of 0.5, the experiment required a total sample size of 162 participants, 27 per group (figures 7 and 8). Figure 8 shows the relationship between the sample size that is needed for the range of possible effect sizes, considering two scenarios for the power of the test.

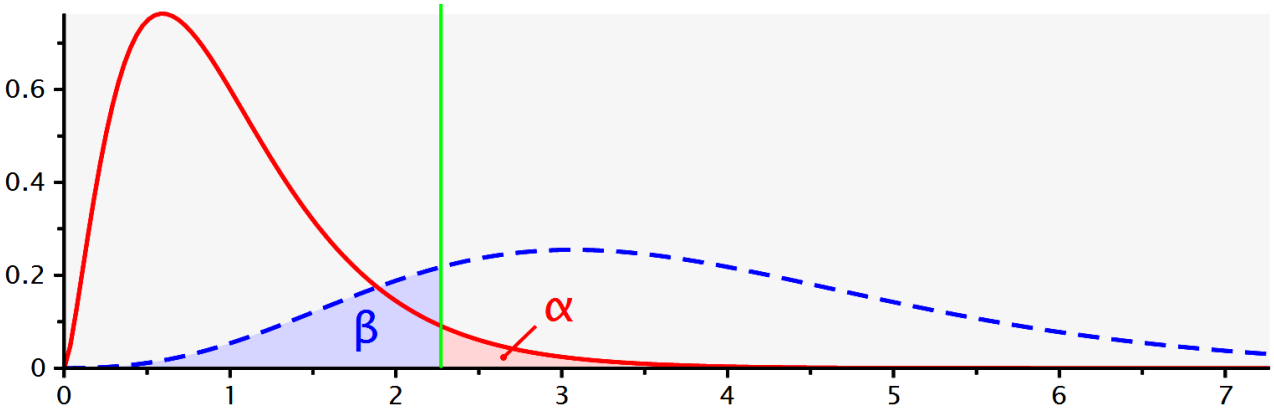

Figure 7: The Critical Value Necessary to Test the Null Hypotheses, based on an Effect Size of f = 0.25 (Medium Effect), α Error Probability of 0.05, Test Power (1-β) of 0.8, and Repeated Measure Correlation of 0.5

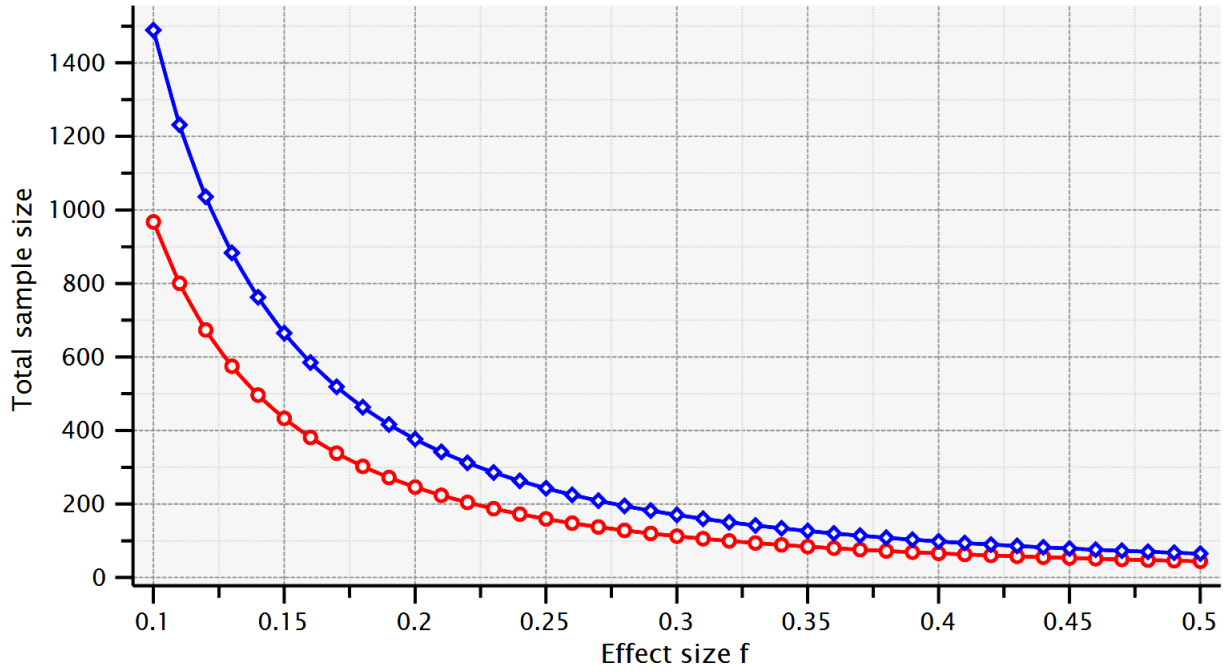

Figure 8: The Relationship between Sample Size and Effect Size for Twice Measurement (Repeated), $\alpha = 0.05$, Correlation among Repeated Measures Assumed to be 0.5, and Considering Two Scenarios for the Power $(1 - \beta)$ of 0.95 (Blue Line with Square Markers) and 0.8 (Red Line with Circular Markers)

In summary, the analysis of this study followed a 2 × 2 factorial ANOVA procedure to test the differential hypotheses (i.e., H 1, 2, a, b, c, d, e and their combinations), including the main effects and interactions. Further developments in form of three treatment groups were designed to help investigate the impact of information exposure in order to get some insights on dissimilarities between imagination and prospection. Repeated measure ANOVA was employed to investigate the impact of information exposure on mental imagery.

CHAPTER 4: FINDINGS

4.1. Introduction

This chapter presents the results of the four studies developed in chapter 3 for the purpose of this dissertation. The phenomenology study helped with providing a deeper understanding of the imagination/prospection process. Structured interviews allowed for drawing a detailed schema of imagination and identifying the potential structure of the imagination construct. In the second study, two focus groups were designed to clarify the questions raised from the phenomenology study, to approve some inferences made based on previous imagination questions and the observations and notes/memories taken during the analysis of the first study, and to generate the information required to produce the measurement items of the imagination scale. The third study (i.e., pilot study) was designed and conducted in three phases. In the first phase, relevancy of the generated items (105 items in total) were investigated by using q-sorting with various analytical techniques such as principal component analysis (PCA), hierarchical cluster analysis, frequency analysis, mode-median agreement, variance analysis, and expert opinion to finalize the imagination scale in order to be tested in the second phase. In the second phase of the pilot study, two versions of imagination scale (short questionnaire with 33 imagination and 47 TDI items, and long questionnaire with 81 imagination items) were administrated for validity and reliability analyses purposes as well as structure identification. The long imagination scale's collected data was used to establish different types of validities and reliability measures, and create the final version of the scale for the experimental study and future uses. Accordingly, face, content,

internal, ecological, concurrent criterion, construct, nomological, measurement, convergent, discriminant (aka divergent) validities were carefully investigated and established. Common method bias (CMB) from the two perspectives of Harman's single factor and common latent factor (CLF) as well as invariance checks of configural, residual, and measurement were furthermore tested to complete the validation process of the imagination scale. In the third and last phase of pilot study, a similar invariance analysis to the second phase was conducted concerning measurement model variations between knowledgeable individuals and individuals without any knowledge of destination. The purpose of this phase was to ensure the usability of imagination scale in drastically different populations. Discussions on the final structure of the imagination/prospection construct and its properties/components and the test results of three structural hypotheses (i.e., H_3, H_4, and H_5) are provided in this phase as well. Finally, in phase three of pilot study, using the data collected from short scale, the moderation/interaction relationship between imagination and TDI's dimensions (i.e., cognitive, affective, and conative) was investigated via regression-based conditional process analysis of moderated mediation model. In the final study (i.e., study 4), a 2×2 factorial mixed experimental design was used to address the imagination/prospection hypotheses as well as the impact of information exposure for its potential manipulation effects. The experiment was conducted in form of pre- (prospection) and post- (imagination) exposures. The first section of the experiment provided the results of 15 imagination/prospection hypotheses (i.e., H_{1a}, H_{2a}, H_{1b}, H_{2b}, $H_{1\times2a}$, $H_{1\times2b}$, H_{1c}, H_{2c}, H_{1d}, H_{2d}, $H_{1\times2c}$, $H_{1\times2d}$, H_{1e}, H_{2e}, and $H_{1\times2e}$) mainly related to the vividness, richness, saliency, autonomy component, and spatial component. The second section of the experiment explored the impact of the three information sources exposures (text, image, and video) on imagination and the changes made to the imagination structure as a result of being exposed to different information sources.

4.2. Study 1: Phenomenon Crystallization

In order to have a deeper understanding of the imagination process, following the guidelines of Smith & Osborn (2008), an interpretive phenomenology analysis (as explained in chapter 3) was conducted using a sample of 12 individuals. A total of 7 hours and 29 minutes of structured interviews were conducted with the average of 37′:26″ per interview. The interview protocol included six open-ended questions with a total of 40 follow-up/instructional questions (the protocol is provided in appendix A). Table 2 provides the profile of interviews; interview protocol was conducted under four conditions of familiarity level (known or unknown) and imagination subject (city or object). Regardless of interview condition, participants were shown a set of five images so that they select one and carefully look at the image for one minute. The image, then, was returned to the set to be used in the final stage of the interview. Participants, were then randomly assigned to one of the four conditions (i.e., known city (e.g., Miami), unknown city (e.g., Islamorado), known object (e.g., Eiffel tower), and unknown object (Hearst castle), the complete list of these items are presented in interview protocol in appendix A). In each condition, the interviewee selected one of the five cities/objects and created a mental scene by closing his/her eyes for as long as the participant preferred. After creating their mental scene, participants were asked about some aspects of their mental image with their eyes closed and the rest with their eyes open. The reason for which participants were asked to answer some questions with eyes closed is due to the nature of these questions dealing with the details of mental scene. Similarly, in later stages, participants were asked to close their eyes again, recall their original mental scene, and answer some further questions. Next, after responding to imagination questions, participants were given the choice to either listen to (with a male or female voice) or read a short story about a trip

to New York and imagine the story (open or closed eyes). Interviewees, next, were asked to explain their mental scene about the trip. Finally, participants were asked to recall the very first image that was shown to them at the beginning of the interview and explain its details as much as they can.

Table 2: Interview Profiles of Interviewees

File ID	File	Familiarity	Story-Input	Subject	Time	Words
1	Interview 02	Known	Read	City	0:43:12	7,076
2	Interview 03	Unknown	Read	City	0:43:47	7,193
3	Interview 04	Known	Read	Object	0:33:03	5,438
4	Interview 05	Unknown	Listen	Object	0:37:55	6,206
5	Interview 06	Known	Listen	City	0:31:03	4,749
6	Interview 07	Known	Listen	Object	0:35:48	5,831
7	Interview 08	Unknown	Listen	City	0:30:46	5,126
8	Interview 09	Known	Listen	Object	0:39:22	6,719
9	Interview 10	Unknown	Listen	City	0:38:40	5,511
10	Interview 11	Unknown	Listen	Object	0:26:34	4,035
11	Interview 12	Unknown	Listen	Object	0:25:55	3,490
12	Interview 13	Known	Listen	City	1:03:02	10,315

As shown in table 3, the results of interpretivist phenomenology analysis revealed three major properties of sensory, structural, and intellectual as higher-order properties in an individual's imagination. These properties are composed of thirteen themes which themselves are formed by forty-five concepts. Concepts are the smallest units of meaningful observations directly coded from the interview transcripts. The codes[31] extracted from the current

[31] "A code in qualitative inquiry is most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data. The data can consist of interview transcripts, participant observation field notes, journals, documents, literature, artifacts, photographs, video, websites, e-mail correspondence, and so on. The portion of data to be coded during First Cycle coding processes can range in magnitude from a single word to a full sentence to an entire page of text to a stream of moving images." (Saldaña, 2009, p. 3)

phenomenology study are more or less in accordance with the literature of imagination. For example, the sensory modality of imagination and the concept of self-presentation which both emerged from the phenomenology study of this dissertation have been previously mentioned by Kosslyn, Ganis, & Thompson (2010) and Rice (2007) respectively. Table 3 shows all three categories of codes sorted based on their appearance and frequency in interviews.

4.2.1. Sensory Property

The main property of every mental scene, as expected, is the sensory property. The sensory property is formed by six themes of richness, vividness, tactile, auditory, olfactory, and gustatory. Nevertheless, this property is mainly dominated by visual themes of richness and vividness. The reason is that non-visual themes of sensory property are all composed of single concepts such as taste for gustatory, smell for olfactory, sound for auditory, and touch for tactile. Among non-visual themes, however, tactile and auditory themes are more prevalent compared to the rest (i.e., olfactory and gustatory).

4.2.1.1 Non-Visual Sensory-related Themes

Concerning auditory sensory-related themes, some of the 'auditory' codes were in form of 'music/rhythms':

> **"Interviewee 03**: *Yeah, and I was—I even said to you like the Oom-Pah-Pah band, which sort of a slangy word for, you know, the way they sound. It's kinda like, "Poom poom poom, poom poom poom." You know like that.* [laughs] *I guess it's a lot of brass that's why it sounds that way.*"

While others were sounds related and relevant to the imagined context:

> "**Interviewee 13:** *Um, families having a good time. I could hear*--**Interviewer:** *You hear like talking children?*
> **Interviewee 13:** *Talking children. Waves crashing.*
> **Interviewer:** *It was clear or it was like a general, rumbling sound, people talking?*
> **Interviewee 13:** *It's kind of rumbling.*"

With regards to the 'tactile' theme, participants occasionally talked about textures, touching entities and tactile in their explanations. For example, interviewee 4 mentioned "*I can feel the texture of the-- of the statue*" or interviewee 13 mentioned "[…] *Um, and as I'm getting closer I feel this-- actually I can feel the sand actually kind of warm on my feet*".

Concerning the gustatory theme of individuals' imagination, only one interviewee talked about it while explaining her mental scene:

> "**Interviewee 3**: *I had the pretzel thing may-- that maybe is something-- I don't know, I-- Just recently, we've been eating at that brewpub down the street. They're, uh, just a little south of Titusville. They have these amazing pretzels with, um, very rustic kind of mustard with a lot of seeds in it*."

Finally, few interviewees used the theme of olfactory in the explanation of their mental scenes. For example, interviewee 13 mentioned "*Uh, yeah.* [Laughs] *Actually, the cruise ship, yes. Uh, the cruise ship actually smells really nasty. Um*".

4.2.1.2 Vividness

With regards to the 'vividness' theme of sensory property, 'image solidarity', 'cohesiveness', 'fragmentation' and 'clear' are the four concepts making up this theme. The latter

concept of ‘clear’, however, is the most frequent code, and as such the dominant concept of the theme of vividness. Depending on respondents’ attention window, participants showed different levels of visual clarity for different parts of their mental scene. For example, while the main entity of their mental scene is clear, the peripheral areas might be blurry. For example, interviewees 5 and 10, respectively, mentioned: “*Um, I was more focused on the arch itself, kinda the peripheral view wasn't-- it was like fuzzed out*” and “*Um, it was kind of in between sharp and blurry it wasn’t like blurry where I couldn't tell what it was, but it wasn't like it was sitting right in front of me either.*”

In addition, some participants reported a more clear mental scene when recalling the image for the second time. For instance, interviewee 6 stated: “*Yes it is. Yeah the-the-- like you said the horizon is more clear, I'm able to see further and the actual image is more clear.*” Furthermore, participants reported higher levels of visual clarity for known entities compared to unknown ones. For instance, interviewees 8 who was talking about the mental scene related to an unknown city indicated: “*I mean there's not like distinctiveness to the buildings or anything, it was just kind of like a generic sort of view*” whereas interviewee 2 who was talking about the mental scene related to a known city indicated: “*Yeah, maybe because I was living there so I have it very clear in my mind. It's what I was looking every single day different times per day.*”

4.2.1.3 Richness

The most dominant theme in sensory property is a visual-related theme, namely, ‘richness’. ‘In richness, ‘Details’ is the most frequent concept with the most variations. Most of the participants who imagined a person in their mental scene reported that they only know it is a person (a gesture maybe or a shadow) but he/she has no details. Participants, furthermore, could have

selectively add details to the sections of their mental scene. These details were not necessarily correlated with reality but served the purpose of generating information that are absent in reality (e.g., rotation of the building upside down if existing in their mental scene). Usually, participants indicated that their mental scene is detailed, until they were asked to explain it. It was then that some participants mentioned that the image in their head is more detailed than what they can verbally explain. The lack of verbal explanation could be due to the fact that participants selectively had the autonomy to add details but the original scene lacked those details. Finally, details seem to be in a close relationship with the participants' attention window as they (i.e. details) only appear on the main entity. For example, interviewee 07 mentioned that:

> "**Interviewee 07:** *Certain things stood out more than others. Definitely the road going up, it was a brick road because I could actually see you know the bricks kind of broken up there, the flowers were prominent, they were pinks, purple, white, yellow, and then the birds, they were going by too fast to really get all their detail, but you could tell that they were there.*
> […] **Interviewer:** *Talking about the two, did you see how many towers are there or do you just have general feeling of--*
> **Interviewee 07:** *It was just a general feeling, if I had to guess I'd probably be about six towers, I think.*"

Table 3: Properties, Themes, and Concepts Summary

PROPERTY/Theme/*Concept*	**# Codes**	**# People**	**PROPERTY/Theme/***Concept*	**# Codes**	**# People**
SENSORY			**Mindfulness**		
Auditory			*Sense of time*	12	10
Sound	11	5	*Emotions*	9	8
Tactile			*Role play*	5	4
Touch	15	11	**Point of View**		
Gustatory			*Vantage point*	16	10
Taste	1	1	*Self-eye perspective*	12	12
Olfactory			*Self-presence*	1	1
Smell	5	2	**Autonomy**		
Vividness			*Imagining unreal*	20	12
Clear	13	12	*Change of direction*	12	10
Image solidarity	8	8	*Color change*	14	10
Cohesiveness	8	8	*Shape change*	14	10
Fragmentation	1	1	*Rotation*	13	12
Richness			*Texture change*	13	11
Details	33	10	*Losing control*	6	5
Visual description	17	11	*Change*	1	1
Color	16	12	*Main elements property*	1	1
Number of entities	12	12	**STRUCTURAL**		
Single image	8	8	**Scale**		
Embedded imagination	7	5	*Size*	12	10
Multiple image	7	4	*Main entity*	10	9
Incomplete image	1	1	**Motion**		
Isolation	1	1	*Animated image*	7	6
Context	1	1	*Stationary image*	5	5
INTELLECTUAL			**Spatial**		
Memory			*Distance from observer*	12	10
Familiarity	15	9	*Sense of direction*	11	10
Recalling the scene	4	4	*Distances among entities*	9	8
Memory issue	4	2	*Perspective details*	1	1
Previous experience	1	1			

'Visual description' is another critical concept in the richness theme. Sometimes these descriptions become less accurate than the scene itself. For example, interviewee 3 mentioned:

> "*Well, okay. I imagined, oops, sort of a town not really a city I guess, but it's like a large town- -and it had cobblestone streets and like narrow alleyways, um, a lot of storefronts that have sort of Bavarian architectural details and a-- like a central square with a fountain and the smell of pretzels and you know other German food maybe like something, uh, what's that stuff called? Um, what am I*

thinking of? Oh, Tom, what am I thinking of? Oh, sauerkrat, sorry. I-I it was in my head, but it didn't really think up the word. Um, and then I was thinking maybe also of, uh, like a castle or a fort. Because of the word "fort", I thought maybe that means fort in German, but I don't know. But I was thinking maybe there's a castle or some kind of fortification in this-- in this town, uh, and-and [chuckles] *then I had a strange thought about like, you know, Oom-Pah-Pah band and guys in lederhosen and stuff like that*. [Laughs] *You know, with the hat with a little feather in it and all that kind of stuff*. [Laughs] *I guess that's also Bavarian, so I guess that was basically it*".

During the interviews, it was common for the participants to displace the main entity in their mental scene. For example, the statue of liberty being inside the river, yellow cabs in a totally black background, and the magic kingdom castle inside a jungle are among the entities that are displaced in interviewees' visual description. Interestingly, descriptions were limited merely to the visual theme and were not observed for any other sensory properties' themes. 'Color' is the third frequent concept in formation of the richness theme. It seems that similar previous experiences of participants, mostly, resulted in colorful scenes whereas lack of information resulted in more of gray or black and white scenes. That being said, since there are no quantitative data to support this claim, it is not possible to identify the pattern. In addition, some participants reported that colors in the center show higher levels of contrast compared to peripheral areas of the scene. For example, interviewee 06 mentioned:

"*Everything was in a very realistic color I guess th-the further out I'll look it kind of blended in like the color started to bleed.*"

When interviewees were asked about the number of entities[32] in their mental scene, depending on their definition of entity, responses were very different. Some participants considered actions as the main entities, while some others considered things as the main entities of their image, yet the third group mentioned that sub-entities (e.g. trees vs. branches, leafs, etc.) are the main entities of their mental scene. Interviewees, furthermore, reported different combinations with regards to the number of scenes of their mental image: from a single scene with multiple areas to multiple scenes. The results of phenomenology analysis showed that when there is a storyline in the imagination, the subject usually sees multiple scenes (scenes might be animated and dynamic or picture-like stationary). Context and isolation are the other two concepts contributing to the richness theme of the sensory property. Interviewees reported various combinations of context and main entities. While some reported seeing the entity totally isolated with no backgrounds, some reported only seeing the context without the main entity; yet another group indicated that they see the main entity of their mental scene within its context. Embedded imagination or double imagination is the last concept in the richness theme. Embedded imagination happens when a person exists in the mental scene of an interviewee who is thinking about something or imagining something. For example, in the story that participants read/listen to, the woman character [Sheila] was thinking about a conversation that she had with her doctor about the stage of her cancer. Interviewee 10 was explaining Sheila's thoughts and when asked to explain the scene, the interviewee said:

[32] The concept of entity was carefully explained to participants as anything or basically "thing". It can be object, human, animal, actions, simple/complex organisms, building, event, materials, etc.

"*Um, it was more like she was thinking back to what the doctor had said to her.*"

4.2.2. Intellectual Property

As shown in table 3, "intellectual" property is the second main property resulted from phenomenology analysis. Intellectual property mostly is about the ability of one's brain in the imagination and prospection process. It deals with various aspect of mental capacity to both make a mental scene and manipulate it. There are four themes under the intellectual property, namely, memory, mindfulness, point of view, and autonomy. These four themes include 19 concepts in total.

4.2.2.1 Memory

Memory is the focal theme of the entire process of imagination since the information needed to build the mental scene are all recalled from working memory. 'Familiarity' and 'previous experience' are the two concepts in the memory theme that provide information for and from the memory during the mental scene creation process. For example, Interviewee 02 who selected Paris as the city which he is familiar with, used the most familiar setting (his room) to create his mental scene as he said: "*Well it's in a city that I know, Paris. I was living and working there for a while.* […] *I was having the image of the view from my room, where I was. I was living inside the hotel, so I had a room, uh, at the sixth floor of the hotel, the top floor.*" In the prospection process, likewise, memory has the main role since similar information (based on the judgment of the process) from one's memory will be recalled to make the closest possible mental scene with the purpose of anticipating the future experience.

It should be noted that the sources of information and knowledge are not limited to personal familiarity or previous experience of the individual only; but the source of information can be from postcards, books, magazines, movies, news, and even folklore culture and stories that the individual has heard about a subject, place, etc. Synthesizing can also happen during the mental scene construction. The individual might build part of the scene from a personal experience and the other part from a movie for instance while changing the vantage point all along the mental scene. This means that personal experience and familiarity do not always have priority over other types of information for mental scene creation. For example, the mental scene of one the participants with two previous experiences of visiting New York was not built upon her prior experiences but had come from news, books, or other information inputs. Even hearing or reading some familiar words can be the source of priming the memory to recall close information. For example, one of the subjects said that he sees everything in mid-day (the same time that he visited the New York City), except the taxis that he sees them in a rainy day despite the fact that it never rained during his summer visit to New York. The taxi part of the respondent's mental scene could potentially be due to a movie he has seen or a book he has previously read). The act of priming the memory is not always a conscious act; some participants were subconsciously connecting the dots and making patterns to activate their memory and create the mental scene. Also, to make a mental scene, some participants were subconsciously twisting the information to make it correlate with the information to which they are familiar with. For example, in Sheila's story, there is a part in which football (soccer) players have been mentioned; while all participants imagined an American football stadium, one imagined a soccer stadium and not an American football stadium. Individuals, furthermore, paired different constituents with the main element of their mental image. These aforementioned elements are both, dyadically, stored in the memory. For example, after

listening to the story about Sheila looking at her monitor and searching for a trip deal to New York, one of the participants, added a laptop and a couch on which Sheila was sitting to her mental scene. These information, however, were never presented in the story. Finally, when participants completely failed to obtain any clue about the object/city that they are not familiar with at all, they randomly built a scene. For example, in case of "Tinago Falls in Philippines", one participant imagined a beach with no signs of waterfall. 'Recalling the scene' and 'memory issues' are the other elements of the memory theme (table 3). With regards to recalling the scene, interviewees are divided into three groups. First, interviewees who can recall more or less the initial scene that they have built. Second, those who uncontrollably add and remove elements to the scene that were not present in the original scene, and third, participants who recall the original scene with more details, clearness, and vividness. Finally, individuals who have difficulty with recalling the original scene and so they make an incomplete or broken image are categorized under the element of memory issues. For example interviewee 6 and 2, who respectively mentioned: "*Umm. I'm able to see further an image more clearly*" and "*The palms are making shadow but I don't remember which side*" were referring to the third group of recalling participants and participants with memory issue respectively.

4.2.2.2 Mindfulness

The second theme in intellectual property (table 3) is 'mindfulness', which is composed of three concepts: 'sense of time', 'emotions', and 'role play'. Although previous studies have shown that individuals are to some extent capable of estimating the time needed to perform some tasks by using their mental scenes (Kosslyn et al., 2010), Gilbert & Wilson (2007) indicated that people subconsciously condense and ignore the amount of time needed to complete tasks such as traveling

to a destination. Findings of the current study support Gilbert & Wilson (2007) notion that people can estimate the amount of time needed to complete a task based upon their mental scene. For instance, interviewee 06 who, for the second time (recall), created a mental scene of walking through Central Park of New York in a mid-sunny-day mentioned:

> "**Interviewee 06:** […] *the horizon is more clear, I'm able to see further and the actual image is more clear.*
> **Interviewer:** *Now considering the furthest point possible in your mental scene that you created,-*
> **Interviewee 06:** *Mm-hmm.*
> **Interviewer:** *-how long it will take you to get there like walking with the same pace that you're walking right now*?
> **Interviewee 06:** *I'd say probably a few-- two minutes, maybe.*"

'Emotions' is the second frequent concept in the mindfulness theme. Participants showed less emotions when the mental scene was about objects compared to when it was about a trip to a destination. Generally, two types of emotions were observed. First, the emotions that were trigged due to bringing memories back and second, emotions (e.g., excitement) created due to desirable changes that individuals made to their mental scene to make their experience more delightful. For example, interviewee 07 not only was happy when visiting Disney in her mind but also was excited to be in the middle of nature with no or few people (not a usual part of Disney experience):

> "*I pictured the castle being more in a forest kind of scene. There were a lot of flowers everywhere, there are a lot of tall trees, the sun was shining, a lot of birds flying everywhere, sort of like snowing almost. Something like that* […] *It was a happy one. It made me think of when I've gone to Disney and seeing the castle, it just kind of brought a feeling of joy. There was a calming effect as well just kind of being able to look at it and take in the nature and just having a beautiful castle there. It was just–* […] *there weren't any people. No.*"

The last concept in the mindfulness theme is 'role play'. It seems that individuals tend to put themselves in the focal point of their mental scene and observe the whole scene. Especially, when they read/listen to a story about someone else, they tend to take the main character's role in the story. For example, when interview 03 was asked to explain what Sheila looked like, she responded: "*maybe I imagined her a little bit like myself*" or when interviewee 09 was asked about the trip that Sheila was planning for, she responded: "*For some reason, I actually felt like I took the woman's place when I was actually in her place making this decision.*"

4.2.2.3 Point of View

The next theme in intellectual property is 'point of view', which is formed by the concepts of 'vantage point', 'self-eye perspective', and 'self-presence'. Vantage point is strongly associated with the concept of 'self-eye perspective' where the individual sees everything from his own eyesight. Participants kept their self-eye perspective for most of the time even when they were instructed to change their perspective dramatically (e.g. bird's eye view). Self-presence is a broader concept compared to vantage point. It includes the concept of self-eye perspective but from two different standpoints. Most of the participants (except for one case) denoted that although they felt and understood their self-presence in their mental scene, they could not see themselves. For instance, interviewee 4 and 8, respectively, mentioned: "*I cannot see myself. Uh, the scene, I know is coming from me and-- and but I couldn't see my hands or anything like that. I couldn't see any part of me. No*" and "*When I was, walking was like my eyes seeing everything like I was visiting. So, I couldn't see mysel*". On the other hand, one participant mentioned that while he saw the mental image from his own eyesight (i.e., self-eye perspective), he, himself, was also present in the scene as if he was a part it or involved in the actions of the mental scene.

Furthermore, according to the recorded memos of this phenomenology study, it is worth to mention that general scenes and familiar situations were more likely to be perceived with a higher degree of self-presence compared to detailed and instructed scenes and stories of others.

4.2.2.4 Autonomy

'Autonomy' theme is the last theme of the intellectual property and is a relatively well-studied concept in mental imagery and in traditional survey methods of imagination studies (Kihlstrom et al., 1991). The 'Autonomy' theme is highly related to one's mental capacity and brainpower to manipulate the mental scene. Although it is potentially probable to improve one's mental capacity with specific trainings, it is mostly associated with the innate intelligence quotient (IQ) level of the individual (LeBoutillier & Marks, 2003). In the current study, nine concepts were identified as the contributors to the autonomy theme. 'Imagining unreal' is the first concept in this theme. Participants reported different levels of difficulties when trying to add an unreal entity (e.g. unicorn) to their mental scene. Issues such as scene's vividness decline, unstable and fragmented scene (disconnections), and distortion are the most common problems that occur when individuals tried to add unreal subjects. In addition, imagining an act with an unreal subject (e.g. riding a unicorn) was more difficult for participants compared to imagining the unreal subject only. For example, when interviewee 04 who imagined canoeing toward the Statue of Liberty was asked to add a unicorn to the mental scene and fly with the unicorn, he replied: "*I cannot. I can see the unicorn between me and the* [Statue] […] *but I cannot fly with it. I can touch the statue, I can touch the canoe,* […] *um, but I cannot touch the unicorn.*"

Participants were further asked to imagine some of the entities of their mental scene upside down to examine if they have autonomy over 'change of direction' in their mental scene. Some

participants were able to do so and some others were not. The main problem reported in the 'change of direction' concept was loss of focus in the mental scene. In addition to 'change of direction', concepts of 'shape change' and 'color change' were also included in the autonomy theme (table 3). For most of the participants, the color change concept is much easier to apply compared shape change and direction change, respectively. Detail reduction and solidarity loss are the common issues reported as a result of color change and shape change respectively. Interestingly, individuals who did not have any issue with color change, reported issues with direction, shape, and texture change. In a similar vein, those who did not have any difficulties with changing the direction, and shape/texture of objects in their mental scene, reported difficulty with color change. Furthermore, some participants reported that changing the color to a color that is common for an object is much easier than changing it to something that is very unlikely and out of the ordinary. For example, interviewee 05 mentioned:

> "**Interviewer 05:** *And now, can you change the colors, so you said that the main element was the arch and it was the grey and white thing like, can you change that to a yellow arch?*
> **Interviewee 05:** *Yeah, I can change the color of the material that it would've been made out of.*
> **Interviewer 05:** *Okay and what about the other things, like can you change the leaf of the green tree to uh, I don't know red, blue?*
> **Interviewee 05:** *No.*"

According to results, the color change concept showed a strong association with the concept of texture change. Some participants reported that change in texture resulted in change in color and vice versa. On the same note, change of texture can result in change of the entire scene as interviewee 9 mentioned:

"**Interviewer:** *Okay. Now if I ask you to, like, feel that Unicorn is from metal, okay? Is it anything that- anything else is changing in your mental image?*
Interviewee 9: *No. Other than that the unicorn's now--*
Interviewer: *It's now metal.*
Interviewee 9: *-metal.*
Interviewer: *You see that when you touch it it's metal, yeah.*
Interviewee 9: *Yeah, that--*
Interviewer: *What about the color of the unicorn? Has it changed when you imagine that's metal rather than a horse's color?*
Interviewee 9: *Yes.*
Interviewer: *What was the color, what is the color right now?*
Interviewee 9: *The color of the unicorn before it changed was white.*
Interviewer: *Okay.*
Interviewee 9: *And white with blue eyes, and--*
Interviewer: *White with blue eyes, okay.*
Interviewee 9: *And then now it's metal, or like a shiny metal, very, very shiny metal and the eyes are now black.*
Interviewer: *Black, okay. What is changed because of changing in the texture of this unicorn? Everything else is the same like the castle?*
Interviewee 9: *Um, the-- well, I mean changing the unicorn, it felt like the castle changed as well. But it felt like the place in general got darker.*
Interviewer: *Darker, okay. I see. Can you explain what the change in the castle?*
Interviewee 9: *It just-- it made it seem very unhappy.*
Interviewer: *Oh, the castle become unhappy?*
Interviewee 9: *Yeah, it's--*
Interviewer: *All right. I see.*
Interviewee 9: *It's not the typical castle that people would want to go see".*

However, unlike other change concepts (i.e. direction, shape, and color), change in texture does not result in change of details, vividness, resolution, etc. The shared feature among most of the above-mentioned changes, nevertheless, is that the change in one can result in losing autonomy over the mental scene. For example, Interviewee 05 mentioned:

"*But immediately when you mentioned changing color it started to rain* [out of the autonomy of the interviewee] *in my head.*"

On the other hand, the participants who could keep themselves in control of their mental scene when asked to change some specific parts of their mental image, reported that they only can do so if some other parts of their mental image changes too. For example, interviewee 11 mentioned:

> "**Interviewer:** *Can you start walking toward the door in your image?*
> **Interviewee 11:** *Mm-hmm.*
> **Interviewer:** *So that you're getting closer to the door.*
> **Interviewee 11:** *Yes.*
> **Interviewer:** *Okay. Now while you're doing that, is there anything changing in the image*?
> **Interviewee 11:** *The doors coming down* [opening]."

Rotating the entire scene and one or more entities was the last concept tested for the autonomy theme of mental scene. Most of the participants reported no problem conducting rotation. A few individuals, however, mentioned that the scene become hazy when they rotate it.

4.2.3. Structural Property

The last property which emerged from the phenomenology analysis is the structural property. Structural property is about structural-related matters of mental scene, and is formed by three themes of scale, motion, and spatial.

4.2.3.1 Scale

Scale is the first theme of the structural property and is composed of two concepts of size and main entity. In terms of size, individuals reported size of the entities proportionate to the reality and each other in their mental scene. Only a few participants reported that the changes they

made to their mental scene resulted in changes of some entities' size to unusual sizes. The main entity concept, as expected, was the central focus of individuals' mental scenes. Main entity defines individuals' attention window and focus, vividness, clarity, and solidarity from the middle of the mental scene (both from attention window perspective and geometric perspective) and gets blurry and hazy moving towards the peripheral areas.

4.2.3.2 Motion

Structural property's second theme is named the 'motion' theme (table 3). Motion in a more general term that can be translated to kinesthetic properties in imagination literature (Kosslyn et al., 2010). Nevertheless, here, the focus is more on structural issues of the whole scene. Based on participants' responses, mental scenes range from completely stationary to completely animated scenes. Some interviewees' mental scene were stationary with only the ability to zoom in and out, while others reported their mental scene as static with the ability to move their view point around the scene. The third category of respondents indicated their mental scene as if they were sitting in the movie theater watching the movie or being involved in the scene like a regular day of their life. Nevertheless, a mental scene is not necessarily in one side of a motion scale, it can be a combination of animated and stationary images. Frame per seconds for different interviewees were also different. Some interviewees reported seeing a series of images jumping from one to another or in slow-motion form while the rest reported more of a movie-like experience. Usually in a fully dynamic scene, a type of action is involved such as walking around the scene or touching the objects, etc.

4.2.3.3 Spatial

The final theme in structural property is the spatial theme (table 3). Spatial theme is a critical part of the imagination process since 1) it keeps the whole sensory property's themes together and 2) acts as a bridge between structural and intellectual properties. Distance, direction, and location are the three main elements of the spatial theme with the inclusion of four concepts: 'distance from observer', 'sense of direction', 'distances among entities', and 'perspective details'. The analysis showed that there is a strong association between distance from observer and distance among entities. In fact, some individuals measured the distance among entities by comparing their own location in their mental scene to the location of the imagined entities (how distant they are from the objects). That being said, some respondents reported that they can see the distance among entities but cannot observe the distance of these entities from themselves (observers). This issue might be related to the self-presence and lack of it in mental scene. For example, interviewee 04 explained:

> *"-you know, not just a part of it. So, I wasn't like right next to it* [unintelligible 00:10:10] *like that. So, uh, you know, so we're probably talking, you know, I don't know, 400-500 yards probably something like bigger enough-- clear enough, far enough so that I could see the whole statue. I could see that the river was probably, uh, the-- the statue was in the middle of the river, and it was probably 200 or 300 yards on either side of-- of the statue to the banks where the forest, where the trees would be.*"

Another example is interviewee 11:

> "**Interviewer:** *Okay. Could you see the distances along the entities? Like how far is the window from the door?*
> **Interviewee 11:** *Yes.*
> **Interviewer:** *All the distances among it, among those three entities, grass, door and the castle?*

Interviewee 11: *Yeah.*
Interviewer: *The entities are clear?*
Interviewee 11: *Yes.*
Interviewer: *Could you see the distance between you and the entities?*
Interviewee 11: *No.*
Interviewer: *That one is not clear?*
Interviewee 11: *No.*
Interviewer: *Interesting. But the entities between themselves is clear? [00:08:00]*
Interviewee 11: *Yes.*"

Sense of direction is another important concept of spatial theme (table 3). Sense of direction can easily be distorted when trying to recall the image or losing focus. Depending on the concentration level, however, the individual might be able to resist the changes and direction loss. An important finding regarding one's sense of direction is the number of reference points the individual uses to navigate through the mental scene. For example, when explaining the directions of her mental scene, interviewee 03 mentioned:

> "*Yes. Actually, so yeah, the large building was in front of me and kind of above me because it was uphill from me. And the fountain, for some reason, I don't understand was behind me. Like directly, like I was starting out in that location, and sort of walking down this narrow street*."

Interpretive phenomenology analysis provided invaluable insights into the process and mechanism of imagination and prospection. These findings being in line with the previous literature of imagination, revealed significant limitations of previous scales developed to measure imagination in general and TDI in particular. The results of the phenomenology analysis are the main source of the item creation phase for imagination scale development. However, while the phenomenology study answered so many questions, it created some more as well concerning travelers' knowledge, familiarity, self-presence, subject of imagination, vantage point, etc. A

second study, therefore, was carried out to provide the opportunity for more in-depth discussions and clarifications.

4.3. Study 2: Item Generation

In order to further investigate some of the findings of the phenomenology study and answer the questions arised from interviews, a focus group with eight participants was conducted. The protocol for the first focus group was developed based on the interviews' results which can be found in appendix B.

4.3.1. Focus Group 1: Clarification

Unlike interview respondents who were limited to only one knowledge condition (familiarity or unfamiliarity), focus group respondents were asked to compare their mental image about a known destination with an unknown one. All participants except one, reported significantly better quality images for the known destinations compared to those unknown. In fact, two participants reported lack of image details [black screen] for unknown destinations. Furthermore, the destinations which individuals were not familiar with (i.e., unknown destinations) were usually paired with negative attributes or rare and unusual elements during the mental scene creation process. For example, one of the participants imagined a poor Mediterranean town when thinking about the city, Perth (a modern coastal city, which is the capital and the largest city/harbor of Western Australia), and another participant stated that in her mental scene, Perth is a desert. Known (familiar) places, on the other hand, were usually mentioned with positive emotions, colorful scenes, bright, and vivid images (even when the participant did not know much about the destination).

Participants were then asked to compare imagining an object (Eiffel tower) to imagining an act (climbing to Eiffel tower). Discussions showed that it is more likely to have a stationary image thinking about a stationary object and an animated (dynamic) mental scene for an act (performance). In addition, participants were asked to compare their mental scene of an object to that of a destination. Discussions showed that participants were more likely to have multiple images (sometimes with no storyline among the images) when crafting a mental scene of a destination, and a single mental scene when imagining an object. Only one participant reported having a single image for a destination mental scene. Next, participants were asked to compare their mental scene of a destination to the mental scene of taking a trip to that destination. Discussions showed that destination imagination is similar to postcards and is usually stationary where the person is an outsider watching the scene; imagining a trip to a destination, however, is composed of more animated scenes which usually include an act (e.g. scuba diving) in which the person is engaged and involved. It should be noticed however, that involvement does not necessarily mean that the individual could see himself/herself in the mental scene; but it points out to the concept of self-presentation. Interestingly, as results of phenomenology analysis suggested, when individuals in the focus group were asked to change the vantage point of their mental scene to bird's-eye view, they were still not able to see themselves as they indicated that by changing the vantage point, they became the bird watching the scene. In the next stage, participants were asked to compare and contrast the center of the scene to the peripheral areas. No individual reported the scene to have a framework, and therefore it is safe to say that mental scene has no boundaries. In addition, for all participants, the center of the scene was more vivid compared to the peripheral area. For peripheral areas, participants said that they knew something was there but it was hazy and they could not tell what it was. The blurring effect could be due to the attention window factor,

making only a limited area of the image vivid. Nevertheless, it is worth mentioning that it is possible to shift the attention window to other areas in short time without imposing any boundary or framework to the scene; but such acts are not consciously perceivable by individuals. Participants were then asked to talk about the distance among the entities in their mental scene. Interestingly, unlike the interviews, all focus group participants except one had no sense of distance in their mental scene. Furthermore, five participants explained that their mental scene was flat with no sense of perspective among the entities, while three others indicated that they had some forms of perspective in their mental scenes. The final discussion was about the impact of questions on the formation of mental scene and social desirability or similar biases when answering the questionnaire of imagination and mental image. Some participants indicated that when they were asked whether they see or smell something, the elements were added to their mental scene. The elements' added effect, however, was not mentioned by everyone and some participants said that they could keep their original scene regardless of the type of question asked. This group elaborated that when their image lacks an element, which is also difficult to imagine, the element would not automatically be added to their mental scene simply by a question about a specific property of the image. In addition, all participants indicated that there were no social desirability type of biases answering the imagination questions since the questions were not controversial and did not include an embarrassing factor. Nevertheless, it should be noted that judgment about a specific quality of mental scene is personal and hence under the impact of self-perception and personality variables. Lastly, participants denoted that in-group discussions such as focus groups, peer effect exists; that is others' opinions and attitudes can potentially influence respondent's mental scene and evaluation.

4.3.2. Focus Group 2: Brainstorming

After clarifying some of the findings of the interviews and acquiring a richer understanding about the imagination and prospection processes, as well as the mechanism of mental scene creation, a focus group with seven Ph.D. students (4 females and 3 males) was conducted. The purpose of this focus group was to brainstorm to reach the ultimate goal of creating the structured questionnaire for imagination. Accordingly, in this focus group, potential measurement items were created and findings of previous studies were categorized.

First, the purpose and process of the dissertation along with the previous studies' results (i.e. the phenomenology results, the first focus group's findings) were explained to participants. All codes were explained and exemplified to make sure participants understand dissertation's status quo and the big picture. Next, participants were asked to categorize the findings of the phenomenology (only raw results by excluding the hierarchical structure) and previous focus group in themes and higher-level concepts for the purpose of developing measures and constructs. Two primary decisions, however, were made before starting the main discussion: 1. the structure and order of items, themes, and concepts of the phenomenology study were not to be revealed to the participants to not influence their judgement, and 2. only visual aspects were to be included in discussions as other sensory aspects were to be developed from visual aspect in later stages.

Discussions resulted in a six-factor model of visual aspect that is summarized in table 4. The categorization was considered as the result of the second focus group to be analyzed and used along with other findings of previous studies to create the imagination scale.

Table 4: The Six Factors of Imagination's Visual Aspect as Developed by the Participants of the Second Focus Group

Factor/*Item*	**Factor**/*Item*
Technical	*Vantage point change*
Saliency	**Spatial**
Shape	*Framework* (*peripheral areas*)
Size	*Location*
Solidarity	*Sense of time* (*time lapse*)
Color (*temperature*)	*Vantage point*
Color (*contrast*)	*Perspective* (*depth*)
Texture	*Distance from observer*
Perceived Realism	*Sense of direction*
Number of entities	*Distance from each other*
Embedded imagination	**Quality**
Self-presence (*inclusion*)	*Cohesiveness* (*structural stability*)
Number of separate scenes	*Novelty*
Presence of storyline	*Sharpness*
Details	*Brightness*
Richness	*Color*
Sense of time (*recognition*)	*Vividness*
Level of isolation	*Clearness*
Presence of main entity	*Familiarity* (*randomness*)
Self-presence (*observer*)	*Severity* (*intensity*)
Autonomy	Focuses
Shape change	**Kinesthetic**
Rotation	*Level of engagement*
Up-side-down	*Acts*
Unreal object addition	*Gestures and postures*
Unreal act addition	*Motion*
Color change	

As seen in tables 3 and 4, there are similarities and differences between the six-factor model and the results of the phenomenology study. For example, discussions of the second focus group resulted in combining the point of view and spatial themes' concepts to make up the construct, spatial. The autonomy theme remained the same construct with a few reductions. The new construct of kinesthetic, moreover, was added to the model, which is the combination of several concepts of intellectual and structural properties such as motion theme. The above-mentioned three constructs (i.e. spatial, autonomy, and kinesthetic) were considered as the final solution of the model. However, the rest of the constructs (i.e. technical, perceived realism, and quality) were

more investigated due to discriminant validity and construct unidimensionality concerns. By using the existing surveys in the literature as well as the results of the previous studies (i.e. phenomenology and two focus groups), 105 items were developed to measure the eight constructs which I named visual, auditory, tactile, olfactory, gustatory, autonomy, kinesthetic, and spatial. The list of the initial 105 items can be found in appendix C.

4.4. Study 3: Pilot Study

Prior to testing the measurement properties of imagination scale, the relevance of the items to the expected constructs was validated. To do so, the first phase of the pilot study was designed similar to Q-sorting studies with minor differences.

4.4.1. Phase I: Relevance

A sample of 70 undergraduate students (61 usable) from Rosen College of Hospitality Management, University of Central Florida were given the 105 items in a random order and asked to assign the items to the pre-defined eight constructs. After completing assigning the items to their perceived most-relevant construct, students were asked to put the items in order from the most relevant to the least relevant. The collected data then was analyzed by using four different analysis techniques of principal component analysis (PCA), descriptive (comparison of mode and median and sorting based on variance), hierarchical clustering (on items), and frequency analysis. The researcher, furthermore, scrutinized the results and made judgement calls on imagination scale items' exclusion/inclusion criteria.

PCA identified 15 components that were reducible to eight based on the items' cross-loadings. Nevertheless, the items were not forced to an 8-component solution because of the small

sample size. 19 out of 105 items showed loading values of less than 0.3 and/or high cross-loadings with multiple constructs, which all were labeled as non-relevant. In descriptive analysis, the variance of items' rankings as well as the mode and median of items assigned to constructs were calculated. The mode and median of 11 items did not agree and showed high levels of variance (except for one item); accordingly, they were all labeled as non-relevant. Agglomerative coefficient change was used to decide on the number of clusters in hierarchical clustering analysis. Three solutions of 8-cluster, 9-cluster, and 10-cluster were tested to find the most appropriate one. Results showed that the 9-cluster solution is the most appropriate. On the other hand, as both 8^{th} and 10^{th} clusters were related to the autonomy construct, they were merged. Finally, the frequency table was used to investigate the distribution of items on the eight constructs. The cut-off point of 50% was used to identify the constructs to which the items belong. Twenty items were left out with less than 50% occurrence on any construct; and therefore they were labeled as non-relevant.

Table 5 shows the outcome of the Q-sorting process which resulted in elimination of 24 items and reducing the imagination scale items to 81. The numbers in table 5 are the number of times where the four methods' results and expert's judgement were in agreement on the constructs to which the items belong. The table is divided into two sections; the first section includes the 81 items that at least three methods (including experts' opinion) showed consistent results regarding their related construct. The second section of table 5 includes the 24 items that are either mostly assigned to the non-relevant group or there are no agreements concerning the constructs to which they should be assigned.

Table 5: Classification of Measurement Items based on the PCA, Descriptive, Hierarchical Clustering, and Frequency Analyses as well as Expert's Judgement. 24 Items below the Horizontal Line were Dropped from the Rest of the Analysis

Items	V	A	T	O	G	K	C	S	NR
a sharp image	5	0	0	0	0	0	0	0	0
detailed	5	0	0	0	0	0	0	0	0
I see many separate scenes	5	0	0	0	0	0	0	0	0
most of the elements/things I see are by themselves (isolated) and are not related to other elements/things	5	0	0	0	0	0	0	0	0
very colorful	5	0	0	0	0	0	0	0	0
most textures are easily visible	4	1	0	0	0	0	0	0	0
very bright	4	1	0	0	0	0	0	0	0
animated and movie-like	4	0	0	0	0	0	1	0	0
I am watching the image as if it were happening in front of me	4	0	0	0	0	0	1	0	0
I can easily see any entities upside down	4	0	0	0	0	0	1	0	0
I can see myself inside my mental image	4	0	0	0	0	0	1	0	0
regular shapes are easily detectable (e.g. triangle, circle, etc.)	4	0	0	0	0	0	0	1	0
the peripheral areas are visible	4	0	0	0	0	0	0	1	0
the peripheral areas are vivid	4	0	0	0	0	0	0	1	0
the time of the day is easily recognizable	4	0	0	0	0	0	0	0	1
there are multiple focus points	4	0	0	0	0	0	0	0	1
colors are distinct from each other	3	2	0	0	0	0	0	0	0
most of the elements/things are noticeable	3	0	0	0	0	0	2	0	0
I have a precise idea of the depth of the image (3D perspective)	3	0	0	0	0	0	1	1	0
I see a series of images	3	0	0	0	0	0	1	0	1
I vividly see everything	3	0	0	0	0	0	1	0	1
irregular shapes are easily detectable	3	0	0	0	0	0	0	1	1
I have a clear sense of the temperature	2	0	3	0	0	0	0	0	0
I clearly see body gestures	2	0	0	0	0	3	0	0	0
I clearly see body postures	2	0	0	0	0	3	0	0	0
the pitches of sounds/noises are identifiable	1	4	0	0	0	0	0	0	0
the flavor(s) I taste is/are random that I don't know at all	1	0	2	0	3	0	0	0	0
the odor(s)/scent(s) I smell is/are random that I don't know at all	1	0	0	3	0	0	0	1	0
taste(s) is/are very strong	1	0	0	0	4	0	0	0	0
I hear many different sounds/noises	0	5	0	0	0	0	1	0	0
I clearly hear myself	0	5	0	0	0	0	0	0	0
the sound(s)/noise(s) I hear is/are harmonious	0	5	0	0	0	0	0	0	0
the sound(s)/noise(s) I hear is/are intense	0	5	0	0	0	0	0	0	0
the sound(s)/noise(s) I hear is/are very clear	0	5	0	0	0	0	0	0	0
most of the sounds/noises I hear are very noticeable	0	4	0	0	0	0	0	1	0
the sound(s)/noise(s) I hear is/are constant	0	4	0	0	0	0	0	0	1
the sound(s)/noise(s) I hear is/are detailed	0	4	0	0	0	0	0	0	1
the sound(s)/noise(s) I hear is/are loud	0	4	0	0	0	0	0	0	1
the sound(s)/noise(s) I hear is/are random that I don't know at all	0	4	0	0	0	0	0	0	1
the sound(s)/noise(s) I hear are related like a story	0	3	0	0	0	0	1	1	0
the sound(s)/noise(s) I hear is/are very audible	0	3	0	0	0	0	1	0	1

Items	V	A	T	O	G	K	C	S	NR
I smell many different odors/scents	0	2	0	3	0	0	0	0	0
most of the odors/scents I smell are very noticeable	0	2	0	3	0	0	0	0	0
the odor(s)/scent(s) I smell is/are very detailed	0	2	0	3	0	0	0	0	0
most of the flavors I taste are very noticeable	0	2	0	0	3	0	0	0	0
I can easily change the volume of the sound(s)/noise(s) I hear	0	2	0	0	0	0	3	0	0
I have a clear understanding of the coarseness of the elements	0	0	4	0	0	1	0	0	0
I touch elements/things	0	0	3	0	1	0	0	1	0
I feel the thickness of elements/things	0	0	3	0	0	1	0	0	1
I feel many different textures	0	0	3	0	0	0	0	2	0
I easily feel the textures of elements/things	0	0	3	0	0	0	0	1	1
I can easily change the texture of the elements/things I touch	0	0	2	0	0	0	3	0	0
I can easily rotate the scene	0	0	1	0	0	0	3	0	1
smell(s) is/are very real	0	0	0	3	1	0	0	1	0
the odor(s)/scent(s) is/are very clear	0	0	0	3	1	0	0	1	0
different odors/scents are distinguishable	0	0	0	3	0	0	1	1	0
the odor(s)/scent(s) I smell is/are very strong	0	0	0	3	0	0	1	0	1
I can easily change the intensity of the odor(s)/scent(s) I smell	0	0	0	2	0	0	3	0	0
I easily taste flavors	0	0	0	0	4	0	0	1	0
the flavor(s) that I taste is/are detailed	0	0	0	0	4	0	0	1	0
I taste many different flavors	0	0	0	0	3	1	1	0	0
the flavor(s) I taste is/are very intense	0	0	0	0	3	1	0	1	0
based on the flavors I taste, different textures are distinguishable	0	0	0	0	3	0	0	2	0
different flavors are easily distinguishable	0	0	0	0	3	0	0	2	0
very alive and active	0	0	0	0	0	4	1	0	0
I feel the weights of different elements/things	0	0	0	0	0	3	0	1	1
I can easily add unreal (mythical) acts to the scene (e.g. flying without any equipment)	0	0	0	0	0	0	5	0	0
I can easily change the colors of any entities to any colors I want	0	0	0	0	0	0	5	0	0
I can easily change the shape of elements/things	0	0	0	0	0	0	5	0	0
I can easily change the sizes of any entities	0	0	0	0	0	0	4	1	0
I can easily dismantle anything I want	0	0	0	0	0	0	4	1	0
I can easily add unreal (mythical) entities to the scene (e.g. unicorn)	0	0	0	0	0	0	4	0	1
I can easily rotate elements/things	0	0	0	0	0	0	4	0	1
I can easily change my vantage point (e.g. bird's-eye view)	0	0	0	0	0	0	3	0	2
I have a precise idea of the spatial surroundings of elements/things	0	0	0	0	0	0	1	4	0
I have a precise idea of the locations of elements/things	0	0	0	0	0	0	1	3	1
I have a precise idea of the arrangement of elements/things	0	0	0	0	0	0	0	5	0
I have a precise idea of the directions of elements/things	0	0	0	0	0	0	0	5	0
I have a precise idea of the distances of elements/things away from me	0	0	0	0	0	0	0	5	0
I have a precise idea of the distances of elements/things from each other	0	0	0	0	0	0	0	5	0
I have a precise estimation of how long it will take to do certain things (e.g. walking from point A to point B)	0	0	0	0	0	0	0	3	2
there are many different elements/things	1	0	0	0	0	1	0	0	3

Items	V	A	T	O	G	K	C	S	NR
well-focused	2	0	0	0	0	0	0	0	3
I easily tell what season it is	2	0	0	0	0	0	0	0	3
objects are all reachable	0	0	0	0	0	1	1	1	2
I am doing and am involved in different things rather than merely observing	0	0	0	0	0	1	1	1	2
I felt like the objects have surrounded me	1	0	0	0	0	1	0	1	2
I have a precise idea of the sizes of different elements/things	1	0	1	0	0	0	0	1	2
there are many things happening	0	0	0	0	0	2	1	0	2
there is a main element/thing that dominates the entire scene	1	0	0	0	0	1	1	0	2
a random scene that I don't know at all	2	0	0	0	0	0	1	0	2
I have a clear understanding of the sharpness of elements/things	1	0	1	0	0	1	0	0	2
very concrete	1	0	0	0	0	0	2	1	1
new and different from whatever I have experienced before	1	0	0	0	0	0	2	1	1
I move around among the objects in the scene	0	0	0	0	0	2	1	1	1
I felt as if I am physically present in the scene	1	0	0	0	0	1	1	1	1
I easily recognize what the smell(s) is/are	0	0	0	2	0	0	1	1	1
the direction(s) of the sound(s)/noise(s) I hear is/are easily recognizable	0	2	0	0	0	0	1	1	1
the source(s) of the sound(s)/noise(s) I hear is/are easily identifiable	0	2	0	0	0	1	0	1	1
whole (complete)	1	0	0	0	0	1	2	0	1
unfolding as a story	1	0	0	0	0	1	2	1	0
I easily identify the distance from which I smell odor(s)/scent(s)	0	0	0	2	0	0	2	1	0
I easily identify the distance from which I hear sound(s)/noise(s)	0	2	0	0	0	0	2	1	0
I easily recognize where the smell(s) is/are coming from	0	1	0	2	0	0	1	1	0
I clearly see facial expressions	2	2	0	0	0	1	0	0	0

V: Visual, A: Auditory, T: Tactile, O: Olfactory, G: Gustatory, K: Kinesthetic, C: Autonomy (Control), S: Spatial, NA: Nonrelated; All items start with either "My mental image is" or "In my mental image,"

Based on the results of the first phase of the pilot study (table 5), two questionnaires were developed. In one questionnaire, named 'long questionnaire', all 81 items were employed to validate the imagination scale. In the other questionnaire, named 'short questionnaire', 33 out of 81 items were used. The criterion for the selection of the 33 items was the agreement level among the aforementioned methods. These 33 items were used along with 47 TDI items gathered from different questionnaires (see chapter 3 for the sources of TDI items). The shorter questionnaire was used for phase three of the pilot study to test the structural relationships between individuals' imagination and TDI. The questionnaires can be found in appendix D.

4.4.2. Phase II: Validity & Reliability

In the second phase of the pilot study, the long questionnaire was distributed among 314 Amazon Mechanical Turk workers, and 24 US destinations were used as the imagination destinations. About half of the participants were asked to select a destination they have previously visited and believe that they are knowledgeable about it. The other half were asked to select a destination that they have never been to and do not have any types of information about it. To ensure the quality of responses, in data screening/cleaning stage, the duration of survey completion was also analyzed in addition to respondents' variances and missing value analyses. Durations that were 1.5 times less than the first quartile and 1.5 times more than the third quartile were considered as outliers and eliminated along with other candidates of missing value analysis (Kitchin & Tate, 2014). As a result, the rest of the analysis was conducted with 242 cases. The frequency distribution showed that 54.5% of participants were females; 48.3% were single, 42.1% were married, and 9.5% were divorced/separated. 27.3% of participants had high school diploma or lower degree, 21.5% associate, 42.6% bachelor, and 8.7% master degree or higher. The average age was 38.9 years old and on average, participants had taken three trips per year.

It is possible to claim that face validity of the questionnaire was achieved as expert opinions was utilized during the item generation process (Mostert, 2007; Rupp & Pant, 2007). Content validity was also ensured since multiple studies (the phenomenology study and two focus groups) were conducted to create the most relevant items possible to be tested in the Q-sorting process, which itself was also specifically focused on the content validity of imagination scale. As a result, the generated items are relevant, representative, and subjectively related to the measurement area of the imagination/prospection domain (Rupp & Pant, 2007). Due to the general nature of the

study subject (imagination/ prospection) and the fact that everyone from any age, gender, and ethnicity without brain damage can imagine and participate in the study, there are no concerns about the sampling (internal validity) and ecological validities (Lavrakas, 2008; Svensson, 2011). Unlike face, content, internal, and ecological validities, however, the measurement validity (i.e. convergent validity, discriminant (aka divergent) validity) of the scale must be empirically investigated considering that imagination scale is being tested for the very first time. On this note, two separate measurement models were built. One exploratory factor analysis (EFA) with no priori-construct-structural assumptions and one confirmatory factor analysis (CFA) based the expectations of the constructs' structure. Table 6 shows the result of EFA with the forced 8-factor maximum likelihood extraction and Promax rotation with Kaiser normalization. The model converged in seven rotations, explaining 76.12% of the total variance with eight factors.

Table 6: The Results of EFA, Factors' Reliability, Explained Variance, Mean and Standard Deviation of the Constructs and Their Respective Items

Items	α Cronbach/ Mean	% of Variance/ Standard Deviation	λ	Communalities Extraction
Visual	**0.958**	**37.97%**		
My mental image is very colorful	6.40	1.650	0.941	0.695
My mental image is detailed	6.19	1.600	0.906	0.750
In my mental image I vividly see everything	6.14	1.565	0.887	0.761
My mental image is a sharp image	6.06	1.707	0.828	0.714
My mental image is very bright	6.09	1.559	0.798	0.587
In my mental image regular shapes are easily detectable (e.g. triangle, circle, etc.)	6.06	1.662	0.793	0.555
In my mental image the time of the day is easily recognizable	6.52	1.519	0.758	0.461
In my mental image most of the elements/things are noticeable	6.04	1.572	0.738	0.678
In my mental image colors are distinct from each other	6.26	1.592	0.706	0.548
In my mental image there are multiple focus points	5.79	1.807	0.660	0.614
In my mental image the peripheral areas are vivid	5.30	1.830	0.645	0.664

Items	α Cronbach/ Mean	% of Variance/ Standard Deviation	λ	Communalities Extraction
In my mental image I am watching the image as if it were happening in front of me	6.17	1.694	0.642	0.547
In my mental image most textures are easily visible	5.83	1.747	0.595	0.656
In my mental image the peripheral areas are visible	5.59	1.798	0.584	0.663
In my mental image I have a precise idea of the depth of the image (3D perspective)	5.87	1.832	0.579	0.581
In my mental image irregular shapes are easily detectable	5.39	1.815	0.575	0.541
Tactile	**0.905**	**2.24%**		
In my mental image I feel the textures of elements/things	4.56	2.173	0.931	0.838
In my mental image I feel many different textures	4.56	2.117	0.797	0.746
In my mental image I touch elements/things	4.49	2.196	0.754	0.701
In my mental image I have a clear understanding of the coarseness of the elements	5.08	2.016	0.636	0.588
Auditory	**0.975**	**5.76%**		
In my mental image the sound(s)/noise(s) I hear is/are detailed	4.90	2.328	0.934	0.902
In my mental image the sound(s)/noise(s) I hear is/are intense	4.43	2.244	0.928	0.889
In my mental image the sound(s)/noise(s) I hear is/are very clear	4.86	2.334	0.917	0.913
In my mental image I hear many different sounds/noises	4.84	2.328	0.913	0.898
In my mental image the sound(s)/noise(s) I hear is/are constant	4.67	2.322	0.903	0.853
In my mental image the sound(s)/noise(s) I hear is/are loud	4.31	2.200	0.891	0.777
In my mental image the pitches of sounds/noises are identifiable	4.90	2.300	0.852	0.794
In my mental image the sound(s)/noise(s) I hear is/are harmonious	4.67	2.221	0.727	0.715
In my mental image the sound(s)/noise(s) I hear are related like a story	4.46	2.308	0.669	0.693
Gustatory	**0.985**	**12.81%**		
In my mental image most of the flavors I taste are very noticeable	3.78	2.557	0.973	0.966
In my mental image the flavor(s) that I taste is/are detailed	3.64	2.501	0.965	0.967
In my mental image I taste many different flavors	3.64	2.473	0.962	0.937
In my mental image the flavor(s) I taste is/are very intense	3.54	2.451	0.955	0.957
In my mental image I easily taste flavors	3.73	2.567	0.951	0.932
In my mental image taste(s) is/are very strong	3.58	2.435	0.931	0.959
In my mental image different flavors are easily distinguishable	3.70	2.504	0.915	0.956
In my mental image based on the flavors I taste, different textures are distinguishable	3.56	2.483	0.912	0.934

Items	α Cronbach/ Mean	% of Variance/ Standard Deviation	λ	Communalities Extraction
In my mental image the flavor(s) I taste is/are random that I don't know at all	2.81	2.026	0.612	0.445
Olfactory	**0.989**	**2.07%**		
In my mental image the odor(s)/scent(s) I smell is/are very strong	4.08	2.467	0.918	0.916
In my mental image the odor(s)/scent(s) is/are very clear	4.02	2.465	0.915	0.957
In my mental image most of the odors/scents I smell are very noticeable	4.05	2.484	0.901	0.947
In my mental image smell(s) is/are very real	4.14	2.506	0.898	0.939
In my mental image the odor(s)/scent(s) I smell is/are very detailed	3.99	2.447	0.885	0.962
In my mental image different odors/scents are distinguishable	4.03	2.415	0.811	0.888
In my mental image I smell many different odors/scents	3.93	2.394	0.749	0.900
Autonomy	**0.941**	**6.30%**		
In my mental image I can easily change the sizes of any entities	4.36	2.053	0.935	0.783
In my mental image I can easily change the shape of elements/things	4.29	2.079	0.910	0.820
In my mental image I can easily rotate elements/things	4.55	2.065	0.894	0.805
my mental image I can easily rotate the scene	4.76	2.167	0.831	0.717
In my mental image I can easily change the colors of any entities to any colors I want	4.74	2.066	0.825	0.627
In my mental image I can easily add unreal (mythical) acts to the scene (e.g. flying without any equipment)	4.49	2.168	0.727	0.500
In my mental image I can easily change the texture of the elements/things I touch	4.10	2.137	0.705	0.742
In my mental image I can easily add unreal (mythical) entities to the scene (e.g. unicorn)	4.50	2.175	0.674	0.467
In my mental image I can easily change my vantage point (e.g. bird's-eye view)	5.29	2.063	0.634	0.473
In my mental image I can easily dismantle anything I want	4.29	2.028	0.607	0.502
Spatial	**0.960**	**7.39%**		
In my mental image I have a precise idea of the distances of elements/things from each other	5.46	1.920	0.965	0.891
In my mental image I have a precise idea of the directions of elements/things	5.52	1.867	0.948	0.837
In my mental image I have a precise idea of the locations of elements/things	5.52	1.836	0.943	0.848
In my mental image I have a precise idea of the distances of elements/things away from me	5.56	1.821	0.796	0.806
In my mental image I have a precise idea of the spatial surroundings of elements/things	5.55	1.822	0.780	0.769

Items	α Cronbach/ Mean	% of Variance/ Standard Deviation	λ	Communalities Extraction
In my mental image I have a precise idea of the arrangement of elements/things	5.78	1.777	0.775	0.740
In my mental image I have a precise estimation of how long it will take to do certain things (e.g. walking from point A to point B)	5.15	1.929	0.719	0.650
Kinesthetic	**0.961**	**3.28%**		
In my mental image, I clearly see body gestures	5.27	2.177	0.915	0.926
In my mental image, I clearly see body postures	5.31	2.185	0.904	0.932

As shown in table 6, all factor loadings were significant and the least loading was 0.575. As expected, the biggest portion of the variance was explained by the visual factor (37.97%) followed by gustatory (12.81%), spatial (7.39%), and autonomy (6.30%) factors respectively. Based on the results of EFA, 16 items (five visual, 4 auditory, 2 autonomy, 2 tactile, 2 kinesthetic, and 1 olfactory) were dropped from the list of 81 items. All factors showed acceptable levels of reliability with the lowest α Cronbach being 0.905.

In the CFA model, 21 items (11 visual, 4 auditory, 2 tactile, 2 autonomy, 1 olfactory, and 1 kinesthetic) out of 81 were dropped in order to achieve the desired model fit, validity, and reliability scores. Squared multiple correlations (R^2) are reported in table 7 for nomological and criterion validities' evaluation purposes. Nomological validity along with the measurement validity ensure the construct validity of the scale. Although all loadings being significant indicates that the nomological validity is established by denoting that the logical relationships inside the constructs were as expected (Lynch, 1999; Molina-Azorín, Tarí, Pereira-Moliner, López-Gamero, & Pertusa-Ortega, 2015), R^2 can also help with the evaluation process of the nomological network of relationships. For all measurement items, all explained variances were more than 50% except for eight of them (i.e. one gustatory, 2 visual, 4 autonomy, and 1 kinesthetic out of 59 total items),

indicating a strong level of nomological validity. As shown in table 7, all constructs showed acceptable convergent validity with lowest average variance extracted (AVE) being 0.590 for the autonomy construct. Also, the measurement model showed strong levels of reliability with lowest construct reliability being 0.889 for the kinesthetic construct. The lowest item's loading of 0.6 with all values being statistically significant, furthermore, is the indication of item reliability (Molina-Azorín et al., 2015) as well as convergent validity (Hair et al., 2010). None of the standard errors were abnormally high and t-values were all large enough (ρ-values are significant for all of them at $\rho < 0.001$ level).

Table 7: Constructs and their Respective Items' Loadings as well as Average Variance Extracted, t-Values, Squared Multiple Correlations, and Items' Descriptive Values

Constructs/*Items*	**AVE**/Mean	**CR**/St.D	**λ**	**t-value**	R^2
Gustatory	**0.886**	**0.986**			
In my mental image the flavor(s) that I taste is/are detailed	3.64	2.501	0.982	56.570	0.965
In my mental image most of the flavors I taste are very noticeable	3.78	2.557	0.981	21.153	0.963
In my mental image taste(s) is/are very strong	3.58	2.435	0.979	53.771	0.958
In my mental image the flavor(s) I taste is/are very intense	3.54	2.451	0.978	53.272	0.956
In my mental image different flavors are easily distinguishable	3.70	2.504	0.977	52.732	0.955
In my mental image I taste many different flavors	3.64	2.473	0.967	47.117	0.935
In my mental image based on the flavors I taste, different textures are distinguishable	3.56	2.483	0.966	46.592	0.933
In my mental image I easily taste flavors	3.73	2.567	0.965	46.070	0.931
In my mental image the flavor(s) I taste is/are random that I don't know at all	2.81	2.026	0.616	11.958	0.379
Auditory	**0.806**	**0.974**			
In my mental image I hear many different sounds/noises	4.84	2.328	0.948	28.796	0.899
In my mental image the sound(s)/noise(s) I hear is/are intense	4.43	2.244	0.947	28.619	0.896
In my mental image the sound(s)/noise(s) I hear is/are very clear	4.86	2.334	0.932	42.443	0.868
In my mental image the sound(s)/noise(s) I hear is/are detailed	4.90	2.328	0.925	18.919	0.856
In my mental image the sound(s)/noise(s) I hear is/are constant	4.67	2.322	0.924	26.192	0.853
In my mental image the sound(s)/noise(s) I hear is/are loud	4.31	2.200	0.883	22.794	0.780

Constructs/*Items*	**AVE**/Mean	**CR**/St.D	**λ**	**t-value**	R^2
In my mental image the pitches of sounds/noises are identifiable	4.90	2.300	0.882	22.680	0.777
In my mental image the sound(s)/noise(s) I hear is/are harmonious	4.67	2.221	0.817	18.746	0.667
In my mental image the sound(s)/noise(s) I hear are related like a story	4.46	2.308	0.813	18.531	0.660
Visual	**0.620**	**0.942**			
My mental image is detailed	6.19	1.600	0.887	18.143	0.787
In my mental image I vividly see everything	6.14	1.565	0.863	17.273	0.744
My mental image is a sharp image	6.06	1.707	0.858	17.105	0.736
My mental image is very colorful	6.40	1.650	0.841	16.022	0.707
In my mental image most of the elements/things are noticeable	6.04	1.572	0.788	14.891	0.621
My mental image is very bright	6.09	1.559	0.772	14.424	0.596
In my mental image colors are distinct from each other	6.26	1.592	0.750	13.806	0.562
In my mental image I am watching the image as if it were happening in front of me	6.17	1.694	0.732	13.343	0.536
In my mental image regular shapes are easily detectable (e.g. triangle, circle, etc.)	6.06	1.662	0.687	12.190	0.472
In my mental image the time of the day is easily recognizable	6.52	1.519	0.662	11.604	0.439
Autonomy	**0.590**	**0.934**			
In my mental image I can easily change the shape of elements/things	4.29	2.079	0.926	23.712	0.858
In my mental image I can easily change the sizes of any entities	4.36	2.053	0.907	18.102	0.822
In my mental image I can easily rotate elements/things	4.55	2.065	0.856	19.519	0.732
In my mental image I can easily change the texture of the elements/things I touch	4.10	2.137	0.824	18.013	0.679
In my mental image I can easily rotate the scene	4.76	2.167	0.774	15.902	0.600
In my mental image I can easily change the colors of any entities to any colors I want	4.74	2.066	0.736	14.552	0.541
In my mental image I can easily dismantle anything I want	4.29	2.028	0.685	12.944	0.469
In my mental image I can easily add unreal (mythical) acts to the scene (e.g. flying without any equipment)	4.49	2.168	0.658	12.169	0.432
In my mental image I can easily add unreal (mythical) entities to the scene (e.g. unicorn)	4.50	2.175	0.630	11.418	0.396
In my mental image I can easily change my vantage point (e.g. bird's-eye view)	5.29	2.063	0.611	10.945	0.374
Spatial	**0.772**	**0.959**			
In my mental image I have a precise idea of the distances of elements/things from each other	5.46	1.920	0.943	19.500	0.888
In my mental image I have a precise idea of the locations of elements/things	5.52	1.836	0.922	27.261	0.849

Constructs/*Items*	**AVE**/Mean	**CR**/St.D	**λ**	**t-value**	R^2
In my mental image I have a precise idea of the directions of elements/things	5.52	1.867	0.909	25.954	0.826
In my mental image I have a precise idea of the distances of elements/things away from me	5.56	1.821	0.876	23.018	0.767
In my mental image I have a precise idea of the spatial surroundings of elements/things	5.55	1.822	0.863	22.082	0.745
In my mental image I have a precise idea of the arrangement of elements/things	5.78	1.777	0.833	20.083	0.694
In my mental image I have a precise estimation of how long it will take to do certain things (e.g. walking from point A to point B)	5.15	1.929	0.795	18.043	0.633
Olfactory	**0.925**	**0.989**			
In my mental image the odor(s)/scent(s) I smell is/are very detailed	3.99	2.447	0.980	51.348	0.961
In my mental image the odor(s)/scent(s) is/are very clear	4.02	2.465	0.976	20.940	0.953
In my mental image most of the odors/scents I smell are very noticeable	4.05	2.484	0.972	47.080	0.945
In my mental image smell(s) is/are very real	4.14	2.506	0.967	44.599	0.934
In my mental image the odor(s)/scent(s) I smell is/are very strong	4.08	2.467	0.954	40.186	0.910
In my mental image I smell many different odors/scents	3.93	2.394	0.942	36.888	0.888
In my mental image different odors/scents are distinguishable	4.03	2.415	0.941	36.585	0.886
Tactile	**0.716**	**0.909**			
In my mental image I easily feel the textures of elements/things	4.56	2.173	0.932	18.808	0.869
In my mental image I feel many different textures	4.56	2.117	0.884	21.412	0.781
In my mental image I touch elements/things	4.49	2.196	0.830	18.600	0.689
In my mental image I have a clear understanding of the coarseness of the elements	5.08	2.016	0.725	14.316	0.525
Kinesthetic	**0.735**	**0.889**			
In my mental image, I clearly see body gestures	5.27	2.177	0.965	29.415	0.931
In my mental image, I clearly see body postures	5.31	2.185	0.956	19.672	0.915
My mental image is very alive and active	5.92	1.716	0.600	11.052	0.360

In addition to convergent validity and reliability, the CFA model's discriminant validity was evaluated by investigating the correlation table. Table 8 shows the correlation coefficients of the eight constructs of the measurement model. Furthermore, table 8 depicts the model fit indices of the measurement model as well as the mean and standard deviation values of the eight constructs. As shown in the table, the square root of average variance extracted (AVE) values on

diagonal are higher than any pair of constructs' correlations, which indicate that there is enough discriminant validity. Moreover, two correlation coefficients were in range of 0.6, one correlation coefficient in range of 0.7, and the rest of them under 0.6 which support the initial conceptualization of the mental image construct as a higher-order formative emergent construct composed of five sensory properties plus three structural/intellectual properties of autonomy, spatial, and kinesthetic. With regards to absolute model fit indices, while the ratio of chi-square to degree of freedom, root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) were in the acceptable range, the RMSEA's significance level (PCLOSE), root mean square residual (RMR), and goodness of fit index (GFI) were not satisfactory. There could be multiple reasons for these values not falling within the acceptable levels. The most important one could be the large number of items per construct (Hair et al., 2010) except for the constructs of tactile and kinesthetic. Another reason could be the existence of heterogeneity in the dataset since data has been gathered from two populations of 1) participants with knowledge and previous visit experience of the destination and 2) participants without any knowledge and previous visit experience of the destination. These two populations are not expected to have the same structure for the imagination constructs, and therefore model fit indices might be higher for one population. In terms of incremental fit indices, while IFI (incremental fit index) and comparative fit index (CFI) showed acceptable levels, normed fit index (NFI) and Tucker-Lewis index (TLI) were lower than the acceptable level that could possibly be related to the same reasons mentioned above. Finally, three parsimony fit indices are also reported in table 8 that are useful for comparison of alternative models.

Table 8: Correlation Coefficients with Constructs' Descriptives and Model Fit Indices

Components	Mean	St.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gustatory (1)	3.77	2.502	**0.941**							
Auditory (2)	4.82	2.129	0.512	**0.898**						
Visual (3)	6.24	1.354	0.337	0.567	**0.787**					
Autonomy (4)	4.50	1.814	0.404	0.369	0.298	**0.768**				
Spatial (5)	5.89	1.777	0.381	0.300	0.567	0.366	**0.879**			
Olfactory (6)	4.08	2.395	0.763	0.577	0.399	0.359	0.295	**0.962**		
Tactile (7)	4.88	1.960	0.558	0.635	0.498	0.365	0.422	0.484	**0.846**	
Kinesthetic (8)	5.42	2.050	0.468	0.615	0.552	0.385	0.412	0.400	0.540	**0.857**
χ^2/DF	1.926		**NFI**	0.858		**RMSEA**	0.062		**SRMR**	0.063
RMR	0.247		**IFI**	0.926		**PCLOSE**	0.000			
GFI	0.706		**CFI**	0.926		**AIC**	3420.6			
AGFI	0.678		**TLI**	0.678		**BIC**	3950.9			

Diagonal values: Square root of average variance extracted; St.D.: Standard Deviation; DF: Degree of Freedom; RMR: Root Mean Square Residual; GFI: Goodness of Fit Index; NFI: Normed Fit Index; IFI: Incremental Fit Index; CFI: Comparative Fit Index; TLI: Tucker-Lewis Index; RMSEA: Root Mean Square Error of Approximation; PCLOSE: ρ-value of Close Fit; AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; SRMR: Standardized Root Mean Square Residual

Since both EFA and CFA measurement models were in agreement concerning the number and type of items to keep in the imagination scale, the CFA model was considered as the final solution. Six out of eight constructs (i.e. auditory, gustatory, olfactory, tactile, autonomy, and spatial) showed the same structure for both EFA and CFA models. The kinesthetic construct was a two-item construct in the EFA solution; however, in the CFA solution, it was possible to preserve the third item for this construct, which ultimately made CFA a better solution. Analyzing the visual construct, in order to achieve the desired properties of construct measurement validity and reliability, six additional items were eliminated in the CFA solution in addition to the five items that were dropped in EFA. With 10 items remaining in the visual construct, this construct is capable of capturing the visual property's variability during the imagination process. In summary, the final version of imagination scale was built by using the items with highest loadings and discriminant validity from the CFA model. The questionnaire can be found in appendix E (as well as figure 9).

Common method bias (CMB) was conducted on the measurement model to ensure that the variation of data is due to the real variance of the constructs rather than the data collection method. As previously explained in the first focus group, social desirability, consistency motif, scale length, item embeddedness, and context-induced mood CMB biases were not a threat to the imagination scale, however, item demand characteristics, common scale format, common scale anchors, and measurement context effect were the four main CMB bias concerns that were carefully investigated (Podsakoff et al., 2003). Since the potential source of CMB is unidentified in case of imagination scale, partial correlation procedure and marker variable (aka controlling for the effects of a directly measured latent methods factor) methods were not admissible. Therefore, the two main methods of Harman's single-factor and common latent factor (CLF) were employed to test for the effect of CMB (Podsakoff et al., 2003). Harman's single-factor analysis showed that the unrotated solution results in nine factors with the first factor including 32 out of 59 items and explaining 38.08% of the variance of all items. Accordingly, based on Harman's single-factor analysis, it is possible to conclude that there is either no concern as for the existence of CMB or if existing, it (CMB) imposes a weak effect on the measurement model.

In order to investigate the existence of CMB using the CLF technique, the specific bias test was conducted. According to the chi-square independence test result, the difference between the chi-square value of zero constrained model and unconstrained model was significant ($\Delta\chi^2$ (59) = 172.128, $\rho < 0.001$). The equal constraints test for bias distribution, however, indicated that the difference in the chi-square value of equal constrained model and unconstrained model was not significant ($\Delta\chi^2$ (58) = 63.730, $\rho = 0.282$). In other words, although the measurable bias was detected, it was equally distributed. Hence, if changes in explained variances of the items are not drastic, it is possible to consider the effect of CMB as minimal. It is critical to further investigate

the impact of CMB at the construct and item levels because they can change the structure of the relationships at the intra-construct level. The difference in standardized beta coefficients and squared multiple correlations (R^2) were specifically calculated to identify the large changes of explained variances and the loadings with absolute differences larger than 0.25. The results showed that the three constructs of visual, spatial, and kinesthetic were impacted by CMB. To be specific, the loadings of six items (out of 10) in the visual construct decreased by more than 0.25 in absolute value. Also, the loadings of four items (out of seven) of the spatial construct dropped significantly after the addition of CLF. Likewise, the loading of one of the three items in the kinesthetic construct dropped by 0.325 as the result of CLF addition. That being said, despite the existence of CMB, all loadings still significantly loaded on their respective constructs, showing that structure of the constructs can be preserved. In addition, the changes of R^2 were investigated to see the impact magnitude of CMB on each construct. In the visual construct, the largest change in the explained variances was only 4.2% with the average R^2 of 1.46%. In the spatial construct, similarly, the largest change in the explained variances was only 4.9% with the average R^2 of 2.34%. The results indicated that although CMB influenced two constructs of visual and spatial, its impact was minimal and could be omitted. The same claim, however, cannot be made for the kinesthetic construct as, on average, 28.9% of the explained variances is due to the existence of CMB. In fact, the R^2 of one of the items increased by 31.7% when its loading significantly dropped after the addition of CLF. Similarly, the R^2 of the item which its loading did not drop after the addition of CLF increased by 53.4%, indicating that this item is also under the impact of CMB. This finding denotes that kinesthetic construct's measurement is seriously biased. The bottom line of this section is that CMB was detected but it had a symmetrical and weak impact on the measurement model except for the construct of kinesthetic. Hence, it is possible to either ignore

the weak CMB or take on the strict approach and impute the constructs' scores while retaining the CLF in the measurement model to mitigate the impact of CMB (appendix F shows the result of CMB analysis).

Finally, invariance check was conducted to make sure that the measurement model is stable and applicable to various populations. This step (i.e., invariance check) is critical for the future use of the imagination scale because if established, it shows that the scale will hold up to its measurement validity in different populations. From a structural standpoint, however, it is imperative to note that it is impossible to have an invariant model for every different population. Stated differently, imagination scale is expected to be invariant for most of the demographic variables while some structural differences might exist between individuals who have previous experiences with the imagination subject (i.e. destination) and those who do not have any prior knowledge and experiences with the subject.

Three categories of configural, residual, and measurement invariances were tested for demographic variables (Hair et al., 2010). The measurement invariance was separately evaluated by checking for the invariances of metric, scaler, factor variance, and factor covariance. The results for all demographic variables were more or less the same; hence only gender invariance is demonstrated here as an example of the other demographic invariances. The tables of gender invariance check are presented in appendix G.

Configural invariance showed that the measurement model fits the data of all groups (here male and female). The constrained model's fit indices were also compared to the unconstrained model. The results indicated that while measurement weights and structural covariances were not significantly different at the 95% alpha level ($\Delta\chi^2$ (51) = 54.184, ρ = 0.354), and the 99% alpha

level ($\Delta\chi^2$ (87) = 116.98, ρ = 0.018), respectively, the measurement residuals were significantly different ($\Delta\chi^2$ (152) = 356.189, $\rho < 0.001$).

The residual invariance analysis showed that three out nine residuals variances concerning the gustatory construct, three out of nine residuals concerning the auditory construct, three out of ten residuals concerning the visual construct, two out of ten residuals concerning the autonomy construct, two out of seven residuals concerning the spatial construct, three out of seven residuals concerning the olfactory construct, and two out of four residuals concerning the tactile construct were significantly different between males and females. Although these results are the indication that residual invariance has been established, to finalize the conclusion, the Cronbach's alpha reliability measure for all constructs were calculated for different groups of males and females. All alpha values were more or less the same for all constructs except for the constructs of autonomy and tactile, which their difference in alpha was 0.024 (α_{male} = 0.952, α_{female} = 0.928) and 0.055 (α_{male} = 0.934, α_{female} = 0.879) respectively. Nevertheless, since all of the alpha values were well above the threshold of 0.7 (Hair et al., 2010), it is possible to assume that residuals are invariant. Concerning measurement invariance, the metric invariance is easily established since only the loadings of three items (out of ten items) of the autonomy construct were significantly higher for males and the rest of the loadings were equal between males and females. On the same note, only two out of ten visual items, and one out of ten autonomy items showed significantly different intercepts, indicating that scaler invariance is established. Factor variance invariance was similarly established since not only none of the eight constructs' variances were significantly different between males and females, but also the Levene test statistics denoted the homogeneity of variances for all constructs for both male and female groups. Finally, the covariance criterion of invariance check was established since only one of the covariance paths between spatial and

autonomy constructs was significantly higher for males compared to females. It should be noted, however, that whether the existence of factor covariance invariance is a desired characteristic or not is context-based. To be specific, had we expected to find different types of structural relationships between constructs, lack of factor covariance invariance was more desirable. That being said, since there was no criterion variable in the measurement model of this study, there are no specific preferences regarding the existence or non-existence of factor covariance invariance. In summary, according to the results of invariance check, it is possible to claim that imagination scale is stable enough to be invariant for different subpopulations.

After the establishment of imagination scale's reliability and validity criteria, it is now possible to investigate the structural relationships among constructs in terms of 1) construct order and 2) the inner relationship between imagination and TDI.

4.4.3. Phase III: The Structural Relationships

Most of the validity criteria such as face, content, internal, ecological, construct, nomological, measurement, convergent, discriminant, and concurrent criterion along with the internal consistency reliability criteria of construct reliability and Cronbach's alpha were investigated in the previous section. However, the two validities of concurrent and nomological were only tested at the intra-construct level; structural relationship analysis, though, provides evidence for the establishment of concurrent and nomological validities at the inter-construct level. Phase III, furthermore, provides the invariance analysis of the imagination scale based on individuals' knowledge of destination (imagination) and lack of it (prospection) and is followed by the moderation/interaction hypothesis analysis to deliver a holistic picture of the imagination/prospection construct, its orders, and its relationship with TDI constructs. The

invariance analysis got carried out using the long imagination scale questionnaire and the interrelationships with TDI constructs was investigated using the short imagination scale questionnaire to avoid survey length bias (Podsakoff et al., 2003).

The three categories of configural, residual, and measurement invariances were tested for the variable of 'knowledge' (Hair et al., 2010) to acquire a clearer understanding of the differences between prospection structure and imagination structure. Furthermore, the measurement invariance was separately evaluated by checking for the invariances of metric, scaler, factor variance, and factor covariance. The tables of the imagination and prospection models' invariance check are presented in appendix H.

In terms of configural invariance, the results indicated that all models (i.e., constrained vs. unconstrained) of measurement weights ($\Delta\chi^2$ (59) = 93.548, ρ = 0.003), structural covariances ($\Delta\chi^2$ (87) = 123.236, ρ = 0.006), and measurement residuals ($\Delta\chi^2$ (152) = 397.98, ρ < 0.001) were significantly different at the 99% alpha level. These results called for further investigation of configural invariance as the outcome implied the possibility of lack of invariance in measurement models. To investigate the configural invariance, therefore, the model fit indices of absolute, comparative, and incremental for both imagination and prospection measurement models were compared. Both imagination and prospection measurement models fit the collected data more or less the same since the difference in model fit indices was minimal. However, both models poorly fit the data mainly due to the small sample size and large number of items. That being said, the absolute fit indices showed an acceptable level of model fit for both imagination and prospection models.

The residual invariance analysis indicated that two out nine residuals variance concerning the gustatory construct, five out of nine residuals concerning the auditory construct, six out of ten

residuals concerning the visual construct, three out of ten residuals concerning the autonomy construct, four out of seven residuals concerning the spatial construct, four out of seven residuals concerning the olfactory construct, one out of four residuals concerning the tactile construct, and one out of three residuals concerning the kinesthetic construct were significantly different for imagination and prospection models.

Among these differences, the error variances were higher in 15 cases of the prospection model and 11 cases of the imagination model. The results showed that in all visual items, the error variances were larger for the prospection model compared to the imagination model. This finding was expected and in accordance with the anticipation of not having a solid mental scene due to lack of knowledge and/or memory. The same results held true for the constructs of spatial and kinesthetic, indicating that the mental scene is not solid. In addition, as expected, the error variances of the autonomy construct's items for the imagination model were larger than those of the prospection model. This finding can be due to the idea that with *structured* stored information in memory, the mental image is harder to control compared to when the stored information is *assembled* either randomly or based on various sources. That being said, some other constructs such as auditory showed an unexpected results with their items' error variances being higher for the imagination model compared to prospection. Although these results indicated lack of residual invariance, to ensure that the scale is still capable of measuring both imagination and prospection precisely, the Cronbach's alpha reliability measure for all constructs were calculated. All alpha values were more or less the same for all constructs with the minimum alpha of 0.846, indicating that the scores for both imagination and prospection constructs are reliable. With regards to metric invariance, it is possible to claim that it was established since only the loadings of one out of nine items of the gustatory construct, two out of ten items of the autonomy construct, and three out of

seven items of the spatial construct were significantly higher for the prospection model. The major difference between prospection and imagination model, however, is that there were no scaler invariances for four out of eight constructs. In other words, the intercepts of half of the auditory, and the entire visual, spatial, and kinesthetic items were significantly higher for the imagination model compared to the prospection model. The lack of scaler invariance is expected, however, as imagination is knowledge/experience based, and therefore its score on average should be higher than the prospection model. Regarding the invariance of factor variance, only the kinesthetic and visual constructs showed a lack of factor variance invariance. In other words, a more liberal test of Levene showed that while the variance of tactile, spatial, and auditory constructs were homogenous at the alpha level of 99%, the variance of kinesthetic and visual constructs were heterogeneous at the alpha level of 99%. Finally, nine covariance values were significantly higher for the prospection model compared to the imagination model, indicating higher correlation coefficients for prospection constructs. The covariance of the visual construct with constructs of gustatory, auditory, olfactory, tactile, and kinesthetic were all higher for the prospection model compared to the imagination model. Similarly, the covariance of the kinesthetic construct with the constructs of olfactory, tactile, gustatory, and auditory were all higher in prospection model compared to imagination model. In general, higher covariances in prospection model compared to imagination model is justifiable since the lack of experience/knowledge results in different constructs variations to move (change) together synchronically.

Based on the phenomenology and focus group studies, as well as the correlation analysis of the imagination/prospection constructs, *imagination,* from a conceptual viewpoint, is a third-order formative emergent construct with two properties of sensory and structural. The sensory property of imagination is a second-order formative emergent construct composed of five

components of visual, auditory, tactile, gustatory, and olfactory. The structural property of imagination is a second-order formative emergent construct composed of three components of autonomy, spatial, and kinesthetic. All the first-order constructs (i.e., components) of visual, auditory, tactile, gustatory, olfactory, autonomy, spatial, and kinesthetic are reflective however, that is they reflect in their respective measurement items. Figure 9 depicts the structure of the imagination/prospection construct as conceptualized. It should be noted that since the first-order constructs are all reflective and only the higher-order constructs are formative , it is possible to adopt a full-reflective model for all constructs and use the covariance-based structural equation modeling (CB-SEM) approach with maximum likelihood (ML) estimation instead of the variance-based (VB-SEM) approach with partial least square (PLS) estimation. Nevertheless, VB-SEM with PLS estimation is more appropriate because it can provide a more accurate construct score estimation with the formative conceptualization of constructs. Furthermore, the abstraction level can be increased/decreased by eliminating the higher-order constructs. As a result, studies can ignore the third-order construct of imagination and instead employ the properties (second-order) or the components (first-order) levels to increase the explanatory power of their studies.

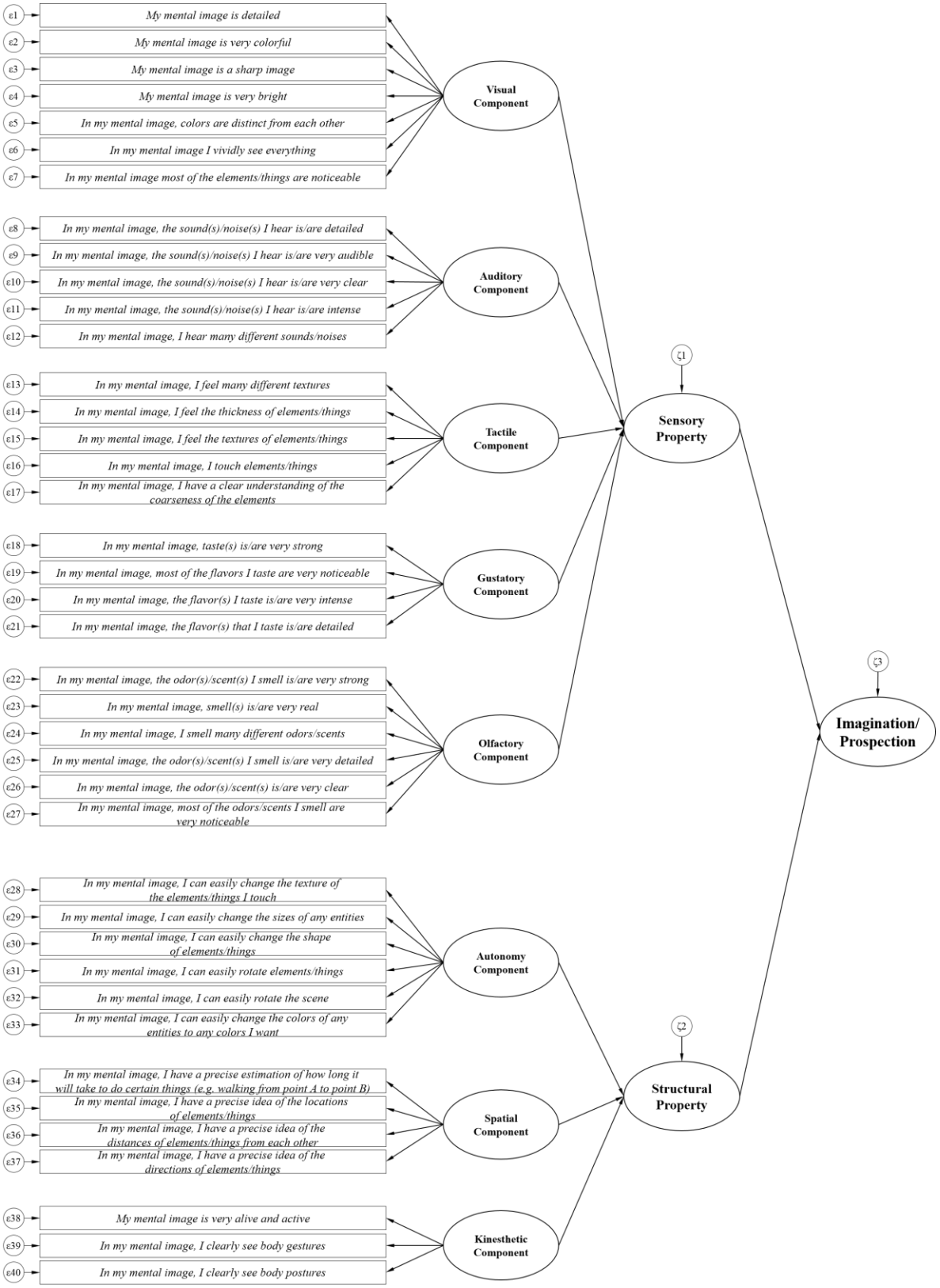

Figure 9: Imagination/Prospection Construct Conceptualization

As a final point, in order to have a clearer understanding of the structural inter-construct relationships, the moderation/interaction analysis of H_3, H_4, and H_5, as previously proposed in chapter two and three (figures 3 and 5), were tested with regression-based conditional process analysis of moderated mediation model (Hayes, 2013). For the purpose of interaction analysis, the constructs' scores were all imputed and standardized. Table 9 summarizes the results of hypotheses testing of the main and interaction effects and figure 10 shows the operationalization results of the structural hypotheses in figure 5.

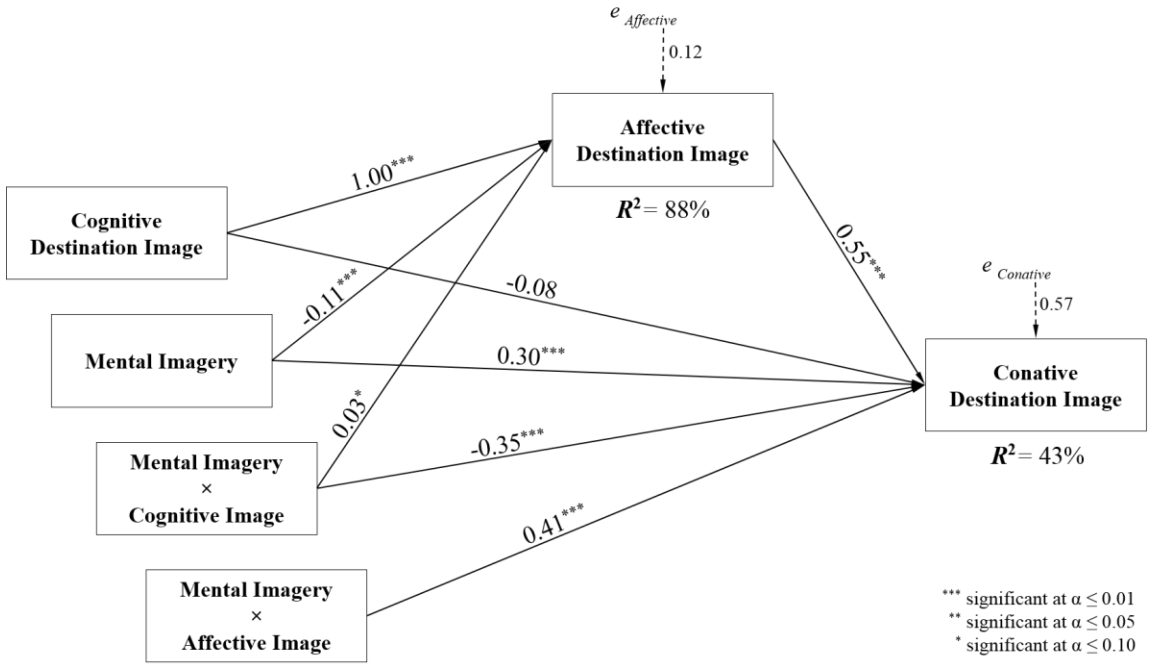

Figure 10: The Results of Structural Hypotheses and Moderation Effect of Imagination on TAM of TDI

Hypothesis 3 was not supported due to the direction of interaction. Although the interaction impact of cognitive destination image with imagination on conative destination image was significant (β = -0.350, ρ = 0.002, f^2 = 0.030), it was not positive. In other words, as shown in figure 11, when imagination score is low, cognitive destination image shows a positive relationship with the conative destination image. On the other hand, when imagination score is

high, the relationship between cognitive and conative destination image is negative. This effect might be due to the fact that a great portion of the impact of cognitive destination image on conative destination image is mediated by affective destination image. Also, another explanation for the direction of moderation in the third hypothesis could be related to the results of the first focus group study. Participants showed that when the subject of mental scene is unknown (which the imagination score is expected to be low), individuals are more inclined to assign negative attributes to the destination. Therefore, as cognitive destination image is merely the evaluation/judgement of the destination *attributes*, the findings can be justified in this manner as well.

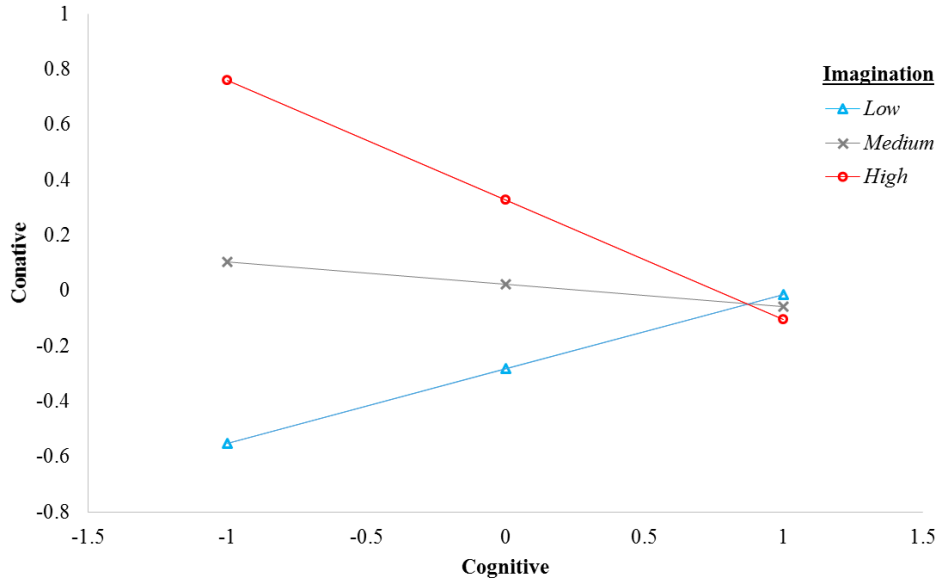

Figure 11: The Impact of Cognitive Destination Image on Conative Destination Image for Different Levels of Imagination

Table 9: Regression-based Conditional Process Analysis of the Interaction Effect of Imagination in TDI's Components' Inter-relationships

	Coefficient	SE	t-statistic	ρ-value	R^2
Model 1 dependent variable: Affective					0.880
Intercept	-0.016	0.024	-0.667	0.505	
Cognitive	1.003	0.032	31.258	0.000	
Imagination	-0.113	0.023	-4.822	0.000	
Cognitive × *Imagination*	0.034	0.018	1.775	0.077	
Model 2 dependent variable: Conative					0.434
Intercept	0.022	0.051	0.422	0.673	
Cognitive	-0.081	0.170	-0.478	0.633	
Affective	0.553	0.162	3.411	0.001	
Imagination	0.305	0.052	5.910	0.000	
Cognitive × *Imagination*	-0.350	0.113	-3.100	0.002	
Affective × *Imagination*	0.408	0.117	3.496	0.001	

The fourth hypothesis was supported according to the results of the regression-based conditional process analysis. The interaction of affective destination image with imagination constructs showed a positive impact on the conative destination image ($\beta = 0.408$, $\rho = 0.001$, $f^2 = 0.037$). As shown in figure 12, the relationship between affective and conative destination image is positive for all levels of imagination. However, the slope of the line (relationship) changes with different rates depending on the imagination level. To be specific, the relationship between affective destination image and conative destination image is slightly positive but insignificant for cases with low imagination levels. For medium levels of imagination, however, the relationship between affective and conative destination image is strongly positive. Similarly, for high levels of imagination, affective and conative destination image have a positive relationship but stronger than medium levels of imagination.

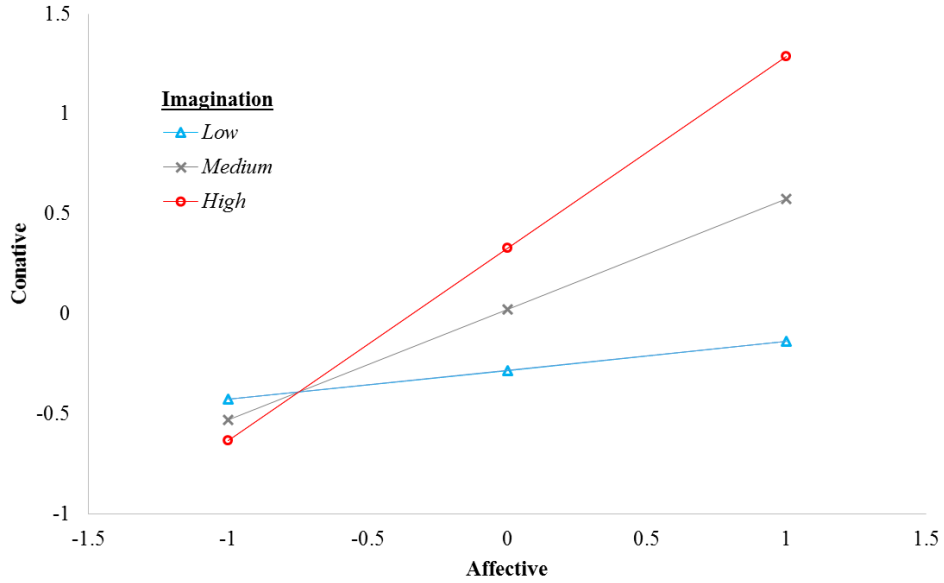

Figure 12: The Impact of Affective Destination Image on Conative Destination Image for Different Levels of Imagination

The fifth hypothesis was supported according to the results of the regression-based conditional process analysis. The results, however, indicated a weak effect since the moderation/interaction was supported at the alpha level of 90%. The interaction of cognitive destination image with imagination constructs showed a positive impact on the affective destination image ($\beta = 0.034$, $\rho = 0.077$, $f^2 = 0.012$). As shown in figure 13, although the positive impact of cognitive destination image on affective destination image is slightly stronger for higher levels of imagination, the impact is very weak since the slopes of the three lines are almost parallel to each other.

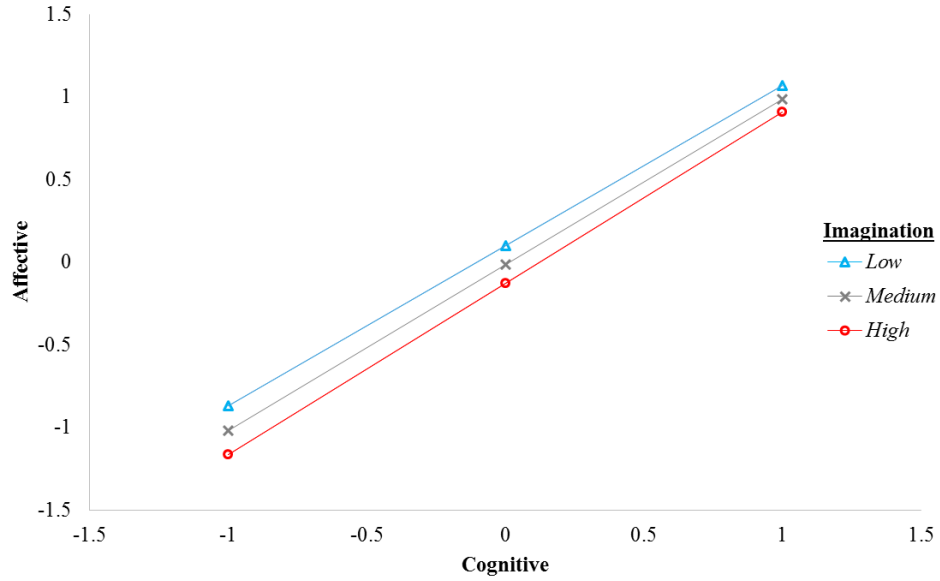

Figure 13: The Impact of Cognitive Destination Image on Affective Destination Image for Different Levels of Imagination

Based on the structural hypotheses analysis, the formal abstraction operationalized for in chapter three can be rewritten as below:

$$Affective = -0.02 + 1Cognitive - 0.11Imagination + 0.03CognitivImagination$$

$$Conative = 0.02 - 0.08Cognitive + 0.30Imagination + 0.55Affective$$
$$- 0.35CognitiveImagination + 0.41AffectiveImagination$$

The time (and logical) precedence of affection and cognition is controversial. Stated differently, in the Tri-component (cognitive-affective-conative) Attitudinal Model of TDI (figure 3), cognitive image is usually treated as the predictor of the affective and conative image components (Agapito et al., 2013). In other words, affection and conation are typically considered as postcognitive processes in psychology theories (Zajonc, 1980). Nevertheless, some psychology studies (e.g., Murphy & Zajonc, 1993) suggest that affection can co-exist with

cognition as a parallel process. In fact, Zajonc's (1980) hypothesis suggested the independence of affective reaction as a result of minimal stimulus intake from the cognitive processing system. Therefore, in order to have a better understanding of the time precedence of tri-component attitudinal model, this study also tested a rival model (of figure 10) by placing affective destination image as the antecedent and cognitive destination image as the mediator. The results of the rival model were then compared with those of the original model (figure 10). Since the findings of both operationalizations were more or less the same, the results were not reported to keep the section as parsimonious as possible.

4.5. Study 4: The Experiment

In order to investigate the causal impact of knowledge and visitation on imagination/prospection process, an experimental design approach was adopted and a 2×2 factorial mix design was developed. Apart from the main effects, the interaction effects were also investigated. Out of the four possible combinations of "not knowledgeable—not visitor", "knowledgeable visitor", "knowledgeable—not visitor", and "not knowledgeable visitor", the last one (i.e. "not knowledgeable visitor") is not plausible. As a result, the combination was made on three levels of interaction only.

A convenient sample of 405 observations was collected by recruiting university students. After initial screening and eliminating incomplete cases, individuals with lack of attention (utilizing trap questions), and experiment session duration outliers, 378 observations were used for the purpose of this study. Out of the 378 participants, 197 of them received no treatment and were not exposed to any of the three information sources of text, image, and video about the destination. Sixty-nine out of the 197 participants had not previously visited the selected destination and had

no knowledge about it. Sixty-three out of the 197 participants had not previously visited the selected destination but were knowledgeable about it. Finally, 65 out of 197 participants had previously visited the selected destination and were knowledgeable about it. The rest of the 181 participants (out of the 378 participants) were exposed to one of the sources of information about the destination of choice. Fifty-seven out of 181 participants were exposed to an informational text about the destination. Sixty-four out of 181 participants were exposed to five images (randomly ordered) about the destination. Finally, 60 out of 181 participants were exposed to a video about the destination of choice (any length between 01:09 to 6:38, with the average length of 4:38). It is important to note that due to copyright issues, the images, texts, and videos used in this study are not provided in appendices but is available upon request. The descriptive statistics showed that 94% of the participants were single, 23% were females, and the average age of participants was 23.1 years old with an average of 3.5 trips per year.

In the first section of the experiment (i.e. hypothesis testing), 15 hypotheses related to vividness, richness, autonomy, spatial properties, and their interactions were tested with regards to imagination/prospection level. In the second section of the experiment (i.e. Information Exposure), an exploratory approach was adopted to investigate the impact of information source on mental scene evolution.

4.5.1. Hypothesis Testing

The results of factorial ANOVA supported H_{1a} that the imagination of individuals with previous visit experience (M = 6.75, SD = 1.521) is more vivid ($F_{(1, 194)}$ = 3.174, ρ = 0.076, η^2 = 0.016) compared to the imagination of those with no prior visit experience (M = 5.81, SD = 1.668). Nevertheless, the significance level of 0.1 and the weak effect size of 0.016 indicates that ‘prior

visit experience' has a minimal impact. The results of this study supported H_{2a} as knowledge exerts an almost medium size effect on imagination vividness ($F_{(1, 194)} = 9.406$, $\rho = 0.002$, $\eta^2 = 0.046$) in a way that individuals who have knowledge about the destination ($M = 6.51$, $SD = 1.506$) express a more vivid mental scene compared to those without any knowledge of the destination ($M = 5.41$, $SD = 1.752$). The results of this study did not support H_{1b} that individuals with previous visit experience ($M = 3.76$, $SD = 1.329$) exhibit higher levels of autonomy over their imagination of a destination ($F_{(1, 194)} = 0.132$, $\rho = 0.717$, $\eta^2 = 0.001$) compared to those without any prior visit experience ($M = 3.66$, $SD = 1.317$). Similarly, no support was found for H_{2b} since the individuals with knowledge of the destination ($M = 3.80$, $SD = 1.322$) did not exhibit higher levels of autonomy over their imagination of the destination ($F_{(1, 194)} = 2.374$, $\rho = 0.125$, $\eta^2 = 0.012$) compared to those with no knowledge of the destination ($M = 3.49$, $SD = 1.296$). The insignificant results might be due to the fact that control over imagination is more an inner attribute related to the individual's intellectual ability rather than an external attribute that can be strengthened by visiting a destination and gaining knowledge about it. Moreover, the interaction effect between knowledge and prior visit experience was scrutinized to test $H_{1\times2a}$ and understand whether knowledgeable visitors have higher imagination vividness compared to other two groups of not knowledgeable—not visitor and knowledgeable—not visitors. The results suggested that there is a significant difference in terms of imagination vividness among the three levels of interactions ($F_{(2, 194)} = 12.395$, $\rho < 0.001$, $\eta^2 = 0.113$). Planned contrast results for the hypothesis, $H_{1\times2a}$, indicated that knowledgeable visitors ($M = 6.75$, $SD = 1.521$) report more vividness in their mental scenes ($t_{(108.379)} = 4.921$, $\rho < 0.001$, $r_{contrast} = 0.183$) compared to knowledgeable—not visitors ($M = 6.25$, $SD = 1.459$) and not knowledgeable—not visitors ($M = 5.41$, $SD = 1.752$). Furthermore, the interaction exerts a medium effect size on imagination vividness. Investigating the same interaction effect (i.e.,

knowledge and prior visit experience) on the autonomy construct ($H_{1\times2b}$) showed that there is no significant difference in terms of autonomy over the mental scene between knowledgeable visitors and others two groups of not knowledgeable—not visitor and knowledgeable—not visitors ($F_{(2, 194)} = 1.313$, $\rho = 0.271$, $\eta^2 = 0.013$). In order to have a more thorough understanding of the impact of knowledge and prior visit experience on the autonomy construct, six separate ANOVA tests were ran on the six measurement items that this construct (i.e., autonomy) reflects in. The results showed that for all measurement items except one, there was no significant difference between the above-mentioned groups regarding the interaction effects. However, participants' responses depicts a significant interaction effect regarding their ability to easily rotate the mental scene ($F_{(2, 194)} = 3.368$, $\rho = 0.036$, $\eta^2 = 0.033$). Planned contrast results indicated that knowledgeable visitors ($M = 6.14$, $SD = 1.836$) report more autonomy concerning their ability to easily rotate their mental scene ($t_{(194)} = 2.572$, $\rho = 0.011$, $r_{contrast} = 0.033$) compared to knowledgeable—not visitors ($M = 5.43$, $SD = 1.940$) and not knowledgeable—not visitors ($M = 5.33$, $SD = 2.041$). Nevertheless, the weak effect size is the indication that such a difference in ability to easily rotate the mental scene is only slightly stronger for knowledgeable visitors compared to others.

Our findings supported H_{1c} that individuals with previous visit experience ($M = 7.23$, $SD = 1.027$) have a richer imagination of the destination (Brown-Forsythe $F_{(1, 187.075)} = 37.722$, $\rho < 0.001$, $\omega^2 = 0.118$) compared to those without any prior visit experience ($M = 6.03$, $SD = 1.703$). The effect size shows that the impact of the prior visit experience on richness of imagination is medium. In a similar vein, H_{2c} is supported as knowledge exerts a strong effect on imagination richness (Brown-Forsythe $F_{(1, 107.529)} = 43.186$, $\rho < 0.001$, $\omega^2 = 0.206$) in a way that individuals with some knowledge about the destination ($M = 6.97$, $SD = 1.255$) explain a richer mental scene compared to those without any knowledge about the destination ($M = 5.42$, $SD = 1.727$).

Furthermore, the findings of this study supported H_{1d} that individuals with previous visit experience (M = 6.85, SD = 1.383) show more salient imagination of a destination ($F_{(1, 195)}$ = 8.610, ρ = 0.004, η^2 = 0.042) compared to those without any prior visit experience (M = 6.22, SD = 1.421). The effect size of the impact of prior visit experience on imagination saliency is small to medium. The results, similarly, supported H_{2d} that individuals with some knowledge (M = 6.73, SD = 1.239) about the destination show more salient imagination (Brown-Forsythe $F_{(1, 112.645)}$ = 15.716, $\rho < 0.001$, ω^2 = 0.081) compared to those without any knowledge about the destination (M = 5.86, SD = 1.602). Moreover, the results of interaction effect analysis (Brown-Forsythe $F_{(2, 172.675)}$ = 29.160, $\rho < 0.001$, ω^2 = 0.220) supported $H_{1\times2c}$ concerning that knowledgeable visitors (M = 7.23, SD = 1.027) explain a richer imagination ($t_{(149.262)}$ = 7.639, $\rho < 0.001$, $r_{contrast}$ = 0.281) compared to knowledgeable—not visitors (M = 6.70, SD = 1.410) and not knowledgeable—not visitors (M = 5.42, SD = 1.727). The effect size shows that the interaction between knowledge and prior visit experience exerts a strong effect on imagination richness. Investigating the same interaction effect (i.e., knowledge and prior visit experience) on imagination saliency ($H_{1\times2d}$) showed that there is a significant difference (Brown-Forsythe $F_{(2, 181.991)}$ = 9.742, $\rho < 0.001$, ω^2 = 0.080) between interactions groups of knowledgeable visitors and two groups of not knowledgeable—not visitor and knowledgeable—not visitors. Planned contrast results indicated that knowledgeable visitors (M = 6.85, SD = 1.383) experience a more salient imagination ($t_{(123.651)}$ = 2.928, ρ = 0.004, $r_{contrast}$ = 0.065) compared to knowledgeable—not visitors (M = 6.62, SD = 1.069) and not knowledgeable—not visitors (M = 5.86, SD = 1.602). The effect size shows that the impact of knowledge and prior visit experience interaction on imagination saliency is medium.

Finally, the results supported H_{1e} that individuals with previous visit experience (M = 6.09, SD = 1.343) express stronger spatial properties ($F_{(1, 194)}$ = 17.293, $\rho < 0.001$, η^2 = 0.082) compared

to those without any visitation (M = 4.97, SD = 1.511). The effect size shows that the impact of prior visit experience on spatial properties is medium. Unlike H_{1e}, however, H_{2e} is not supported since individual's knowledge of the destination did not exert any significant influence on the spatial properties of imagination ($F_{(1, 194)} = 0.131$, $\rho = 0.718$, $\eta^2 = 0.001$). The results of interaction effect analysis ($F_{(2, 194)} = 12.915$, $\rho < 0.001$, $\eta^2 = 0.118$) supported $H_{1\times2e}$ by showing that there is at least one significant difference among knowledgeable visitors, not knowledgeable—not visitor, and knowledgeable—not visitors in terms of knowledge and prior visit experience interactions effect on spatial properties level. Planned contrast results indicated that knowledgeable visitors (M = 6.09, SD = 1.343) express stronger spatial properties ($t_{(375)} = 5.677$, $\rho < 0.001$, $r_{contrast}$ = 0.079) compared to knowledgeable—not visitors (M = 5.06, SD = 1.541) and not knowledgeable—not visitors (M = 4.57, SD = 1.679). The effect size shows that the interaction between knowledge and prior visit experience exerts a strong effect on spatial properties of imagination. Table 10 summarizes the results of hypothesis testing.

Table 10: Hypothesis Testing Results

Hypothesis	Conceptualization	Decision	Effect Size
H_{1a}	*The mental image of previous and current visitors to a destination is more vivid than the mental image of those who have never visited the destination*	Supported	$\eta^2 = 0.016$
H_{2a}	*The mental image of people who are more knowledgeable about the destination is more vivid than the mental image of those who are less knowledgeable*	Supported	$\eta^2 = 0.046$
H_{1b}	*Current and previous visitors to a destination exhibit higher levels of autonomy over their imagination than those who have never visited the destination*	Not Supported	$\eta^2 = 0.001$
H_{2b}	*People who have more knowledge of the destination show higher levels of autonomy over their imagination than those with less knowledge*	Not Supported	$\eta^2 = 0.012$
$H_{1\times2a}$	*Knowledgeable visitors have higher image vividness compared to others*	Supported	$\eta^2 = 0.113$
$H_{1\times2b}$	*Knowledgeable visitors have more autonomy over the image compared to the others*	Not Supported	$\eta^2 = 0.013$

Hypothesis	Conceptualization	Decision	Effect Size
H_{1c}	*The mental image of previous and current visitors to a destination is richer compared to the mental image of those who have never visited the destination*	Supported	$\omega^2 = 0.118$
H_{2c}	*The mental image of people who are more knowledgeable about the destination is richer compared to the mental image of those who are less knowledgeable*	Supported	$\omega^2 = 0.206$
H_{1d}	*The mental image of previous and current visitors to a destination is more salient compared to the mental image of those who have never visited the destination*	Supported	$\eta^2 = 0.042$
H_{2d}	*The mental image of people who are more knowledgeable about the destination is more salient compared to the mental image of those who are less knowledgeable*	Supported	$\omega^2 = 0.081$
$H_{1\times2c}$	*Knowledgeable visitors show a richer image compared to the others*	Supported	$\omega^2 = 0.220$
$H_{1\times2d}$	*Knowledgeable visitors show a more salient image compared to the others*	Supported	$\omega^2 = 0.080$
H_{1e}	*The mental image of previous and current visitors to a destination is stronger regarding spatial properties compared to the mental image of those who have never visited the destination*	Supported	$\eta^2 = 0.082$
H_{2e}	*The mental image of people who are more knowledgeable about a destination is stronger regarding spatial properties compared to the mental image of those who are less knowledgeable*	Not Supported	$\eta^2 = 0.001$
$H_{1\times2e}$	*Knowledgeable visitors show stronger spatial properties in their mental image compared to the others*	Supported	$\eta^2 = 0.118$
H_3	*Mental image positively moderates the positive relationship between the cognitive destination image and the conative destination image*	Not Supported	$f^2 = 0.030$
H_4	*Mental image positively moderates the positive relationship between the affective destination image and the conative destination image*	Supported	$f^2 = 0.037$
H_5	*Mental image positively moderates the positive relationship between the cognitive destination image and the affective destination image*	Supported	$f^2 = 0.012$

4.5.2. Information Exposure

The exploratory section of the experimental study examines the impact of different information sources including text, image, and video on the transition procedure of prospection to imagination of individuals with no prior visit experience and knowledge of the destination. All examinations were conducted in forms of pre- (prospection) and post- (imagination) exposure to

the information source. In terms of the visual component of the sensory property of imagination, the results showed that prospection (M = 4.89, SD = 1.469) scores significantly lower ($F_{(1, 246)}$ = 237.866, ρ = 0.638, η^2 = 0.492) than imagination (M = 6.16, SD = 1.375). As expected, the strong effect size indicates that being exposed to information about a destination strongly enhances the visual component of the sensory property of imagination. Furthermore, the interaction effect between information source and information exposure was significant ($F_{(3, 246)}$ = 29.818, ρ < 0.001, η^2 = 0.267). As shown in figure 14, all information sources enhance the visual component of the sensory property of imagination, video's rate of increase is higher than those of image and text. These findings are accurate despite the significant difference among information sources ($F_{(3, 246)}$ = 2.764, ρ = 0.043, η^2 = 0.033) as the score for only control group was lower than other groups and information sources were not significantly different from each other. The post-hoc test of Tukey HSD (M_{diff} = -0.555, SE = 0.204, ρ = 0.035) depicted that the level of the visual component in the sensory property of imagination in image group is significantly lower than that of the control group. In other words, the changes in the visual construct's score were not inherent from information sources' participants.

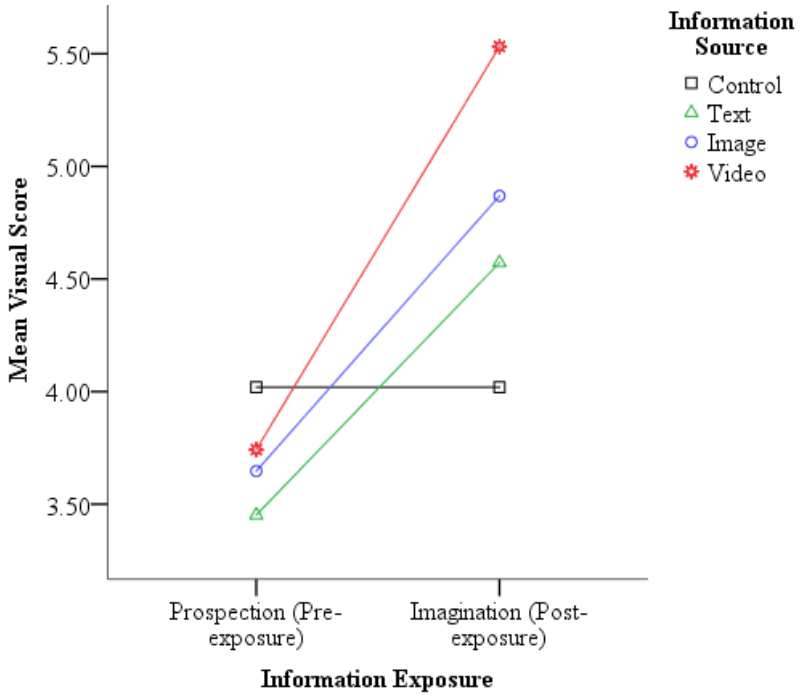

Figure 14: The Impact of Information Exposure on the Visual Component of the Sensory Property of Imagination

Regarding the tactile component of the sensory property of imagination, the results showed that prospection (M = 3.73, SD = 1.725) scores significantly lower ($F_{(1, 246)}$ = 112.558, ρ < 0.001, η^2 = 0.314) than imagination (M = 4.73, SD = 1.906). The strong effect size, in fact, indicates that being exposed to information about a destination strongly enhances the tactile component of the sensory property of imagination. Furthermore, the interaction effect between information source and information exposure was significant ($F_{(3, 246)}$ = 15.607, ρ < 0.001, η^2 = 0.160). However, as shown in figure 15, although all information sources enhance the tactile component of the sensory property of imagination, video's rate of increase is higher than those of text and image. These findings are accurate since different information sources did not show any significant differences ($F_{(3, 246)}$ = 2.040, ρ = 0.109, η^2 = 0.024). In other words, the changes in the tactile construct's score were not inherent from information sources' participants.

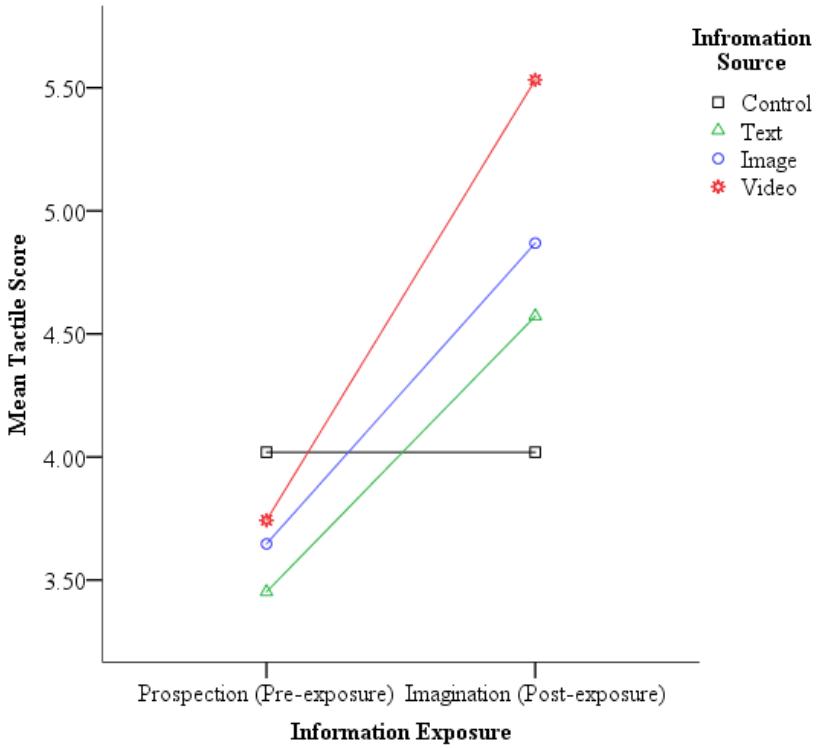

Figure 15: The Impact of Information Exposure on the Tactile Component of the Sensory Property of Imagination

Concerning the auditory component of the sensory property of imagination, the results showed that prospection (M = 4.37, SD = 1.877) scores significantly lower ($F_{(1, 246)}$ = 47.648, ρ < 0.001, η^2 = 0.162) than imagination (M = 5.03, SD = 1.693). The strong effect size, in fact, indicates that being exposed to information about a destination strongly enhances the auditory component of sensory property of imagination. Furthermore, the interaction effect between information source and information exposure was significant ($F_{(3, 246)}$ = 10.369, ρ < 0.001, η^2 = 0.112). It should be noted, however, that although video, text, and image enhance the auditory component of the sensory property of imagination, the enhancement rate for the information source of image is much less than those of video and text. In fact, even with the enhancement, post-exposure level is still less than the control group (figure 16). In addition, the interaction effect between information source and information exposure showed a medium effect size on the

auditory component. These findings are accurate since different information sources did not show any significant differences ($F_{(3, 246)} = 0.559$, $\rho = 0.642$, $\eta^2 = 0.007$). In other words, the changes in the auditory construct's score were not inherent from information sources' participants.

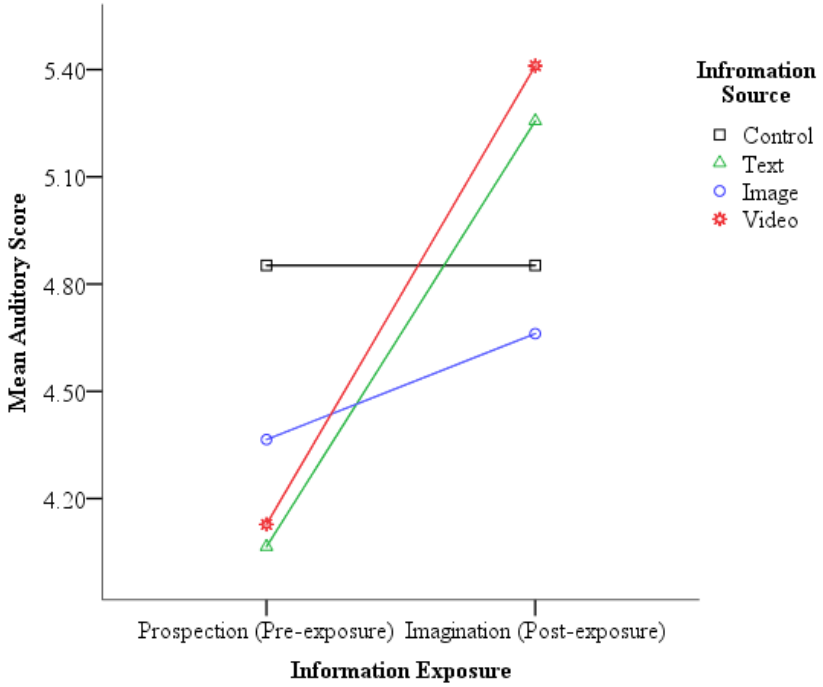

Figure 16: The Impact of Information Exposure on the Auditory Component of the Sensory Property of Imagination

Regarding the olfactory component of the sensory property of imagination, the results of this study showed that prospection ($M = 3.72$, $SD = 2.146$) scores significantly lower ($F_{(1, 246)} = 66.230$, $\rho < 0.001$, $\eta^2 = 0.212$) than imagination ($M = 4.55$, $SD = 2.269$). The strong effect size, in fact, indicates that being exposed to information about a destination strongly enhances the olfactory component of the sensory property of imagination. Furthermore, the interaction effect between information source and information exposure was significant ($F_{(3, 246)} = 11.163$, $\rho < 0.001$, $\eta^2 = 0.120$). It should be noted, however, that although all information sources enhance the

olfactory component of the sensory property of imagination, video's and text's rate of increase are higher than that of image (figure 17). In addition, the interaction effect between information source and information exposure showed a medium effect size on the olfactory component. These findings are accurate since different information sources did not show any significant differences ($F_{(3, 246)} = 0.732$, $\rho = 0.534$, $\eta^2 = 0.009$). In other words, the changes in the olfactory construct's score were not inherent from information sources' participants.

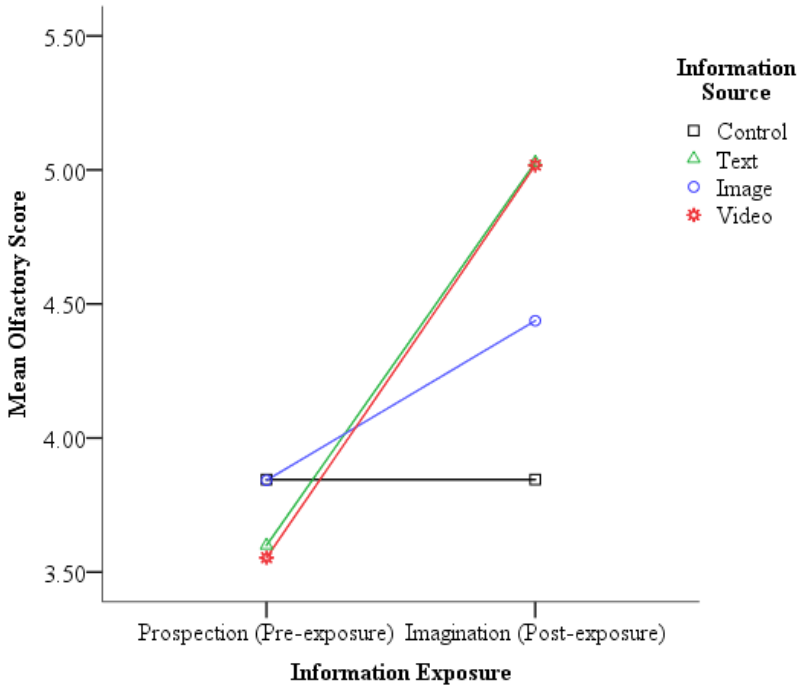

Figure 17: The Impact of Information Exposure on the Olfactory Component of the Sensory Property of Imagination

In terms of the gustatory component of the sensory property of imagination, the results showed that prospection ($M = 2.89$, $SD = 2.055$) scores significantly lower ($F_{(1, 246)} = 30.232$, $\rho < 0.001$, $\eta^2 = 0.109$) than imagination ($M = 3.48$, $SD = 2.312$). The medium effect size, moreover, indicates that being exposed to information about a destination moderately enhances the gustatory

component of the sensory property of imagination. Furthermore, the interaction effect between information source and information exposure stage was significant ($F_{(3, 246)} = 7.758$, $\rho < 0.001$, $\eta^2 = 0.086$). It should be noted, however, that although video, text, and image enhance the gustatory component of the sensory property of imagination, the enhancement rate for the information source of image is much less than those of video and text. In fact, even with the enhancement, post-exposure level is still less than the control group (figure 18). In addition, the interaction effect between information source and information exposure showed a medium effect size on the gustatory component. These findings are accurate since different information sources did not show any significant differences ($F_{(3, 246)} = 0.589$, $\rho = 0.623$, $\eta^2 = 0.007$). In other words, the changes in the gustatory construct's score were not inherent from information sources' participants.

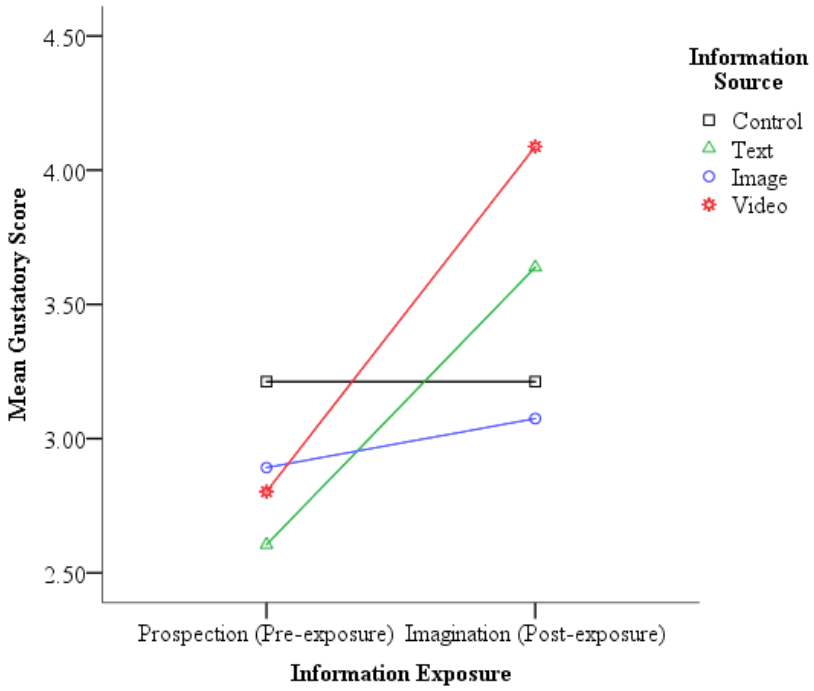

Figure 18: The Impact of Information Exposure on the Gustatory Component of the Sensory Property of Imagination

In terms of the autonomy component of the structural property of imagination, the results showed that prospection (M = 3.43, SD = 1.388) scores significantly lower ($F_{(1, 246)}$ = 168.287, ρ < 0.001, η^2 = 0.406) than imagination (M = 4.43, SD = 1.711). The strong effect size, in fact, indicates that being exposed to information about a destination strongly enhances the autonomy component of the structural property of imagination. Furthermore, the interaction effect between information source and information exposure was significant ($F_{(3, 246)}$ = 20.229, ρ < 0.001, η^2 = 0.198). It should be noted, however, that the interaction effect is not real since it is the outcome of the comparison between the control group from pre-exposure with information source groups in post-exposure (figure 19). Different information sources also showed significant differences ($F_{(3, 246)}$ = 4.143, ρ = 0.007, η^2 = 0.048) concerning the autonomy component. The post-hoc test of Tukey HSD (M_{diff} = -0.808, SE = 0.242, ρ = 0.005) depicted that the level of the autonomy component in the structural property of imagination in video group is significantly higher than that of the control group.

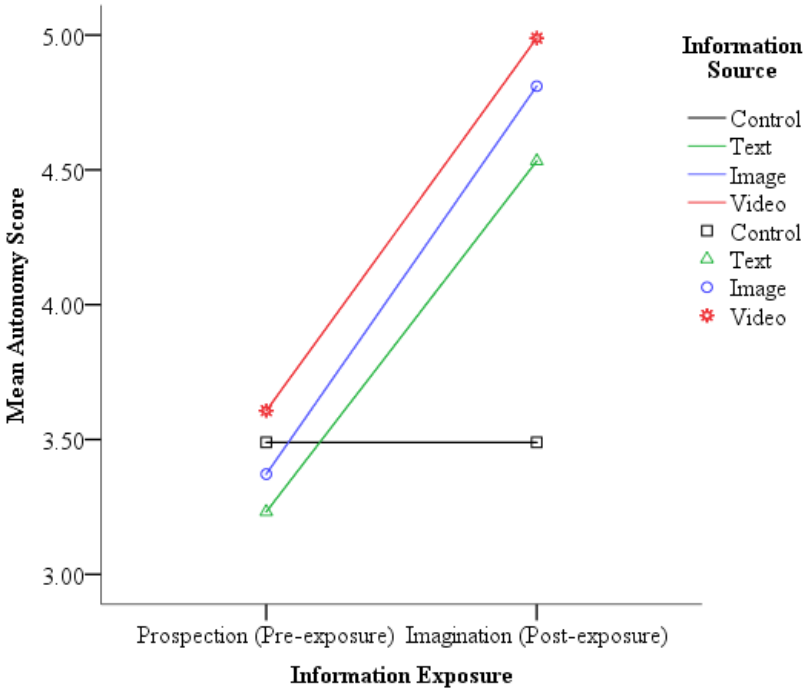

Figure 19: The Impact of Information Exposure on the Autonomy Component of the Structural Property of Imagination

Regarding the spatial component of the structural property of imagination, the results showed that prospection (M = 4.57, SD = 1.679) scores significantly lower ($F_{(1, 246)}$ = 33.860, ρ < 0.001, η^2 = 0.121) than imagination (M = 5.08, SD = 1.578). The medium effect size, moreover, indicates that being exposed to information about a destination moderately enhances the spatial component of the structural property of imagination. Furthermore, the interaction between information source and information exposure was significant ($F_{(3, 246)}$ = 4.434, ρ = 0.005, η^2 = 0.051). It should be noted, however, that although image, video, and text enhance the spatial component of the structural property of imagination, the enhancement rate for the information source of video is less than the rate for image. In fact, even with the enhancement, post-exposure level is still less than the control group (figure 20). In addition, the interaction effect between information source and information exposure showed a weak effect size on the spatial component.

These findings are accurate since different information sources did not show any significant differences ($F_{(3, 246)} = 1.171$, $\rho = 0.321$, $\eta^2 = 0.014$). In other words, the changes in the spatial construct's score were not inherent from information sources' participants.

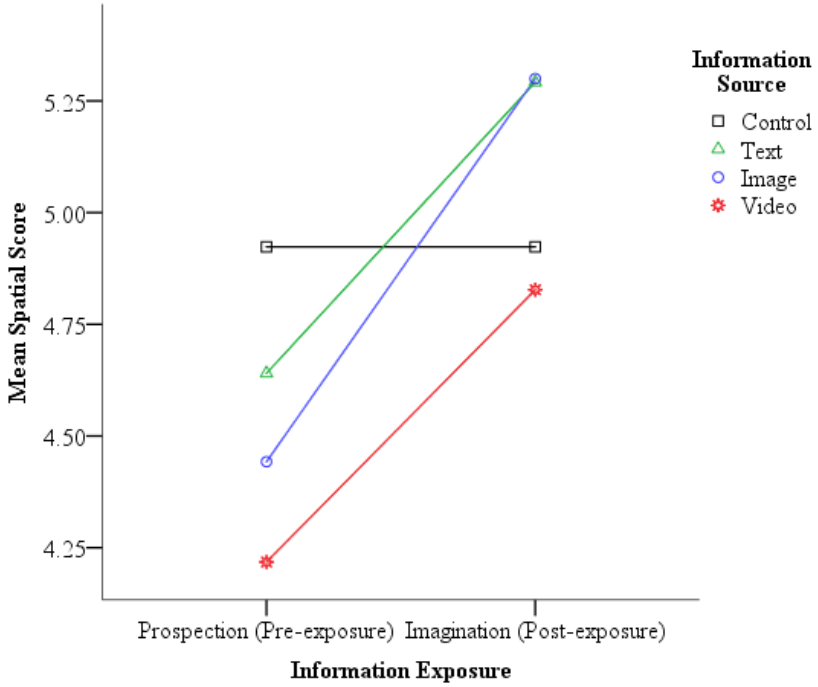

Figure 20: The Impact of Information Exposure on the Spatial Component of the Structural Property of Imagination

Finally, regarding the kinesthetic component of the structural property of imagination, the result of this study showed that prospection ($M = 2.17$, $SD = 1.024$) scores significantly lower ($F_{(1, 246)} = 33.735$, $\rho < 0.001$, $\eta^2 = 0.121$) than imagination ($M = 2.46$, $SD = 0.819$). The medium effect size, moreover, indicates that being expose to information about a destination moderately enhances the kinesthetic component of the structural property of imagination (figure 21). Furthermore, the interaction between information source and information exposure stage was significant ($F_{(3, 246)} = 5.227$, $\rho = 0.002$, $\eta^2 = 0.060$). It should be noted, however, that although all

information sources enhance the kinesthetic component of the structural property of imagination, text's rate of increase is higher than those of text and image. These findings are accurate since different information sources did not show any significant differences ($F_{(3, 246)} = 0.366$, $\rho = 0.778$, $\eta^2 = 0.004$). In other words, the changes in the kinesthetic construct's score were not inherent from information sources' participants.

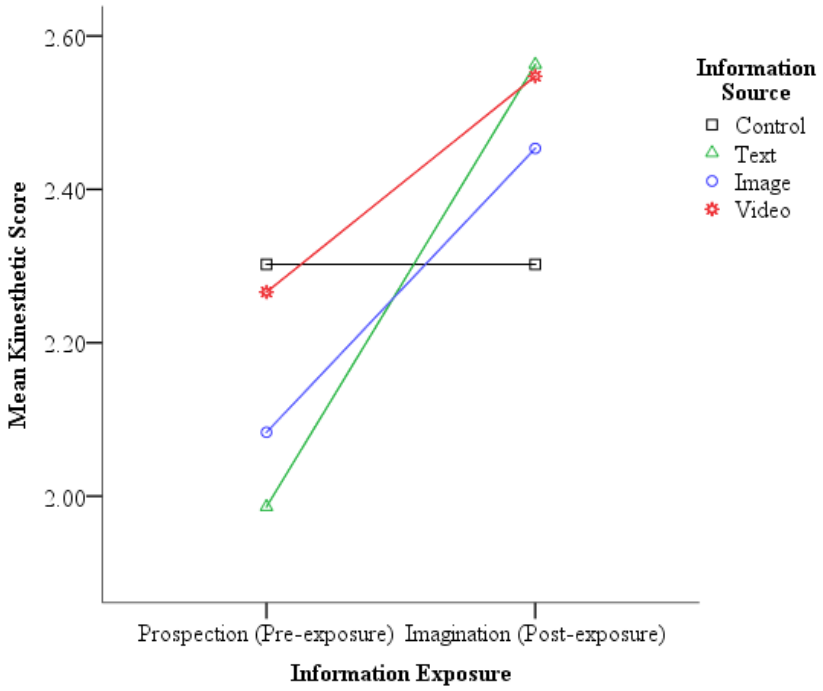

Figure 21: The Impact of Information Exposure on the Kinesthetic Component of the Structural Property of Imagination

Table 11 summarizes the results of information exposure within-subject analysis. The interactions are not included in the table for simplicity purposes. More information on interactions, however, can be found in figures related to different components. Except for gustatory, spatial, and kinesthetic components, which the effect size was medium, information exposure showed a strong impact on mental imagery components. As shown in table 11, the strongest effect was

recorded for visual components ($\eta^2 = 0.492$) followed by autonomy ($\eta^2 = 0.406$) and ($\eta^2 = 0.314$) tactile components. The results showed that it is not only sensory property's components that are under the impact of information exposure, but structural property' components are also affected by information exposure. Contrary to previous findings of this dissertation, sense of control over mental imagery increased after being exposed to an information source. The paradoxical results in autonomy component can be due to a few reasons. The first and most important reason is the design of the study, controlling for the factors that influence an individual's sense of control over his/her mental imagery. Stated differently, due to the within nature of the study, the impact of the third variable (i.e., IQ, mental capacity for imagination, etc.) was controlled with the same participants being exposed to an information source. Among other reasons, it is possible to point out the existence of a source of information. In other words, the previous study of this dissertation was memory-based; that is the individuals had to respond to autonomy questions by referring back to their memory. In this study, however, participants are provided with information that affects their power of control over their mental imagery.

Table 11: The Results of the Impact of Information Exposure on Various Components of the Sensory and Structural Properties of Mental Imaginary

Component	Prospection (Pre-exposure) Mean Score	Imagination (Post-exposure) Mean Score	Difference	ρ-value	Effect Size
Visual	4.89	6.16	1.27	0.000	$\eta^2 = 0.492$
Tactile	3.73	4.73	1.00	0.000	$\eta^2 = 0.314$
Auditory	4.37	5.03	0.66	0.000	$\eta^2 = 0.162$
Olfactory	3.72	4.55	0.83	0.000	$\eta^2 = 0.212$
Gustatory	2.89	3.48	0.59	0.000	$\eta^2 = 0.109$
Autonomy	3.43	4.43	1.00	0.000	$\eta^2 = 0.406$
Spatial	4.57	5.08	0.51	0.000	$\eta^2 = 0.121$
Kinesthetic	2.17	2.46	0.29	0.000	$\eta^2 = 0.121$

This chapter presented the results of various phases and studies of this dissertation. Investigating the proposed hypotheses, information exposure's impact, and structural composition of imagination and TDI not only shed light on the effect of imagination on TDI but also provided an explanation on how prospection and imagination procedures influence image formation. The results showed that the imagination scale is valid and reliable that can be employed in imagination measurement in general and hedonic consumptions in particular. The findings showed that the imagination scale is resistant to fundamental structural differences between prospection and imagination. Furthermore, the results of hypotheses testing (both structural and differential) and information exposure examination revealed important information about the structure of mental imagery, its relation with TDI as a distinct construct, and its evolution with various media exposure. The discussion about this chapter's results, theoretical and practical implications, limitations of the current dissertation as well as suggestions for future studies are presented in the next chapter.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1. Introduction

Despite the important role of imagination and prospection in hedonic consumption (Gilbert & Wilson, 2007) in general and tourism consumption (Su, 2010) in particular, imagination has never been systematically investigated in tourism literature. The prevalent practice among tourism scholars in main stream TDI studies is the *marketing* perspective and conceptualization of image (Stern et al., 2001) which makes it (i.e., TDI) a general attitudinal construct with no image component (Lai & Li, 2016). A few recent studies (e.g., Lai & Li, 2015) have also acknowledged this issue that 30 years of main stream research have neglected the component of 'image' in conceptualization of TDI. Although some unconventional studies have investigated the image aspect of TDI, they are mostly unstructured, unsystematic, and qualitative. Therefore, there is a need for further systematic investigation of this (i.e., image) component. In a similar vein, a quick review of the psychology literature shows that studying imagination through the survey method is not prevalent anymore as most of the imagination studies have shifted their methods to either exact measurement tools of fMRI and EEG (Wraga, Shephard, Church, Inati, & Kosslyn, 2005) or experiential indices such as richness experiential index (REI) (Hassabis et al., 2007). These new methods are valuable and more precise than the survey method; however, they have some issues as well with the former being feasible in lab experiments only and the latter being study-dependent composites that are none-universal.

This dissertation adopted a mixed-method approach to create the destination imagination and mental image questionnaire (imagination scale). In the imagination scale, most of the issues with previous scales are eliminated and a comprehensive, updated scale is developed to address the needs of survey-based imagination studies in general and destination studies in particular. In other words, due to the all-inclusive measurement approach and generality of the measurement items, imagination scale can be practiced in any contexts dealing with imagination/prospection measurement.

Structural analysis in chapter four showed that imagination is a stand-alone construct with sufficient discriminant validity from TDI components that modulate the inter-construct relationships of TDI elements. In this chapter, the results of the tested structural hypotheses are clarified for future adoption of TDI and imagination constructs simultaneously. Moreover, to further clarify the nature of the two concepts of imagination and prospection, their procedures and differences are thoroughly discussed. Finally, based on the results of the exploratory phase of information exposure in chapter four, this chapter elaborates on the findings on how information sources can influence one's imagination/prospection. Theoretical contributions, limitations, and future studies are also addressed in this chapter.

5.2. Discussion of Research Findings

In this section, the quality and future utilizations of imagination scale are scrutinized and addressed respectively. Furthermore, the measurement theory, structure, similarities, and differences between imagination and TDI, similarities and differences between prospection and imagination, and the impact of various information sources on imagination/prospection are discussed in detail.

5.2.1. OMI Scale

The imagination scale was built upon the multimodal sensory perspective as well as the theoretical foundations of Protomodel hypotheses of upper (dorsal) and lower (ventral) visual streams of mental imagery. As a result of the conceptualization and operationalization of the current dissertation, eight components emerged to measure the two sensory (five components) and structural (three components) properties of mental imagery. Hence, the designed scale is named Octomodal Mental Imagery (OMI) scale. OMI scale is developed by following multiple rigorous studies and incorporating expert opinions. In the sensory property, each construct is measured with a few relevant *exclusive* sensory qualities (e.g., brightness in the visual construct or audible in auditory construct) and some *inclusive* properties shared among all sensory components (e.g., richness). In fact, a closer look at the final version of OMI (appendix E) reveals that the four components of visual, auditory, olfactory, and gustatory are more or less measured on the seven aspects of richness, vividness, difference, strength, noticeability, intensity, and distinguishableness. The tactile component, on the other hand, is almost entirely measured with exclusive tactual sensory properties.

5.2.1.1 Biological Expectation

OMI is designed based on various cortical areas of brain and two visual streams and subsystems of ventral and dorsal as explained in the Protomodel section of theoretical foundation of chapter two. Therefore, it is possible to biologically validate the OMI scale based on the correlation of components with expected areas of brain.

According to functionality of brain cortical areas, some speculations can be made about the activation of different cortical and cerebral areas when responding to OMI. In view of that, it is expected that the visual component activate the occipital lobes of brain specifically the medial side and the parietal lobe (figure 22). Furthermore, the auditory component should activate the adjacent areas of superior, posterior, and lateral temporal lobes. The olfactory component is expected to activate the temporal lobes of the brain specifically the edges of anterior insula (figure 22). The gustatory component, similarly, is anticipated to activate the edges of anterior insula as well as the frontal operculum parts of the brain. The tactile component is expected to activate the somatosensory cortex as well as parts of the parietal lobes (figure 22). In addition, as explained in chapter two, the two cortical subsystems of ventral and dorsal will become active after attention window is fixated on the visual buffer. The ventral subsystem is responsible for properties such as shape, color, and texture (Kosslyn, 1996), and therefore activates the inferotemporal cortex and inferior temporal lobes (figure 22). On this note, it is possible to propose that the ventral subsystem should have associations with the autonomy component of the structural property as well as some qualities of the sensory property's components (e.g., loudness, brightness, thickness, etc.). The dorsal subsystem is responsible for the spatial qualities of location, size and orientation (Kosslyn, 1996), and therefore is expected to activate the posterior parietal lobes (figure 22). On this note, dorsal subsystem related areas should correlate with the components of autonomy, spatial, and kinesthetic. A medium size association among all components in both structural and sensory properties is also expected since areas of brain are simultaneously involved in processing imagination/ prospection. To be specific, hippocampus, posteriori, and superior temporal lobes (figure 22) are involved in associative memory, DLPFC is involved in information lookup sub-system, and frontal lobe is responsible for attention shift in visual buffer (figure 22).

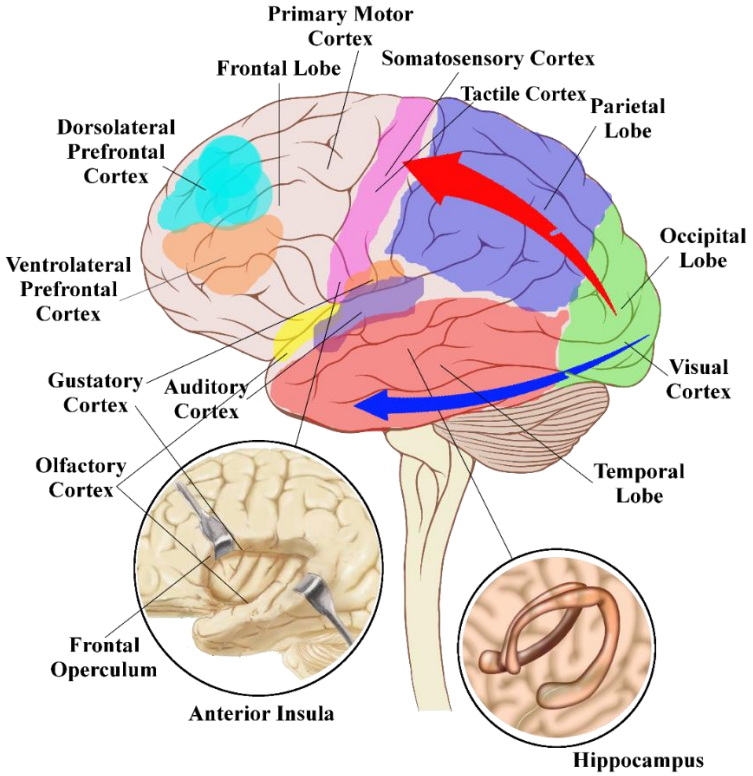

Figure 22: Schematic Map Related to Imagination/Prospection. The Red Arrow above is the Dorsal Visual Subsystem (Stream) and the Blue Arrow Below is the Ventral Visual Subsystem (Stream)

5.2.1.2 Comparison of Correlations

The correlations of components can be compared to the map illustrated in figure 22 to see if the relations are as expected. Results of component correlations, furthermore, can be employed to partially investigate the nomological and content validities of the questionnaire items.

The visual component was expected to be the main player as it corresponds to the visual cortex of brain that is the starting point of the imagination process. Furthermore, in every imagination loop, the process restarts from the visual cortex again by the shift of the attention window. Therefore, the results of this study that the visual component explains the biggest part of the variance in imagination/prospection was not surprising. The correlation analysis of the

imagination components, furthermore, showed that the visual component has the highest correlation with the auditory component followed by tactile. This finding is cogent and plausible since these three sensory components are along the stream of the ventral subsystem of imagination.

Among the components of the structural property, spatial and kinesthetic components, by nature, are already a part of the dorsal sub-system. Nevertheless, since the visual and tactile components showed a high correlation with the spatial component, it can be inferred that they (i.e., visual and tactile components) are also important for the dorsal sub-system. In fact, the kinesthetic component showed a high correlation with the auditory, visual, and tactile components respectively, indicating that these three sensory properties are used by the motor sensory cortex (regions related to the kinesthetic area) to create the 'movement' quality of mental image. The high correlation of the kinesthetic component with the three sensory components mentioned above is reasonable with the fact that the ventral and dorsal subsystems join in primary motor and dorsolateral prefrontal cortices.

5.2.1.3 OMI Validation

The OMI scale is developed by following several rigorous studies and incorporating expert opinions. Construct validity of OMI was also established since nomological validity and measurement validity (e.g. convergent and discriminant validities) were established. To be specific, the results showed that the eight components of imagination were more explained by their respective items rather than the items of other components (measurement validity), and that the intrarelationships of constructs maintain a logical network of relations (nomological validity). Based on the overall validity analyses' results of chapter four, it is possible to claim that the construct abstraction of octomodal mental imagery model (i.e., *eight components of the two main*

properties of structural and sensory) is valid, and appropriate to measure the latent construct of mental imagery.

The results of Common Method Bias (CMB) analysis showed that although OMI does not have issues such as social desirability bias, consistency motif, scale length, item embeddedness, and context-induced mood, OMI can become biased due to item demand characteristics, common scale format, common scale anchors, and measurement context effect. In other words, the analysis showed that all correlations are inflated to some extent due to the existence of CMB. One important reason for inflation of component correlations and existence of CMB might be related to the relations of different brain cortices. As explained in Protomodel, hippocampus and various adjacent areas of temporal lobes are simultaneously involved in almost every stage of the imagination process. As a result, various components of imagination have cortical associations, causing the correlation value to inflate which in turn make the OMI scale show CMB. In addition, it should be noted that CMB is the result of a compromise on validity. In other words, in order to enhance the content validity of the sensory components, same qualities (richness, vividness, etc.) were repeatedly questioned for each construct, which increase the CMB. This matter is specifically important in one's decision to adopt the long or short version of the OMI scale with the latter including more similar questions, and therefore, having more probability of showing the CMB issue (appendix E). In addition, when using OMI, it is imperative to consider the context of data collection to minimize the amount of bias. If the study of interest includes constructs conceptually similar to OMI scale components (i.e., visual, auditory, tactile, olfactory, gustatory, autonomy, spatial, and kinesthetic), common latent factor (CLF) should be retained in the construct score imputation process to eliminate artificial inflation of the correlation coefficients. In contexts with less similar constructs, however, there is no need to control for the impact of CMB, as it will be

weak. On this note, if OMI is used with other constructs and other scales and questionnaires such as TDI, the likelihood for existence of CMB reduces.

Invariance check was conducted on two conceptually dissimilar conditions of demographic-based invariance and knowledge-based invariance. Demographic-based invariance check was conducted to make sure that the structure of the mental imagery construct will be preserved for different populations. Strictly speaking, demographic-based invariance, if achieved, is the indication that the OMI scale is valid and reliable for other studies as well. Knowledge-based invariance was conducted to investigate fundamental existential differences in the concept of mental imagery between prospection (i.e., individuals without any knowledge about destinations) and imagination (i.e., individuals with knowledge of destinations). In situations where invariance fails, lack of invariance in several aspects of the construct of interest is expected and the structure of the construct, usually, cannot be preserved. Therefore, in extreme cases (e.g., knowledge-based invariance), testing for invariance is usually fruitless. That being said, due to the innate differences between imagination and prospection, testing for the knowledge-based invariance in this dissertation is an essential step of OMI validation specifically since it shows us the fundamental differences between the two concepts of imagination and prospection.

To investigate the demographic-based invariance and knowledge-based invariance, three invariance categories of configural, residual, and measurement as well as four invariance sub-categories of measurement invariance (i.e., metric, scaler, factor variance, and factor covariance) were tested. The results showed that mental imagery components show invariance in all categories of demographic variables (appendix G) as the differences were either insignificant for metric invariance or minimal for configural and residual invariances. Regarding knowledge-based invariance, although configural invariance was violated, the difference between imagination and

prospection was minimal. In terms of residual invariance, the results showed that the imagination structure is not invariant. As expected, visual, spatial, and kinesthetic components showed higher levels of error for prospection compared to imagination. For the autonomy component, however, the situation was reverse as the residual level for imagination was higher than that of prospection. The unusual finding about the autonomy component can be due to the idea that with structured stored information in memory, the mental image is harder to control compared to when the stored information is assembled either randomly or based on various sources. That being said, with residual invariance being related to construct reliability, all constructs in both imagination and prospection process show acceptable levels of reliability. This indicates that despite the differences in error terms, OMI can be employed for both cases of prospection and imagination and produce reliable measurement scores. Concerning measurement invariance, metric invariance was established while scaler, factor variance, and factor covariance were violated. With regards to scaler invariance, the four components of visual, auditory, spatial, and kinesthetic showed higher intercepts for imagination compared to prospection. The finding was expected because imagination is an experienced, knowledge-based process that depends upon the functionality of one's episodic memory, whereas prospection is a creative-based process that depends upon the ability of an individual to synthesize events and entities in prefrontal cortex and semantic memory. In terms of factor variance invariance, except for the components of visual and kinesthetic, the rest showed homogenous variances. The higher variance of the components of visual and kinesthetic for prospection in comparison to imagination can be reasoned by prospection not having a solid reference point. Factor covariance invariance, likewise, was violated. The violation, however, does not cause an issue since different component correlations magnitudes were expected in the time of imagination compared to prospection. To be specific, with prospection activating more

areas of brain, constructs showed stronger associations for all significant coefficients. In other words, brain spent more effort and energy and activated larger areas of cortical and lobes to create a mental scene for those with no prior knowledge about the destination.

The bottom line of the discussions above is that despite the expected differences in constructs' structure as well as inter- and intra-relationships, OMI shows sufficient resilience to fundamental differences between prospection and imagination, and can produce valid scores for the included constructs. As a result, the OMI scale can be employed in both circumstances where individuals make a mental scene either based on imagination or prospection. The results of this dissertation showed that OMI passes the validity and reliability tests and can be considered as an appropriate scale to measure imagination/prospection constructs.

5.2.2. Destination Image and Imagination

This section discusses the interplay between TDI and imagination (H3, H4, and H5). H1 and H2 are discussed in the following section according to the order of analyses.

In three arrangements, imagination interacted with the components of TDI (i.e., cognitive, affective, and conative) as hypothesized. Nevertheless, the direction of the imagination and cognitive interaction impact on conative destination image was not as expected (H_3). To be specific, unlike hypothesized, the interaction of imagination with cognitive destination image has a negative impact on conative destination image. According to our results, whereas cognitive destination image has a positive impact on conative destination image for low levels of imagination, it has a negative impact on conative destination image for high levels of imagination. There are a few explanations as to why the findings did not support the third hypothesis. On one hand, based on the results of previous focus group in this dissertation, individuals assign negative

attributes to unknown places. On the other hand, the results of knowledge-based invariance check showed that the construct scores of imagination process were usually higher than those of prospection process. Therefore, with cognitive destination image being based on destination attributes, when the imagination level is high, the cognitive image component exert a negative impact on the conative image component. A more plausible reason, however, is the mediation role of affective destination image in the relationship between cognitive and conative destination image. In other words, with affective destination image surpassing the full mediation of the relationship between cognitive and conative destination image, the positive impact of cognitive component on conative component not only becomes insignificant but also become slightly negative (suppressed). This means that when the moderation impact of imagination is added to the relationship, the negative impact is intensified for high levels of imagination, while the relationship remains as expected for lower levels of imagination.

The second interaction hypothesis (H_4) was supported. The analysis showed that while the impact of affective destination image on conative destination image was not significant for lower levels of imagination, the relationship was positive and stronger for higher levels of imagination and weaker for medium levels of imagination. These results show that for an individual with higher levels of imagination (i.e., mental scene is more noticeable, more vivid, more detailed, etc.), one unit of increase in affective destination image (i.e., having more positive emotions towards a trip to a destination), increases the conative destination image (i.e., willingness and intention to visit a destination) more.

Finally, the results of this study supports the fifth hypothesis (third and last interaction hypothesis) that the positive impact of cognitive destination image on affective destination image is stronger for higher levels of imagination compared to medium and lower levels of imagination

(H_5). It should be noted that although the affective level of TDI, for any given levels of cognitive destination image, is greater for lower levels of imagination compared to higher levels of imagination, the slope of the relationship (line) is larger for higher levels of imagination compared to lower levels of imagination. In other words, the rate of increase in affective destination image due to increase in cognitive destination image is faster (higher) for higher levels of imagination compared to lower levels of imagination. Despite the fact that results supported the fifth hypothesis, it is important to mention that the impact of imagination and cognitive destination image interaction on affective destination image is weak. In other words, the positive impact of cognitive destination image on affective destination image does not significantly change from lower levels of imagination to higher levels of imagination. This means that stronger positive emotions as a result of more favorable evaluations of a destination attributes are not strongly under the impact of imagination (mental scene) magnitude.

5.2.3. Prospection vs. Imagination

This section discusses the proposed H_1 and H_2 of the study for three visual qualities and two structural components. The three qualities of vividness, saliency, and richness of the visual component in sensory property along with the two components of autonomy and spatial in the structural property were compared between imagination and prospection to gain a more in-depth insight into these similar yet different processes. The comparison showed that although previous visitors indicate a more vivid and more salient mental image compared to non-visitors, the impact of visitation on mental image vividness and saliency is rather weak. On a similar note, individuals with knowledge about a destination reported a more vivid and salient mental image compared to those without any knowledge of the destination. Nevertheless, the size of the impact was medium.

The interaction of previous visit experience with knowledge of the destination also resulted in a medium size effect for knowledgeable visitors showing a more vivid and salient mental image compared to knowledgeable, non-visitor and non-knowledgeable, non-visitor groups. Based on these results, it can be concluded that while both previous visit experience and knowledge about the destination improve the quality of one's mental image vividness and saliency significantly, the impact of knowledge on quality of mental image is stronger than that of previous visit experience with a weak (minimal) impact. This means that knowledge of a destination is the main factor of difference between prospection and imagination in terms of mental image's vividness and saliency. Regarding the richness quality of mental image, the results showed that knowledge and previous visit experience exert a robust influence on one's mental image richness. The effect size, however, is different: While knowledge exerts a strong positive impact on the richness quality of mental image, previous visit experience exerts a medium impact. The interaction between knowledge of the destination and previous visit experience, also, showed a strong effect on the richness quality of mental image. Based on these findings, it seems that richness, compared to vividness and saliency, is a better indicator for distinguishing prospection from imagination considering that mental image becomes richer substantially when the individual visit a destination or even more importantly gain some knowledge of the destination.

The two remaining structural property components of autonomy and spatial also revealed useful information. According to the results of this study, neither knowledge nor previous visit experience exert a significant influence on the autonomy component. This result is in line with our findings from OMI scale knowledge-based invariance check, that autonomy is not under the impact of previous visit experience or knowledge of destination. As previously stated, this is due to the idea that the autonomy component of mental image is related to attributes of intelligence

and adaptability of an individual rather than knowledge and previous experience. Regarding spatial properties, while previous visit experience exerts a medium influence on the quality of mental image by enhancing its spatial properties, knowledge of destination does not. Interestingly, however, the interaction between knowledge and previous visit experience depicts a strong effect on mental image by substantially increasing its spatial properties. The bottom line is that the knowledge of place (destination), although useful in enriching the mental image and enhancing the vividness and saliency of an individual's imagination, has no impact on image spatial properties such as location and direction of entities unless it (knowledge) couples with the individual's personal visit experience of destination.

5.2.4. Imagination Manipulation

Previous section scrutinized the differences between prospection and imagination from the between—subject perspective. This section, however, investigates the differences between prospection and imagination from the within—subject perspective. In the previous section, the impact of two influential factors of previous visit experience and knowledge of destination on mental image quality were examined concerning both imagination and prospection. In this section, the role of source of knowledge is examined for individuals who had no previous visit experience and knowledge of a destination but received one of three treatments of textual, image, or video clip information sources. Stated differently, the evolution of prospection to imagination because of information exposure is demystified in this section.

The results showed that all three information sources had a significant impact on all eight components of sensory and structural properties, and that their effect sizes were either medium or strong. The high and medium effect sizes indicate the important role of information sources in

imagination manipulation. Moreover, the direction of effects were all as expected, that is the information sources of textual, image, and video clip increased the score of imagination (post-exposure) more than the score of prospection (pre-exposure).

The impact of information sources on visual and tactile components were also similar in a way that all three information sources significantly increased their scores. That being said, the extent of increase in visual and tactile components' scores was higher for individuals who watched the video compared to those who were exposed to the other two information sources (i.e., image and text). The visual and tactile components' scores for those who watched a video clip were also higher than the control group. Stated differently, the visual and tactile component scores for exposure to image and text followed the scores of exposure to video clip but the difference between the scores of the first two medium exposure (i.e., image and text) was not significant. Accordingly, it can be deduced that visual clues are the best proxy for individuals to judge the textures of elements in their mental scene.

Concerning the olfactory component's score in relation to the influence of information sources, similar to previous results, all three information sources increased the component score. Nevertheless, the amount of increase was much higher for those who were shown video and textual information compared to those who saw images of the destination. There were no significant differences, however, between text and video concerning the olfactory component's score.

Similar to olfactory component, image was not found to be a major information source in enhancing one's imagination of gustatory and auditory components. That being said, some differences were uncovered between olfactory component with auditory and gustatory components. The results showed that the score of olfactory component increased and became higher than the control group's component score after individuals was exposed to the information

source of image. On the other hand, the gustatory and auditory component scores increased only below the score of control group after receiving the treatment of image. Stated differently, although the gustatory and auditory components' scores increased after being exposed to the information source of image, the final score was still below the score of the control group. The final note worth mentioning is that while in auditory component, video exerted a similar influence as textual information source on the construct score, in gustatory component, the impact of video was slightly stronger.

Regarding structural property's components, the results for kinesthetic and spatial components were different compared to the results of most sensory property's components. For autonomy component, however, the results were similar to sensory property's components discussed above. To be specific, all three information sources of text, image, and video clip enhanced the autonomy component's score at the same rate with no significant differences among sources. Although no *significant* differences were found among the three information sources of interest, it should be mentioned that the score of the autonomy component, after receiving the treatment of the video clip, was slightly higher than the scores of image and text treatments respectively. Furthermore, after being exposed to the three different information sources, the score of the autonomy component was found higher than that of the control group. Concerning kinesthetic component, while both information sources of video clip and image increased the score of this component at the same rate, the information source of text exerted a much stronger impact. These findings suggest that textual data, compared to video clip and image, induce and instigate more motion and details especially when one of the elements of one's mental image is 'people'. With regards to spatial component, the results showed that both information sources of text and image exerted a strong influence on its score. However, the rate of increase in the score of the

spatial component was much stronger for image. The information source of video clip, likewise, showed the same rate of influence as the textual information source, but its rate of impact on spatial component score was still significantly less than the control group.

The overall results of this section suggests that video is one the strongest information sources for all components of sensory property as well as the autonomy component of structural property. Concerning the olfactory and auditory components of sensory property and the spatial component of structural property, textual information source showed superiority over other sources. However, its power climax was observed for the kinesthetic component, in which textual information notably outperformed the two other sources. Static image, also similar to the textual information source, was found to have an important role in the spatial component of structural property. Finally, for the autonomy component of structural property as well as the visual and tactile components of sensory property, the information sources of video and image had significant roles respectively.

5.3. Implications

In this section, the theoretical and managerial contributions of this dissertation are explained. It should be noted that the theoretical and managerial implications described and exemplified in next two subsections are only a few examples of potential implications of this dissertation.

5.3.1. Theoretical Implications

This study successfully conceptualized, operationalized, and validated a multiple-item scale (i.e., OMI) to measure imagination/prospection. As such, the OMI scale expands the realm

of tourism imaginaries (Salazar, 2012) to new frontiers and empowers the studies and scholars who are interested in imagination/prospection (e.g., Ghosh & Sarkar, 2016; Su, 2010) by accurately measuring the sensory and structural properties of an individuals' imagination and prospection. From the theoretical perspective, therefore, the operational definition of imagination offered in chapter three can be revisited:

> *Imagination is a multimodal third-order emergent construct composed of five sensory properties of visual, auditory, tactile, olfactory, and gustatory, and three structural properties of autonomy, spatial, and kinesthetic.*

As stated above, our results supported the proposition that there is a missing element in TDI studies. TDI is a synergic synthesis of tricomponent attitudinal model TAM with octomodal mental imagery model. In other words, imagination is not only an antecedent of affection and conation but is also a modulator and moderator of the interplay among attitudinal components. The results of this study testify that mental image is a picture-like phenomenon which follows the similar process of perception system (Kosslyn, 1996). Due to the missing element of imagination in TDI conceptualization, the aggregated knowledge about this concept (i.e., TDI) should be revisited for potential incorrect conceptualization. For example, the findings showed that the positive direct impact of affective component of TDI on conative component of TDI holds true only for high levels of imagination. In other words, in the absence of a strong mental image, positive affections would not result in a stronger desire to visit a destination. Furthermore, the results indicate that the direct positive impact of cognitive component of TDI on affective component of TDI is amplified with having a strong mental image.

Measuring TDI along with [potential] visitors' mental imagery enhances the understanding of consumers' perception, information search, decision-making, and personal differences. As

such, the results of this dissertation can be employed in several areas of TDI including: image formation (Baloglu & McCleary, 1999), pictorial elements of TDI (MacKay & Fesenmaier, 1997), virtual TDI (Robert Govers et al., 2007), information search, processing, and quality (Baloglu & McCleary, 1999; S.-E. Kim, Lee, Shin, & Yang, 2017; Llodrà-Riera, Martínez-Ruiz, Jiménez-Zarco, & Izquierdo-Yusta, 2015), TDI evolution (Wong & Qi, 2017), familiarity (Tan & Wu, 2016), image modification process (K.-S. Chon, 1991), multisensory image (Xiong et al., 2015), mental imagery (S.-B. Kim et al., 2014), creativity in tourism (Richards, 2011), image comparison (Stylidis & Cherifi, 2018), non-visitors image (Cherifi et al., 2014), place attachment (Clarke, Murphy, & Lorenzoni, 2018; Gross & Brown, 2008; J.-L. Lin, 2011), destination attractiveness (D. Kim & Perdue, 2011), co-creation (Vargo & Lusch, 2010), experience economy (Pine & Gilmore, 1998), and neuroeconomics/ neuromarketing (Boz, Arslan, & Koc, 2017; Markgraf, Scheffer, & Pulkenat, 2012).

The results of this study, furthermore, showed that imagination is not solely an innate faculty. In fact, except for the autonomy component, which seems to be highly dependent on the intellectual capacity of individuals, the rest of the octomodal mental imagery model's components are under the impact of information sources with obvious differences between imagination and prospection. As expected, video was a major source of information to influence one's imagination/ prospection for almost all modalities except for spatial. Image was not the influencer of imagination/prospection for the most part except for a few components such as spatial modality. On the other hand, text, surprisingly was found to be one of the major sources of information, influencing most of the components except a few modalities such as visual, tactile, and autonomy. The results, furthermore, confirmed prior TDI studies that previous visit experience is an important factor in mental image properties (Cherifi et al., 2014; Stylidis & Cherifi, 2018). Unlike other

studies, however, the results showed that knowledge is more important compared to previous visit experience with regards to vividness, saliency, and richness of mental image. In other words, what really matters is the knowledge of the person about the destination rather than him/her previously visiting the destination. That being said, spatial component in mental image cannot be formed and produced when knowledge exists but previous visit experience does not. Based on this discussion, therefore, it is advised that mental image also be included in topics related to familiarity, past visitation, knowledge, image formation, modification, and evolution (Baloglu & McCleary, 1999; Cherifi et al., 2014; K.-S. Chon, 1991; Stylidis & Cherifi, 2018; Tan & Wu, 2016; Wong & Qi, 2017).

5.3.2. Managerial Implications

Regarding practical implications of this study, OMI can be employed by destination management and marketing organizations (DMOs) to obtain a more accurate understanding of their TDI rather than only measuring the attitudes of potential visitors. In addition, the results of this dissertation are useful for hospitality and tourism marketing practitioners specifically those working on marketing communication models for public relations, design of promotional plans, and effectiveness evaluation of promotional plans by observance of TDI evolution (i.e., prospection vs. imagination). For example, if the target market of a specific destination show a strong imagination capacity towards the destination, the focus should be on the affective and emotional content of promotional materials to enhance the visitation intentions more effectively. Another example is that since socio-spatial connections play an important role in inclusiveness of communities and place attachment of individuals (Amanda & A., 2015; Riikka & Pauliina, 2017; Su, 2010), DMOs can use the OMI scale to investigate the socio-spatial connections of individuals

with the destination in order to design proper communication models and expand the imaginaries of their destination to a broader audience.

Another practical implication of this study would be to identify the weaknesses and strengths of a business performance in order to increase practitioners control over potential customers' imagination. For instance, in addition to visual modal, olfactory and gustatory components are essentials in culinary and cuisine imaginaries. As a result, restaurants can evaluate their rate of success in creating a clear mental scene for their actual customers with regards to proper ambiance and design factors of their service. If change in service factors is required, by utilizing and manipulating different information sources and calculating imagination components' scores, the restaurant can take proper measures and initiatives to enhance the modal of interest among customers.

Finally, multi-sensory and fantasy aspects of hospitality consumption is discussed in the hospitality literature (Miao, Lehto, & Wei, 2014). Therefore, OMI provides the ground for practitioners to evaluate the effectiveness of their efforts to enhance the sensory and fantasy aspects of hospitality and tourism experiences. For instance, the theme park industry can use OMI to investigate the role of fantasy and sensory aspects of imagination/prospection in shaping visitors' hedonic experiences. Theme parks can, furthermore, employ the OMI scale to identify memorable parts of one's experiences, and if needed, manipulate certain events and procedures to create more memorable experiences. The OMI scale in this case can be employed with experience economy scales developed to evaluate four realms of experience (i.e., entertainment, educational, esthetic, and escapist) (Pine & Gilmore, 1998) in order to better understand the qualities of memorable experience concerning mental imageries. Additionally, the combination of octomodal mental

imagery model with experience economy models can significantly improve the measurement of co-creation in hospitality, tourism, and entertainment sectors (Busser & Shulga, 2018).

5.4. Limitations & Future Research

The current dissertation introduced a new perspective towards the use of imagination in hospitality and tourism context, and its results can be employed to enhance the understandings of hedonic consumption in general and tourism concumption (i.e., TDI) in particular. Nevertheless, several limitations should be considered while interpreting the results. These limitations also create interesting opportunities to be addressed in future research. Most of the limitations are related to the impact of information sources in terms of pre- and post- exposure. Due to time and budget limitation, the interaction effects of three information sources together were not investigated. However, due to the strong impacts of information sources on imagination/prospection, it is plausible to test for potential interaction impacts in future studies. The three information sources of image, video, and text were selected based upon previous studies on information processing and information search (Maity, Dass, & Kumar, 2018) as well as the quality of "media richness" (not to be confused with richness as quality of imagination) which includes different levels of richness from rich medium such as videos to less rich medium such as plain texts. Nevertheless, the three selected sources imposed multiple limitations to the procedures of this dissertation as explained below.

The information source of video, as previously discussed, was the most effective source of impact for most of the imagination components in octomodal mental imagery model. It should be noted, however, that videos were all contaminated since they were 'narrated' with prescriptive, pre-written information. In other words, although narration made the video treatments more

realistic, it did not allow us to control for the contamination of text/audio effect. Nevertheless, this design was inevitable for the sake of experiment consistency. As such, future studies should consider videos without narrations as they may produce different results. Stated differently, videos that either do not have any sounds or only contain music should be investigated in future research to overcome the limitation of this study.

On a similar note, in this dissertation, we only have investigated the impact of text *reading* on one's imagination/prospection; future studies should investigate the difference of reading textual information and listening to written information with regards to their impact on an individual's imagination and prospection. This matter is specifically worthy of further investigation since most participants of the first phenomenology study of this dissertation, stated that they prefer to listen to written information rather than reading it. In addition, literature (S.-B. Kim et al., 2014) suggests that auditory information is an impactful information source compared to other sources that we have investigated in this dissertation. In a similar vein, there are a few other influential factors related to textual information sources that were not included in this dissertation, but should be considered in future studies. Previous studies (Naylor & Sanchez, 2018) have shown that the amount of time one spends to read a text and the type of text/writing (i.e., expository vs narrative) are influential factors in information processing of human mind. In this dissertation, we have mainly used expository text and have not recorded the amount of time that study participants spent on reading the text.

This study investigated the impact of information sources on individuals without knowledge and previous visit experience of a destination because we were interested in how prospection (pre-exposure) evolve into imagination (post-exposure). Future studies should examine the impact of various information sources on imagination of individuals who already have

prior visit experience or knowledge about the destination to further shed light on the role of information sources in imagination and prospection. While the investigation of structural relationships among TDI components and mental image elucidate the inter-relationship of the missing component of TDI and traditional components, this study is limited in a sense that imagination and prospection were not separated in the structural TDI and mental imagery analysis. Therefore, future studies should investigate the same structural relationships for exclusive groups of individuals with prior visit and knowledge of destination (imagination) and those without (prospection).

Future studies might also include OMI in virtual and augmented reality studies as their impact on spatial properties of imagination/prospection might be significantly different compared to other methods of information exchange (i.e., video, text, image, etc.). The OMI scale can be paired with standardized general, emotional, and intelligence quotient, as well as personality traits, psychographic and motivation variables to expand our understanding of human imagination in various circumstances based on individual differences. Since OMI is created by using octomodal mental imagery approach which is developed based on Protomodel, it measures and estimates general aspects of imagination that are not limited to hospitality and tourism domain or hedonic consumption for that matter. The OMI scale can be employed for any contexts and conditions in which imagination is the subject of interest. Multidisciplinary utilization of OMI will result in further improvements of the scale, making it a better survey instrument for imagination studies. Likewise, although OMI is designed to measure the universal qualities of imagination (e.g., vividness, richness), future studies should investigate the impact of culture on imagination considering that the content of imagination vary from one culture to another. Further investigation of this matter is important since content of imagination

is affected by cultural differences (e.g., collectivism vs. individualism mentioned by Hofstede (1983). After all, culture is the essence of differences among people (Kluckhohn, Murray, & Schneider, 1953). Finally, future studies can validate OMI biologically. For this purpose, fMRI and EEG methods should be employed to measure the blood oxygen level and electric signals records of the anticipated activated cortical areas. Biological validation not only will increase the content validity of the scale but will also enhance the ecological validity of the imagination scale.

APPENDIX A: INTERVIEW PROTOCOL

IRB Approval

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Jalayer Khalilzadeh**:

Date: **March 16, 2017**

Dear Researcher:

On 03/16/2017, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	Destination Image and Tourist's Imagination: The Forgotten Component (Phase I & II of a Ph.D. dissertation)
Investigator:	Jalayer Khalilzadeh
IRB Number:	SBE-17-12974
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Renea Carver

Signature applied by Renea C Carver on 03/16/2017 03:20:39 PM EDT

IRB Coordinator

Protocol

Interview Process

List of Objects and Cities (explained in question # 2.b)

A) **Known Objects:** Which one do you know the most?
- *1) Magic Kingdom Castle (Florida, USA)*
- *2) Statue of Liberty (New York, USA)*
- *3) Eiffel Tower (Paris, France)*
- *4) Taj Mahal (Agra, India)*
- *5) Colosseum (Rome, Italy)*

B) **Unknown Objects:** Which one do you know the least?
- *1) The Oak Alley Plantation Residential (Louisiana, USA)*
- *2) Hearst Castle (California, USA)*
- *3) Milad Tower (Tehran, Iran)*
- *4) Santa Catalina Arch (Antigua Guatemala, Guatemala)*
- *5) Tinago Falls (Iligan City, Philippine).*

C) **Known City:** Which one do you know the most?
- *1) Miami (Florida, USA)*
- *2) Las Vegas (Nevada, USA)*
- *3) New York (New York, USA)*
- *4) Paris (France)*
- *5) London (England)*

D) **Unknown City:** Which one do you know the least?
- *1) Islamorada (Florida, USA)*
- *2) Chickaloon (Alaska, USA)*
- *3) Colmar (France)*
- *4) Pluckley (England)*
- *5) Erfurt (Germany)*

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1. Please choose only one image out of these five images. (Write down the number of the Image in the specific form)
   a. Why did you select this specific picture? Please explain your answer.
   b. Look at the image carefully for a minute (keep time for 60 seconds).
   c. We will come back to these images later.
2. Now close your eyes.
   a. Relax. (take a deep breath/s)
   b. Create a **mental scene** (Imagine) of **A** or **B**, or **C**, or **D**, take your time to create the scene and let me know when you are finished. (Start with D then A, or B then C)
3. You may open your eyes to answer these questions (**Please do not make any changes in the image you have made while answering the questions**): (Explain by an example what do you mean)
   a. Explain what you were seeing in details.

b. Was it a single scene or multiple scene? If multiple, how many scenes did you have in mind? Explain your answer please. (Ignore it, if it is answered)
c. Was the scene static picture-like scene or dynamic movie-like scene? Explain your answer please. (Ignore it, if it is answered)
d. How solid was the image? Was there any noise (by noise, I mean disturbance not sound)? Was the image stable and firm in your mind or was it disconnecting? Explain your answer please.
e. How vivid (clear, sharp, bright) was the image? Was it blurry at all? Explain your answer please.
f. Was the image coherent? Was the image fragmented? Were there any parts of the image you couldn't see? Explain your answer please.
g. How detailed was your mental image? Explain your answer please.
h. How many entities[33] did you see in your mental image? Explain your answer please.
i. Did you feel anything while imagining? Did you have any emotions through your imagination process? Explain your answer please.
j. While imagining, were you hearing any sound? Were sounds included in your imagination? Explain your answer please. (Ignore it, if it is answered)
k. While imagining, could you smell anything? Were smells included in your imagination? Explain your answer please. (Ignore it, if it is answered)
l. Were you, your-self, a part of the scene that you were imagining? Explain your answer please. (Ignore it, if it is answered)
    - If you were part of the imagination, what were you doing? Explain your answer please. (Ignore it, if it is answered)
m. Could you see the distances among entities? Explain your answer please.
n. Could you see the distances between you and the entities? Explain your answer please.
o. Could you tell me about the directions and orientation between entities? Explain your answer please.
p. In your scene, where were the entities located in the scene? Explain your answer please.
q. What size were the entities? How big/small were them? Explain your answer please.
r. What were the shapes of the entities? Explain your answer please.
s. What color were the entities? Explain your answer please.

4. Now please close your eyes again.
    a. Recall the mental scene that you have created minutes ago.
    a. Is there any element that is changing and you cannot recall the way it was before? If yes, please explain your answer.
    b. Can you walk around in your mental scene? Please explain your answer.
    c. How long will it take you to reach the <u>furthest point possible</u> in your mental framework considering where you are standing in the framework? Why? Explain your answer please.

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[33] By entity, I mean anything or basically "thing". It can be object, human, animal, actions, simple/complex organisms, building, event, materials, etc.

d. Can you imagine yourself on a unicorn flying around the mental scene that you have created? Explain your answer please.
e. Can you touch some of the entities? If yes, what are the textures? Explain your answer please.
f. Can you change the textures to something else (e.g. metal to fabric)? Has anything else changed? Explain your answer please.
g. Can you manipulate the vividness of your imagination? Increase or decrease it? Has anything else changed? Explain your answer please.
h. Can you see the main element of your framework (or any element(s) by interviewer choice) upside down while keeping the surrounding as it was? Has anything else changed? Explain your answer please.
i. Can you change the color of the main element of your framework (or any element(s) by interviewer choice) to something else (or any other unusual color that is different from the color that interviewee already seeing)? Has anything else changed? Explain your answer please.
j. Can you change the shape of the main element of your framework (or any element(s) by interviewer choice) to something else (e.g. a tall cylinder to a sphere-like shape)? Has anything else changed? Explain your answer please.
k. Can you change the angle of the way you are seeing the image? (specifically the interviewer should ask for different angles that the interviewee did not mention before)
l. Can you rotate the mental image in 360° view?
m. Please open your eyes now.
n. We will take a five-minute break now. The break is optional and will not be more than 15 minutes. Although the break is optional and it totally depends on the participant to use it or not, it is strongly suggested.

5. Ask the interviewee to read the piece (Separate Document) below (play audio for half, give the other half to read)
   a. Ask the interviewee to explain in detail what he/she was imaging while reading or listening to the piece above.

Going back to the image that the interviewee has selected at the very beginning of the interview, the interviewee should recall the image and explain in detail what he/she is seeing now (the interviewee is not allowed to see the pictures again).

Imagination Piece Related to Question 5 of the Interview Protocol

In her twilit suburban apartment on the outskirts of the most isolated city in the world, as the sprinkler hissed under the Hills Hoist and football players yelped on the oval across the road, Sheila Jones searched the internet for travelers' bargains in that bigger, more sophisticated city on the far side of the globe. She'd yearned most of her adult life to visit Manhattan, but hadn't felt wealthy enough since her divorce a decade before. Now, it wasn't just the scarcity of economy class seats, her dwindling sick leave or the nearness of her fiftieth birthday that made her fear time was running out.

'The incision's healing nicely. Take a holiday', her oncologist had suggested, 'before your chemotherapy begins in four weeks'.

'Will the chemo cure me for good?'

'You have about a fifty-fifty chance of the cancer recurring'.

Fifty-fifty. It could mean a fair chance. It could mean not fair enough.

'And then? What happens if it recurs?'

'New drugs are being trialed all the time'. His pale manicured hand smoothing the sheet. 'But once cancer reaches that secondary stage, the chances of patients' long-term survival diminish somewhat'.

Could she ever really escape from such a prognosis? Images of Manhattan shimmered like a mirage on her computer screen: skyscraper windows gilded by the sun setting over Central Park's autumn leaves; Times Square; insouciant couples in evening dress in a chandeliered bar; the Statue of Liberty at dawn; yellow taxis speeding past glittering store window displays. Unlimited promise. Shopping week, following Thanksgiving on November 24, is the best time to bag a

bargain in Manhattan, the website read. Only a fortnight away! She could buy herself some stylish clothes to conceal her newly lopsided chest, some elegant shoes, maybe even give herself a total makeover. At the very least, she'd forget for a while the grey routine of her secretarial life and the precariousness of her mortality.

The horizon on the ocean side of the football oval had darkened to cobalt, her favorite blue. Maybe she'd find clothes that color in the Manhattan sales. Finally, encouraged by more reports of the strong Australian dollar on the television news, she bought the last available economy Singapore Airlines ticket and booked a room in the cheapest hotel near Central Park. She could just afford to escape for five days.

The piece is selected from Lazaroo (2014, pp. 1–8) with some manipulations.

APPENDIX B: FIRST FOCUS GROUP PROTOCOL

Protocol

Icebreaker question:

If you had limitless budget, where would you vacation?

Engagement questions:

Have you ever found yourself daydreaming about a destination which you have never seen in your life? Can you explain what the trip is and what is the content of you see?
Have you ever imagined about a trip which you have already been to? How was the imagination similar or different to the actual trip?

Main discussion questions:

1. How do you think one's imagination is different when she/he **has** knowledge (familiarity) of the place/object compared to when she/he has **no** knowledge (familiarity) of the place/object?
2. How do you think one's imagination is different when she/he **has** previously visited a specific place compared to when she/he has **not**?
3. How do you think one's imagination of an **object** like Eiffel tower is different from his/her imagination of a **destination** like Miami city?
4. How do you think one's imagination of an **object** like Eiffel tower is different from his/her imagination of a **process** like climbing up to the Eiffel tower?
5. How do you think one's imagination of a **destination** like the Miami city is different from his/her imagination of a **5-day trip** to that specific destination (for instance Miami)?
6. What are the main properties of 'imagination/prospection'?
7. In your mental scene (the scene you have in mind), are you **always** out of the scene meaning you are the person who is watching/seeing the scene or you **sometimes** see yourself in the image as well?
8. In your mental scene (the scene you have in mind), are you **part of** the scene or it is like you are **watching** a movie/picture?
9. If I ask to change the perspective and vantage point, (e.g. bird eye point of view), is it still you seeing the scene? Can you see yourself now? Where are you?
10. In your mental scenes, could you see the peripheral area? is the border clear? Are **vividness**, **color**, and **solidarity** change from center to peripheral areas?
11. When we talk about **distances** in your scene, what are the common reference points you use? Is it entities from the scene or the observer point of view?
12. Did the question I just asked about "mental image property" prime you to make changes to your primary mental image?

Exit question:

Is there anything else you would like to say that you think might help us with this research?

APPENDIX C: 105 INITIAL ITEMS GENERATED

Items' List

1. In my mental image, most of the elements/things are noticeable.
2. My mental image is well-focused.
3. In my mental image, colors are distinct from each other.
4. In my mental image, most textures are easily visible.
5. In my mental image, there are many *different* elements/things.
6. I can see myself inside my mental image.
7. In my mental image, I am watching the image as if it were happening in front of me.
8. In my mental image, I felt as if I am physically present in the scene.
9. In my mental image, I felt like the objects have surrounded me.
10. In my mental image, I see many *separate* scenes.
11. My mental image is unfolding as a story.
12. My mental image is detailed.
13. In my mental image, the time of the day is easily recognizable.
14. In my mental image, I easily tell what season it is.
15. In my mental image, most of the elements/things I see are by themselves (isolated) and are not related to other elements/things.
16. In my mental image, there is a main element/thing that dominates the entire scene.
17. My mental image is very concrete.
18. My mental image is new and different from whatever I have experienced before.
19. My mental image is a sharp image.
20. My mental image is very colorful.
21. My mental image is very bright.
22. In my mental image, I vividly see everything.
23. My mental image is a random scene that I don't know at all.
24. My mental image is whole (complete).
25. In my mental image, there are multiple focus points.
26. My mental image is animated and movie-like.
27. In my mental image, I see a series of images.

28. In my mental image, the sound(s)/noise(s) I hear are related like a story.
29. In my mental image, I clearly hear myself.
30. In my mental image, I hear many *different* sounds/noises.
31. In my mental image, the sound(s)/noise(s) I hear is/are loud.
32. In my mental image, the pitches of sounds/noises are identifiable.
33. In my mental image, the sound(s)/noise(s) I hear is/are detailed.
34. In my mental image, the sound(s)/noise(s) I hear is/are harmonious.
35. In my mental image, the sound(s)/noise(s) I hear is/are very clear.
36. In my mental image, most of the sounds/noises I hear are very noticeable.
37. In my mental image, the sound(s)/noise(s) I hear is/are very audible.
38. In my mental image, the sound(s)/noise(s) I hear is/are random that I don't know at all.
39. In my mental image, the sound(s)/noise(s) I hear is/are constant.
40. In my mental image, the sound(s)/noise(s) I hear is/are intense.

41. In my mental image, I feel the thickness of elements/things.

42. In my mental image, I have a clear understanding of the sharpness of elements/things.
43. In my mental image, I feel many *different* textures.
44. In my mental image, I have a clear understanding of the coarseness of the elements.
45. In my mental image, I have a clear sense of the temperature.
46. In my mental image, I easily feel the textures of elements/things.
47. In my mental image, I touch elements/things.

48. In my mental image, smell(s) is/are very real.
49. In my mental image, most of the odors/scents I smell are very noticeable.
50. In my mental image, I smell many *different* odors/scents.
51. In my mental image, the odor(s)/scent(s) I smell is/are very strong.
52. In my mental image, different odors/scents are distinguishable.
53. In my mental image, the odor(s)/scent(s) I smell is/are very detailed.
54. In my mental image, the odor(s)/scent(s) is/are very clear.
55. In my mental image, the odor(s)/scent(s) I smell is/are random that I don't know at all.

56. In my mental image, taste(s) is/are very strong.
57. In my mental image, most of the flavors I taste are very noticeable.
58. In my mental image, I taste many *different* flavors.
59. In my mental image, the flavor(s) I taste is/are very intense.
60. In my mental image, different flavors are easily distinguishable.
61. In my mental image, the flavor(s) that I taste is/are detailed.
62. In my mental image, based on the flavors I taste, different textures are distinguishable.
63. In my mental image, I easily taste flavors.
64. In my mental image, the flavor(s) I taste is/are random that I don't know at all.

65. In my mental image, I am doing and am involved in different things rather than merely observing.
66. In my mental image, I move around among the objects in the scene.
67. In my mental image, objects are all reachable.
68. In my mental image, there are many things happening.
69. My mental image is very alive and active.
70. In my mental image, I feel the weights of different elements/things.
71. In my mental image, I clearly see body gestures.
72. In my mental image, I clearly see body postures.
73. In my mental image, I clearly see facial expressions.

74. In my mental image, I can easily change the shape of elements/things.
75. In my mental image, I can easily rotate elements/things.
76. In my mental image, I can easily rotate the scene.
77. In my mental image, I can easily see any entities upside down.
78. In my mental image, I can easily add unreal (mythical) entities to the scene (e.g. unicorn).
79. In my mental image, I can easily add unreal (mythical) acts to the scene (e.g. flying without any equipment).
80. In my mental image, I can easily change the colors of any entities to any colors I want.
81. In my mental image, I can easily change my vantage point (e.g. bird's-eye view).

82. In my mental image, I can easily change the volume of the sound(s)/noise(s) I hear.
83. In my mental image, I can easily change the intensity of the odor(s)/scent(s) I smell.
84. In my mental image, I can easily change the texture of the elements/things I touch.
85. In my mental image, I can easily change the sizes of any entities.
86. In my mental image, I can easily dismantle anything I want.

87. In my mental image, the peripheral areas are visible.
88. In my mental image, the peripheral areas are vivid.
89. In my mental image, I have a precise estimation of how long it will take to do certain things (e.g. walking from point A to point B).
90. In my mental image, I have a precise idea of the locations of elements/things.
91. In my mental image, I have a precise idea of the distances of elements/things away from me.
92. In my mental image, I have a precise idea of the distances of elements/things from each other.
93. In my mental image, I have a precise idea of the depth of the image (3D perspective).
94. In my mental image, I have a precise idea of the directions of elements/things.
95. In my mental image, I have a precise idea of the spatial surroundings of elements/things.
96. In my mental image, I have a precise idea of the sizes of different elements/things.
97. In my mental image, I have a precise idea of the arrangement of elements/things.
98. In my mental image, regular shapes are easily detectable (e.g. triangle, circle, etc.).
99. In my mental image, irregular shapes are easily detectable.
100. In my mental image, the direction(s) of the sound(s)/noise(s) I hear is/are easily recognizable.
101. In my mental image, the source(s) of the sound(s)/noise(s) I hear is/are easily identifiable.
102. In my mental image, I easily identify the distance from which I hear sound(s)/noise(s).
103. In my mental image, I easily identify the distance from which I smell odor(s)/scent(s).
104. In my mental image, I easily recognize where the smell(s) is/are coming from.
105. In my mental image, I easily recognize what the smell(s) is/are.

APPENDIX D: SHORT AND LONG QUESTIONNAIRES

IRB Approval

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Determination of Exempt Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Jalayer Khalilzadeh**

Date: **January 19, 2018**

Dear Researcher:

On 01/19/2018, the IRB reviewed the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	Destination Image and Tourist' s Imagination: The Forgotten Component (Phase III & IV of a Ph.D. dissertation)
Investigator:	Jalayer Khalilzadeh
IRB Number:	SBE-17-13661
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

This letter is signed by:

Kamille Chap

Signature applied by Kamille Chaparro on 01/19/2018 11:12:51 AM EST

Designated Reviewer

Short Questionnaire (imagination scale +TDI)

1. Please select a destination from the list (below) that you have visited (if there are more than one destination that you have visited, select the most recent):

○ Asheville	○ Aspen	○ Boston	○ Charleston	○ Charlotte	○ Chicago
○ Cleveland	○ Denver	○ Hawaii	○ Key West	○ Las Vegas	○ Los Angeles
○ Miami	○ Napa	○ Nashville	○ New Orleans	○ New York	○ Orlando
○ Philadelphia	○ San Diego	○ San Francisco	○ Savannah	○ Seattle	○ Washington D.C.

2. Now, please close your eyes and imagine yourself taking a trip to XXX. Take your time to create a detailed mental image (scene). Open your eyes when you finished creating the mental image and answer the questions very carefully. If the question is asking about something that is totally absent from your mental image, select 0 (not applicable); otherwise, select the number that best explains your mental image and its details.

	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
In my mental image, I see a series of images	⓪	①	②	③	④	⑤	⑥	⑦
My mental image is detailed	⓪	①	②	③	④	⑤	⑥	⑦
In my mental image, colors are distinct from each other	⓪	①	②	③	④	⑤	⑥	⑦
My mental image is very colorful	⓪	①	②	③	④	⑤	⑥	⑦
My mental image is a sharp image	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
the sound(s)/noise(s) I hear is/are detailed	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are very audible	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are very clear	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are intense	⓪	①	②	③	④	⑤	⑥	⑦
I can easily dismantle anything I want	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the intensity of the odor(s)/scent(s) I smell	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the texture of the elements/things I touch	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the sizes of any entities	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
I easily taste flavors	⓪	①	②	③	④	⑤	⑥	⑦
I taste many different flavors	⓪	①	②	③	④	⑤	⑥	⑦
taste(s) is/are very strong	⓪	①	②	③	④	⑤	⑥	⑦
different flavors are easily distinguishable	⓪	①	②	③	④	⑤	⑥	⑦
the odor(s)/scent(s) I smell is/are very strong	⓪	①	②	③	④	⑤	⑥	⑦
smell(s) is/are very real	⓪	①	②	③	④	⑤	⑥	⑦
I smell many different odors/scents	⓪	①	②	③	④	⑤	⑥	⑦
the odor(s)/scent(s) I smell is/are very detailed	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
I have a precise estimation of how long it will take to do certain things (e.g. walking from point A to point B)	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the locations of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the distances of elements/things from each other	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the directions of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I feel the weights of different elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I clearly see body gestures	⓪	①	②	③	④	⑤	⑥	⑦
I clearly see body postures	⓪	①	②	③	④	⑤	⑥	⑦
Everything is very alive and active	⓪	①	②	③	④	⑤	⑥	⑦
I feel many different textures	⓪	①	②	③	④	⑤	⑥	⑦
I feel the thickness of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I feel the textures of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I touch elements/things	⓪	①	②	③	④	⑤	⑥	⑦

3. What do you think about XXX? Select the number that most accurately shows your opinions of XXX.

XXX has …	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
good weather	①	②	③	④	⑤	⑥	⑦
a beautiful landscape	①	②	③	④	⑤	⑥	⑦
a variety of flora and fauna	①	②	③	④	⑤	⑥	⑦
well-developed infrastructures	①	②	③	④	⑤	⑥	⑦
proper accommodation facilities	①	②	③	④	⑤	⑥	⑦
proper tourist facilities	①	②	③	④	⑤	⑥	⑦
various shopping facilities	①	②	③	④	⑤	⑥	⑦
good night life	①	②	③	④	⑤	⑥	⑦
various entertainment activities	①	②	③	④	⑤	⑥	⑦
a variety of cultural attractions	①	②	③	④	⑤	⑥	⑦
a variety of historical monuments	①	②	③	④	⑤	⑥	⑦

XXX has …	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
ample events and festivals	①	②	③	④	⑤	⑥	⑦
a variety of local food (cuisine)	①	②	③	④	⑤	⑥	⑦
acceptable recreational opportunities	①	②	③	④	⑤	⑥	⑦
an acceptable level of personal safety	①	②	③	④	⑤	⑥	⑦
enough security	①	②	③	④	⑤	⑥	⑦
standard hygiene and cleanliness	①	②	③	④	⑤	⑥	⑦
friendly and hospitable locals	①	②	③	④	⑤	⑥	⑦
political stability	①	②	③	④	⑤	⑥	⑦
good reputation	①	②	③	④	⑤	⑥	⑦
unpolluted/unspoiled natural environment	①	②	③	④	⑤	⑥	⑦
good quality of life	①	②	③	④	⑤	⑥	⑦
a different lifestyle	①	②	③	④	⑤	⑥	⑦

4. How do you feel about XXX? Select the number that most accurately shows your emotions towards XXX.

XXX is a ---------- Place.

Pleasant							Unpleasant
Distressful							Relaxing
Sleepy							Arousing
Boring							Exciting
Gloomy							Cheerful
Unenjoyable							Enjoyable
Delighting							Annoying
Unhappy							Happy
Despairing							Encouraging
Disturbing							Calming
Fun							Dull
Appealing							Unappealing
Comforting							Uncomforting
Frustrating							Fulfilling
Interesting							Uninteresting
Attractive							Unattractive

5. How does each statement explain your relationship with XXX? Select the number that most accurately shows the relationship.

	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
XXX has always been a dream-destination to visit sometime during my lifetime	①	②	③	④	⑤	⑥	⑦
XXX is a suitable vacation choice for me	①	②	③	④	⑤	⑥	⑦
XXX helps me put my knowledge to use (i.e. history, geography, philosophy)	①	②	③	④	⑤	⑥	⑦
XXX has always been a personal goal for vacations	①	②	③	④	⑤	⑥	⑦
Visiting XXX stems from a personal need of mine that needs/had to be fulfilled	①	②	③	④	⑤	⑥	⑦
XXX has/had evoked a persistent wish to visit it	①	②	③	④	⑤	⑥	⑦
XXX's positive attributes help/helped me nurture my personality	①	②	③	④	⑤	⑥	⑦
Vacationing in XXX is/has been the best reward/gift I can/could offer myself	①	②	③	④	⑤	⑥	⑦

Long Questionnaire (Only imagination scale)

1. Please select a destination from the list (below) that you have visited (if there are more than one destination that you have visited, select the most recent):

○ Asheville	○ Aspen	○ Boston	○ Charleston	○ Charlotte	○ Chicago
○ Cleveland	○ Denver	○ Hawaii	○ Key West	○ Las Vegas	○ Los Angeles
○ Miami	○ Napa	○ Nashville	○ New Orleans	○ New York	○ Orlando
○ Philadelphia	○ San Diego	○ San Francisco	○ Savannah	○ Seattle	○ Washington D.C.

2. Now, please close your eyes and imagine yourself taking a trip to XXX. Take your time to create a detailed mental image (scene). Open your eyes when you finished creating the mental image and answer the questions very carefully. If the question is asking about something that is totally absent from your mental image, select 0 (not applicable); otherwise, select the number that best explains your mental image and its details.

My mental image is …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
detailed	⓪	①	②	③	④	⑤	⑥	⑦
very colorful	⓪	①	②	③	④	⑤	⑥	⑦
a sharp image	⓪	①	②	③	④	⑤	⑥	⑦
animated and movie-like	⓪	①	②	③	④	⑤	⑥	⑦
very bright	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
I see a series of images	⓪	①	②	③	④	⑤	⑥	⑦
colors are distinct from each other	⓪	①	②	③	④	⑤	⑥	⑦
the time of the day is easily recognizable	⓪	①	②	③	④	⑤	⑥	⑦
I vividly see everything	⓪	①	②	③	④	⑤	⑥	⑦
irregular shapes are easily detectable	⓪	①	②	③	④	⑤	⑥	⑦
regular shapes are easily detectable (e.g. triangle, circle, etc.)	⓪	①	②	③	④	⑤	⑥	⑦
I see many separate scenes	⓪	①	②	③	④	⑤	⑥	⑦
the peripheral areas are vivid	⓪	①	②	③	④	⑤	⑥	⑦
most of the elements/things are noticeable	⓪	①	②	③	④	⑤	⑥	⑦
I am watching the image as if it were happening in front of me	⓪	①	②	③	④	⑤	⑥	⑦
I can see myself inside my mental image	⓪	①	②	③	④	⑤	⑥	⑦
the peripheral areas are visible	⓪	①	②	③	④	⑤	⑥	⑦
there are multiple focus points	⓪	①	②	③	④	⑤	⑥	⑦
most textures are easily visible	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the depth of the image (3D perspective)	⓪	①	②	③	④	⑤	⑥	⑦
most of the elements/things I see are by themselves (isolated) and are not related to other elements/things	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
I have a precise estimation of how long it will take to do certain things (e.g. walking from point A to point B)	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the locations of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the distances of elements/things from each other	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the directions of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the spatial surroundings of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the distances of elements/things away from me	⓪	①	②	③	④	⑤	⑥	⑦
I have a precise idea of the arrangement of elements/things	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
I can easily dismantle anything I want	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the intensity of the odor(s)/scent(s) I smell	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the texture of the elements/things I touch	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the sizes of any entities	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the shape of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the volume of the sound(s)/noise(s) I hear	⓪	①	②	③	④	⑤	⑥	⑦
I can easily rotate elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I can easily rotate the scene	⓪	①	②	③	④	⑤	⑥	⑦
I can easily add unreal (mythical) acts to the scene (e.g. flying without any equipment)	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change the colors of any entities to any colors I want	⓪	①	②	③	④	⑤	⑥	⑦
I can easily add unreal (mythical) entities to the scene (e.g. unicorn)	⓪	①	②	③	④	⑤	⑥	⑦
I can easily change my vantage point (e.g. bird's-eye view)	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
I feel the weights of different elements/things	⓪	①	②	③	④	⑤	⑥	⑦
everything is very alive and active	⓪	①	②	③	④	⑤	⑥	⑦
I clearly see body gestures	⓪	①	②	③	④	⑤	⑥	⑦
I clearly see body postures	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
the sound(s)/noise(s) I hear is/are detailed	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are very audible	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are very clear	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are intense	⓪	①	②	③	④	⑤	⑥	⑦
most of the sounds/noises I hear are very noticeable	⓪	①	②	③	④	⑤	⑥	⑦
I hear many different sounds/noises	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are constant	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are loud	⓪	①	②	③	④	⑤	⑥	⑦
I clearly hear myself	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are harmonious	⓪	①	②	③	④	⑤	⑥	⑦
the pitches of sounds/noises are identifiable	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear is/are random that I don't know at all	⓪	①	②	③	④	⑤	⑥	⑦
the sound(s)/noise(s) I hear are related like a story	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
the odor(s)/scent(s) I smell is/are very strong	⓪	①	②	③	④	⑤	⑥	⑦
smell(s) is/are very real	⓪	①	②	③	④	⑤	⑥	⑦
I smell many different odors/scents	⓪	①	②	③	④	⑤	⑥	⑦
the odor(s)/scent(s) I smell is/are very detailed	⓪	①	②	③	④	⑤	⑥	⑦
the odor(s)/scent(s) is/are very clear	⓪	①	②	③	④	⑤	⑥	⑦
most of the odors/scents I smell are very noticeable	⓪	①	②	③	④	⑤	⑥	⑦
the odor(s)/scent(s) I smell is/are random that I don't know at all	⓪	①	②	③	④	⑤	⑥	⑦
different odors/scents are distinguishable	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
I easily taste flavors	⓪	①	②	③	④	⑤	⑥	⑦
I taste many different flavors	⓪	①	②	③	④	⑤	⑥	⑦
taste(s) is/are very strong	⓪	①	②	③	④	⑤	⑥	⑦
different flavors are easily distinguishable	⓪	①	②	③	④	⑤	⑥	⑦
most of the flavors I taste are very noticeable	⓪	①	②	③	④	⑤	⑥	⑦
the flavor(s) I taste is/are very intense	⓪	①	②	③	④	⑤	⑥	⑦

the flavor(s) that I taste is/are detailed	⓪	①	②	③	④	⑤	⑥	⑦
based on the flavors I taste, different textures are distinguishable	⓪	①	②	③	④	⑤	⑥	⑦
the flavor(s) I taste is/are random that I don't know at all	⓪	①	②	③	④	⑤	⑥	⑦

In my mental image …	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
I feel many different textures	⓪	①	②	③	④	⑤	⑥	⑦
I feel the thickness of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I feel the textures of elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I touch elements/things	⓪	①	②	③	④	⑤	⑥	⑦
I have a clear sense of the temperature	⓪	①	②	③	④	⑤	⑥	⑦
I have a clear understanding of the coarseness of the elements	⓪	①	②	③	④	⑤	⑥	⑦

APPENDIX E: FINAL VERSION OF THE SCALE (OMI)

OMI (Octomodal Mental Imagery) Scale

1. Please close your eyes and imagine yourself taking a trip to XXX. Take your time to create a detailed mental image (scene). Open your eyes when you finished creating the mental image and answer the questions very carefully. If the question is asking about something that is totally absent from your mental image, select 0 (not applicable); otherwise, select the number that best explains your mental image and its details.

In terms of the visual aspect,	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
My mental image is detailed	0	1	2	3	4	5	6	7
My mental image is very colorful	0	1	2	3	4	5	6	7
My mental image is a sharp image	0	1	2	3	4	5	6	7
In my mental image, I vividly see everything	0	1	2	3	4	5	6	7
In my mental image, colors are distinct from each other	0	1	2	3	4	5	6	7
My mental image is very bright(L)	0	1	2	3	4	5	6	7
In my mental image, most of the elements/things are noticeable(L)	0	1	2	3	4	5	6	7

Items labeled with (L) are only for the longer version of questionnaire and should be eliminated from the short version.

In my mental image, . . .	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
. . . I have a precise idea of the *distances* of elements/things from each other	0	1	2	3	4	5	6	7
. . . I have a precise idea of the *directions* of elements/things	0	1	2	3	4	5	6	7
. . . I have a precise idea of the *locations* of elements/things	0	1	2	3	4	5	6	7
. . . I have a precise estimation of how long it will take to do certain things (e.g. walking from point A to point B)(L)	0	1	2	3	4	5	6	7

Items labeled with (L) are only for the longer version of questionnaire and should be eliminated from the short version.

In my mental image, . . .	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
. . . I can easily change the sizes of any entities	0	1	2	3	4	5	6	7
. . . I can easily change the shape of elements/things	0	1	2	3	4	5	6	7
. . . I can easily rotate elements/things	0	1	2	3	4	5	6	7
. . . I can easily change the texture of the elements/things I touch(L)	0	1	2	3	4	5	6	7
. . . I can easily dismantle anything I want(L)	0	1	2	3	4	5	6	7
. . . I can easily rotate the scene(L)	0	1	2	3	4	5	6	7

Items labeled with (L) are only for the longer version of questionnaire and should be eliminated from the short version.

In my mental image, . . .	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
. . . I clearly see gestures	0	1	2	3	4	5	6	7
. . . I clearly see postures	0	1	2	3	4	5	6	7
. . . everything is very alive and active[L]	0	1	2	3	4	5	6	7

Items labeled with [L] are only for the longer version of questionnaire and should be eliminated from the short version.

In my mental image, . . .	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
. . . the sound(s)/noise(s) I hear is/are very clear	0	1	2	3	4	5	6	7
. . . the sound(s)/noise(s) I hear is/are detailed	0	1	2	3	4	5	6	7
. . . the sound(s)/noise(s) I hear is/are very audible	0	1	2	3	4	5	6	7
. . . the sound(s)/noise(s) I hear is/are intense[L]	0	1	2	3	4	5	6	7
. . . I hear many different sounds/noises[L]	0	1	2	3	4	5	6	7

Items labeled with [L] are only for the longer version of questionnaire and should be eliminated from the short version.

In my mental image, . . .	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
. . . the odor(s)/scent(s) I smell is/are very detailed	0	1	2	3	4	5	6	7
. . . the odor(s)/scent(s) is/are very clear	0	1	2	3	4	5	6	7
. . . most of the odors/scents I smell are very noticeable	0	1	2	3	4	5	6	7
. . . the odor(s)/scent(s) I smell is/are very strong[L]	0	1	2	3	4	5	6	7
. . . smell(s) is/are very real[L]	0	1	2	3	4	5	6	7

Items labeled with [L] are only for the longer version of questionnaire and should be eliminated from the short version.

In my mental image, . . .	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
. . . most of the flavors I taste are very noticeable	0	1	2	3	4	5	6	7
. . . the flavor(s) that I taste is/are detailed	0	1	2	3	4	5	6	7
. . . different flavors are distinguishable	0	1	2	3	4	5	6	7
. . . the flavor(s) I taste is/are very intense[L]	0	1	2	3	4	5	6	7
. . . I taste many different flavors[L]	0	1	2	3	4	5	6	7
. . . taste(s) is/are very strong[L]	0	1	2	3	4	5	6	7

Items labeled with [L] are only for the longer version of questionnaire and should be eliminated from the short version.

In my mental image, . . .	Not Applicable	Strongly Disagree	Disagree	Slightly Agree	Not Agree Nor Disagree	Slightly Agree	Agree	Strongly Agree
. . . I feel many different textures	0	1	2	3	4	5	6	7
. . . I feel the textures of elements/things	0	1	2	3	4	5	6	7
. . . I touch elements/things	0	1	2	3	4	5	6	7
. . . I feel the thickness of elements/things[L]	0	1	2	3	4	5	6	7
. . . I have a clear understanding of the coarseness of the elements[L]	0	1	2	3	4	5	6	7

APPENDIX F: CMB ANALYSIS

Items' List

Items Names	Items Labels
Visual_1	*My mental image is detailed*
Visual_2	*My mental image is very colorful*
Visual_3	*My mental image is a sharp image*
Visual_5	*My mental image is very bright*
Visual_7	*In my mental image colors are distinct from each other*
Visual_8	*In my mental image the time of the day is easily recognizable*
Visual_9	*In my mental image I vividly see everything*
Visual_11	*In my mental image regular shapes are easily detectable (e.g. triangle, circle, etc.)*
Visual_14	*In my mental image most of the elements/things are noticeable*
Visual_15	*In my mental image I am watching the image as if it were happening in front of me*
Tactile_1	*In my mental image I feel many different textures*
Tactile_3	*In my mental image I easily feel the textures of elements/things*
Tactile_4	*In my mental image I touch elements/things*
Tactile_6	*In my mental image I have a clear understanding of the coarseness of the elements*
Auditory_1	*In my mental image the sound(s)/noise(s) I hear is/are detailed*
Auditory_3	*In my mental image the sound(s)/noise(s) I hear is/are very clear*
Auditory_4	*In my mental image the sound(s)/noise(s) I hear is/are intense*
Auditory_6	*In my mental image I hear many different sounds/noises*
Auditory_7	*In my mental image the sound(s)/noise(s) I hear is/are constant*
Auditory_8	*In my mental image the sound(s)/noise(s) I hear is/are loud*
Auditory_10	*In my mental image the sound(s)/noise(s) I hear is/are harmonious*
Auditory_11	*In my mental image the pitches of sounds/noises are identifiable*
Auditory_13	*In my mental image the sound(s)/noise(s) I hear are related like a story*
Olfactory_1	*In my mental image the odor(s)/scent(s) I smell is/are very strong*
Olfactory_2	*In my mental image smell(s) is/are very real*
Olfactory_3	*In my mental image I smell many different odors/scents*
Olfactory_4	*In my mental image the odor(s)/scent(s) I smell is/are very detailed*
Olfactory_5	*In my mental image the odor(s)/scent(s) is/are very clear*
Olfactory_6	*In my mental image most of the odors/scents I smell are very noticeable*
Olfactory_8	*In my mental image different odors/scents are distinguishable*
Gustatory_1	*In my mental image I easily taste flavors*
Gustatory_2	*In my mental image I taste many different flavors*
Gustatory_3	*In my mental image taste(s) is/are very strong*
Gustatory_4	*In my mental image different flavors are easily distinguishable*
Gustatory_5	*In my mental image most of the flavors I taste are very noticeable*
Gustatory_6	*In my mental image the flavor(s) I taste is/are very intense*
Gustatory_7	*In my mental image the flavor(s) that I taste is/are detailed*
Gustatory_8	*In my mental image based on the flavors I taste, different textures are distinguishable*
Gustatory_9	*In my mental image the flavor(s) I taste is/are random that I don't know at all*
Autonomy_1	*In my mental image I can easily dismantle anything I want*
Autonomy_3	*In my mental image I can easily change the texture of the elements/things I touch*
Autonomy_4	*In my mental image I can easily change the sizes of any entities*
Autonomy_5	*In my mental image I can easily change the shape of elements/things*

Items Names	Items Labels
Autonomy_7	*In my mental image I can easily rotate elements/things*
Autonomy_8	*In my mental image I can easily rotate the scene*
Autonomy_9	*In my mental image I can easily add unreal (mythical) acts to the scene (e.g. flying without any equipment)*
Autonomy_10	*In my mental image I can easily change the colors of any entities to any colors I want*
Autonomy_11	*In my mental image I can easily add unreal (mythical) entities to the scene (e.g. unicorn)*
Autonomy_12	*In my mental image I can easily change my vantage point (e.g. bird's-eye view)*
Spatial_1	*In my mental image I have a precise estimation of how long it will take to do certain things (e.g. walking from point A to point B)*
Spatial_2	*In my mental image I have a precise idea of the locations of elements/things*
Spatial_3	*In my mental image I have a precise idea of the distances of elements/things from each other*
Spatial_4	*In my mental image I have a precise idea of the directions of elements/things*
Spatial_5	*In my mental image I have a precise idea of the spatial surroundings of elements/things*
Spatial_6	*In my mental image I have a precise idea of the distances of elements/things away from me*
Spatial_7	*In my mental image I have a precise idea of the arrangement of elements/things*
Kinesthetic_2	*My mental image is very alive and active*
Kinesthetic_3	*In my mental image, I clearly see body gestures*
Kinesthetic_4	*In my mental image, I clearly see body postures*

Harman's Single-Factor Unrotated Factor Solution

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9
Gustatory_4	0.927								
Gustatory_3	0.923								
Gustatory_7	0.921								
Gustatory_6	0.919								
Gustatory_8	0.914								
Gustatory_5	0.914								
Gustatory_1	0.903								
Gustatory_2	0.902								
Olfactory_3	0.882								
Olfactory_4	0.872								
Olfactory_6	0.858								
Olfactory_5	0.856								
Olfactory_8	0.854								
Olfactory_2	0.846								
Olfactory_1	0.826								
Auditory_11	0.669								
Auditory_6	0.663	0.496							
Auditory_3	0.66	0.513							
Auditory_4	0.653	0.465							
Auditory_7	0.642								
Auditory_1	0.636	0.505							
Auditory_10	0.628								
Auditory_13	0.62								
Tactile_4	0.613								
Tactile_1	0.601						-0.481		
Kinesthetic_3	0.585	0.549				-0.493			
Auditory_8	0.579								
Kinesthetic_4	0.574	0.554							
Autonomy_3	0.562				0.484				
Gustatory_9	0.555								
Tactile_6	0.511								
Spatial_1	0.474								
Autonomy_1									
Visual_14		0.532							
Visual_1		0.506							
Kinesthetic_2	0.48	0.494							
Visual_9	0.475	0.493							
Visual_3	0.471	0.49							
Visual_15		0.456							
Visual_2		0.453							
Visual_7									
Visual_5									
Visual_11									

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6	Factor7	Factor8	Factor9
Visual_8									
Spatial_6				0.519					
Spatial_3				0.476					
Spatial_2				0.47					
Spatial_4				0.459					
Spatial_5				0.457					
Spatial_7									
Autonomy_9					0.645				
Autonomy_11					0.636				
Autonomy_5	0.452				0.591				
Autonomy_4					0.59				
Autonomy_10					0.586				
Autonomy_7					0.54				
Autonomy_8					0.493				
Autonomy_12									
Tactile_3	0.58						-0.589		

Harman's Single-Factor Unrotated Factor Solution Explained Variance

Factors	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	24.665	41.805	41.805	22.469	38.083	38.083
2	6.829	11.574	53.379	7.314	12.396	50.479
3	5.082	8.613	61.992	3.315	5.619	56.098
4	4.172	7.071	69.063	3.765	6.382	62.479
5	2.381	4.035	73.098	4.341	7.358	69.837
6	1.752	2.969	76.068	1.329	2.253	72.09
7	1.398	2.369	78.437	1.456	2.468	74.559
8	1.171	1.984	80.421	1.844	3.125	77.684
9	1.053	1.785	82.206	0.923	1.564	79.248

CLF Differences

	CLF λ	λ with CLF	R^2 with CLF	λ without CLF	R^2 without CLF	λ Δ	R^2 Δ
Gustatory_5	0.335	0.925	0.967	0.981	0.963	0.056	0.40%
Gustatory_7	0.375	0.909	0.967	0.982	0.965	0.073	0.20%
Gustatory_2	0.337	0.908	0.939	0.967	0.935	0.059	0.40%
Gustatory_6	0.360	0.910	0.958	0.978	0.956	0.068	0.20%
Gustatory_1	0.340	0.905	0.935	0.965	0.931	0.060	0.40%
Gustatory_3	0.360	0.911	0.960	0.979	0.958	0.068	0.20%
Gustatory_4	0.377	0.903	0.957	0.977	0.955	0.074	0.20%
Gustatory_8	0.370	0.894	0.937	0.966	0.933	0.072	0.40%
Gustatory_9	0.098	0.630	0.406	0.616	0.379	0.014	2.70%
Auditory_1	0.384	0.839	0.851	0.925	0.856	0.086	0.50%
Auditory_4	0.346	0.880	0.895	0.947	0.896	0.067	0.10%
Auditory_3	0.443	0.821	0.870	0.932	0.868	0.111	0.20%
Auditory_6	0.404	0.856	0.896	0.948	0.899	0.092	0.30%
Auditory_8	0.269	0.844	0.784	0.883	0.780	0.039	0.40%
Auditory_7	0.325	0.864	0.852	0.924	0.853	0.060	0.10%
Auditory_11	0.318	0.820	0.773	0.882	0.777	0.062	0.40%
Auditory_10	0.238	0.784	0.671	0.817	0.667	0.033	0.40%
Auditory_13	0.309	0.747	0.654	0.813	0.660	0.066	0.60%
Visual_2	0.543	0.660	0.731	0.841	0.707	0.181	2.40%
Visual_1	0.613	0.648	0.795	0.887	0.787	0.239	0.80%
Visual_9	0.682	0.519	0.734	0.863	0.744	0.344	1.00%
Visual_3	0.562	0.660	0.751	0.858	0.736	0.198	1.50%
Visual_5	0.536	0.560	0.600	0.772	0.596	0.212	0.40%
Visual_8	0.586	0.314	0.442	0.662	0.439	0.348	0.30%
Visual_7	0.559	0.486	0.549	0.750	0.562	0.264	1.30%
Visual_11	0.584	0.353	0.466	0.687	0.472	0.334	0.60%
Visual_14	0.752	0.317	0.666	0.788	0.621	0.471	4.50%
Visual_15	0.673	0.318	0.554	0.732	0.536	0.414	1.80%
Autonomy_4	0.406	0.826	0.847	0.907	0.822	0.081	2.50%
Autonomy_5	0.392	0.851	0.878	0.926	0.858	0.075	2.00%
Autonomy_7	0.450	0.743	0.754	0.856	0.732	0.113	2.20%
Autonomy_8	0.472	0.647	0.642	0.774	0.600	0.127	4.20%
Autonomy_10	0.339	0.671	0.564	0.736	0.541	0.065	2.30%
Autonomy_9	0.334	0.587	0.456	0.658	0.432	0.071	2.40%
Autonomy_3	0.416	0.728	0.702	0.824	0.679	0.096	2.30%
Autonomy_11	0.332	0.557	0.421	0.630	0.396	0.073	2.50%
Autonomy_12	0.439	0.488	0.431	0.611	0.374	0.123	5.70%
Autonomy_1	0.382	0.594	0.499	0.685	0.469	0.091	3.00%
Spatial_3	0.602	0.740	0.910	0.943	0.888	0.203	2.20%

	CLF λ	λ with CLF	R^2 with CLF	λ without CLF	R^2 without CLF	λ Δ	R^2 Δ
Spatial_4	0.610	0.681	0.836	0.909	0.826	0.228	1.00%
Spatial_2	0.595	0.716	0.867	0.922	0.849	0.206	1.80%
Spatial_5	0.682	0.542	0.759	0.863	0.745	0.321	1.40%
Spatial_6	0.737	0.512	0.805	0.876	0.767	0.364	3.80%
Spatial_7	0.723	0.469	0.743	0.833	0.694	0.364	4.90%
Spatial_1	0.617	0.515	0.646	0.795	0.633	0.280	1.30%
Olfactory_5	0.358	0.908	0.953	0.976	0.953	0.068	0.00%
Olfactory_1	0.311	0.903	0.913	0.954	0.910	0.051	0.30%
Olfactory_6	0.350	0.907	0.945	0.972	0.945	0.065	0.00%
Olfactory_2	0.350	0.901	0.934	0.967	0.934	0.066	0.00%
Olfactory_4	0.384	0.902	0.961	0.980	0.961	0.078	0.00%
Olfactory_8	0.341	0.877	0.885	0.941	0.886	0.064	0.10%
Olfactory_3	0.361	0.870	0.888	0.942	0.888	0.072	0.00%
Tactile_3	0.404	0.850	0.886	0.932	0.869	0.082	1.70%
Tactile_1	0.455	0.755	0.777	0.884	0.781	0.129	0.40%
Tactile_4	0.368	0.746	0.692	0.830	0.689	0.084	0.30%
Tactile_6	0.452	0.576	0.536	0.725	0.525	0.149	1.10%
Kinesthetic_4	0.414	0.850	0.894	0.956	0.360	0.106	53.40%
Kinesthetic_3	0.418	0.878	0.947	0.965	0.931	0.087	1.60%
Kinesthetic_2	0.723	0.275	0.598	0.600	0.915	0.325	31.70%

Correlation Table with Inflated and Corrected Coefficients

	1	2	3	4	5	6	7	8
1 *Kinesthetic*	**0.865**	0.299	-0.213	0.132	0.205	0.285	0.276	0.010
2 *Tactile*	0.550	**0.914**	0.233	0.265	0.176	0.268	0.391	0.356
3 *Olfactory*	0.387	0.506	**0.863**	0.021	0.104	-0.032	0.178	0.556
4 *Spatial*	0.363	0.412	0.289	**0.957**	0.211	0.427	0.101	0.178
5 *Autonomy*	0.398	0.340	0.330	0.323	**0.960**	0.068	0.094	0.200
6 *Visual*	0.573	0.489	0.393	0.547	0.267	**0.903**	0.386	-0.055
7 *Auditory*	0.602	0.589	0.551	0.319	0.306	0.616	**0.880**	0.075
8 *Gustatory*	0.468	0.569	0.764	0.382	0.388	0.350	0.463	**0.876**

Lower triangle: Inflated correlation coefficients; **Upper triangle:** Common method variance corrected correlation coefficients; **Diagonal:** correlation coefficients of the component with and without common method bias

APPENDIX G: GENDER INVARIANCE CHECK

Configural Invariance

Chi-square test

Assuming model Unconstrained to be correct	**DF**	**χ^2**	**P**	**NFI**	**IFI**	**RFI**	**TLI**
Measurement weights	51	54.184	0.354	0.002	0.002	-0.002	-0.002
Structural covariances	87	116.98	0.018	0.005	0.005	-0.002	-0.002
Measurement residuals	152	356.189	0.000	0.014	0.016	0.003	0.004

Residual Invariance

	Male		Female		
	***β*/Cronbach's α**	***ρ*-value**	***β*/Cronbach's α**	***ρ*-value**	**Δ**
Gustatory	**0.985**		**0.985**		
Gustatory_5	0.337	0.000	0.154	0.000	-3.205**
Gustatory_7	0.236	0.000	0.197	0.000	-0.797
Gustatory_2	0.390	0.000	0.408	0.000	0.221
Gustatory_6	0.315	0.000	0.214	0.000	-1.765
Gustatory_1	0.384	0.000	0.500	0.000	1.314
Gustatory_3	0.342	0.000	0.176	0.000	-2.852**
Gustatory_4	0.221	0.000	0.334	0.000	1.936
Gustatory_8	0.314	0.000	0.492	0.000	2.196*
Gustatory_9	2.730	0.000	2.381	0.000	-0.735
Auditory	**0.969**		**0.979**		
Auditory_1	0.951	0.000	0.598	0.000	-2.039*
Auditory_4	0.532	0.000	0.496	0.000	-0.3
Auditory_3	0.832	0.000	0.547	0.000	-1.823
Auditory_6	0.614	0.000	0.470	0.000	-1.116
Auditory_8	1.264	0.000	0.914	0.000	-1.572
Auditory_7	1.075	0.000	0.553	0.000	-2.853**
Auditory_11	1.458	0.000	0.942	0.000	-2.081*
Auditory_10	1.608	0.000	1.675	0.000	0.211
Auditory_13	1.996	0.000	1.667	0.000	-0.925
Visual	**0.941**		**0.942**		
Visual_2	1.008	0.000	0.566	0.000	-2.554*
Visual_1	0.399	0.000	0.643	0.000	2.073*
Visual_9	0.758	0.000	0.501	0.000	-1.853
Visual_3	0.965	0.000	0.563	0.000	-2.369*
Visual_5	1.119	0.000	0.821	0.000	-1.528
Visual_8	1.115	0.000	1.394	0.000	1.166
Visual_7	1.295	0.000	0.959	0.000	-1.488
Visual_11	1.365	0.000	1.530	0.000	0.595
Visual_14	1.019	0.000	0.852	0.000	-0.89
Visual_15	1.479	0.000	1.185	0.000	-1.124
Autonomy	**0.952**		**0.928**		
Autonomy_4	0.823	0.000	0.686	0.000	-0.748
Autonomy_5	0.365	0.000	0.803	0.000	2.713**
Autonomy_7	0.881	0.000	1.310	0.000	1.834
Autonomy_8	1.294	0.000	2.187	0.000	2.549*
Autonomy_10	2.217	0.000	1.704	0.000	-1.323
Autonomy_9	2.717	0.000	2.623	0.000	-0.185
Autonomy_3	1.580	0.000	1.340	0.000	-0.795
Autonomy_11	2.673	0.000	2.967	0.000	0.552
Autonomy_12	2.734	0.000	2.350	0.000	-0.791
Autonomy_1	2.130	0.000	2.203	0.000	0.177

	Male		Female		
	***β*/Cronbach's α**	***ρ*-value**	***β*/Cronbach's α**	***ρ*-value**	**Δ**
Spatial	**0.968**		**0.951**		
Spatial_3	0.409	0.000	0.342	0.000	-0.689
Spatial_4	0.691	0.000	0.494	0.000	-1.488
Spatial_2	0.606	0.000	0.429	0.000	-1.484
Spatial_5	0.445	0.000	1.225	0.000	4.389**
Spatial_6	0.463	0.000	1.060	0.000	3.704**
Spatial_7	1.044	0.000	0.959	0.000	-0.429
Spatial_1	1.417	0.000	1.300	0.000	-0.438
Olfactory	**0.990**		**0.988**		
Olfactory_5	0.289	0.000	0.209	0.000	-1.376
Olfactory_1	0.497	0.000	0.595	0.000	0.898
Olfactory_6	0.198	0.000	0.487	0.000	3.809**
Olfactory_2	0.227	0.000	0.627	0.000	4.299**
Olfactory_4	0.280	0.000	0.151	0.000	-2.395*
Olfactory_8	0.538	0.000	0.775	0.000	1.838
Olfactory_3	0.567	0.000	0.738	0.000	1.338
Tactile	**0.934**		**0.879**		
Tactile_3	0.395	0.000	0.808	0.000	1.983*
Tactile_1	0.869	0.000	1.079	0.000	0.873
Tactile_4	0.896	0.000	1.946	0.000	3.303**
Tactile_6	1.677	0.000	2.012	0.000	0.918
Kinesthetic	**0.866**		**0.874**		
Kinesthetic_4	0.429	0.002	0.417	0.002	-0.063
Kinesthetic_3	0.341	0.013	0.275	0.040	-0.345
Kinesthetic_2	1.960	0.000	1.811	0.000	-0.42

*: Significant at 0.05, **: Significant at 0.01

Measurement Invariance

Metric Invariance

	Male		Female		
	β	***ρ*-value**	***β***	***ρ*-value**	**Δ**
Gustatory_7	1.001	0.000	0.961	0.000	-1.142
Gustatory_2	0.976	0.000	0.931	0.000	-1.082
Gustatory_6	0.985	0.000	0.930	0.000	-1.502
Gustatory_1	0.999	0.000	0.977	0.000	-0.499
Gustatory_3	0.971	0.000	0.930	0.000	-1.11
Gustatory_4	1.003	0.000	0.951	0.000	-1.383
Gustatory_8	0.982	0.000	0.932	0.000	-1.228
Gustatory_9	0.503	0.000	0.490	0.000	-0.153
Auditory_4	1.034	0.000	0.949	0.000	-1.197
Auditory_3	1.022	0.000	1.005	0.000	-0.338
Auditory_6	1.039	0.000	1.011	0.000	-0.376
Auditory_8	0.905	0.000	0.892	0.000	-0.162
Auditory_7	1.004	0.000	0.986	0.000	-0.223
Auditory_11	0.904	0.000	0.964	0.000	0.691
Auditory_10	0.872	0.000	0.817	0.000	-0.595
Auditory_13	0.888	0.000	0.853	0.000	-0.361
Visual_1	0.958	0.000	1.110	0.000	1.36
Visual_9	0.951	0.000	1.008	0.000	0.501
Visual_3	1.026	0.000	1.086	0.000	0.486
Visual_5	0.761	0.000	0.991	0.000	1.921
Visual_8	0.774	0.000	0.700	0.000	-0.589
Visual_7	0.882	0.000	0.836	0.000	-0.362
Visual_11	0.842	0.000	0.811	0.000	-0.229
Visual_14	0.837	0.000	0.964	0.000	1.06
Visual_15	0.830	0.000	0.975	0.000	1.077
Autonomy_5	1.075	0.000	0.997	0.000	-0.906
Autonomy_7	1.046	0.000	0.854	0.000	-1.985*
Autonomy_8	1.048	0.000	0.755	0.000	-2.636**
Autonomy_10	0.830	0.000	0.794	0.000	-0.321
Autonomy_9	0.759	0.000	0.769	0.000	0.084
Autonomy_3	0.944	0.000	0.950	0.000	0.058
Autonomy_11	0.826	0.000	0.646	0.000	-1.399
Autonomy_12	0.847	0.000	0.490	0.000	-2.912**
Autonomy_1	0.769	0.000	0.725	0.000	-0.389
Spatial_4	0.918	0.000	0.964	0.000	0.658
Spatial_2	0.926	0.000	0.938	0.000	0.165
Spatial_5	0.902	0.000	0.813	0.000	-1.127
Spatial_6	0.933	0.000	0.796	0.000	-1.803

	Male		Female		
	β	***ρ*-value**	***β***	***ρ*-value**	**Δ**
Spatial_7	0.780	0.000	0.846	0.000	0.799
Spatial_1	0.850	0.000	0.842	0.000	-0.087
Olfactory_1	0.983	0.000	0.967	0.000	-0.343
Olfactory_6	1.029	0.000	0.975	0.000	-1.3
Olfactory_2	1.010	0.000	0.993	0.000	-0.388
Olfactory_4	1.006	0.000	0.987	0.000	-0.503
Olfactory_8	0.950	0.000	0.933	0.000	-0.342
Olfactory_3	0.933	0.000	0.931	0.000	-0.042
Tactile_1	0.896	0.000	0.954	0.000	0.677
Tactile_4	0.934	0.000	0.879	0.000	-0.589
Tactile_6	0.776	0.000	0.687	0.000	-0.905
Kinesthetic_3	1.012	0.000	1.007	0.000	-0.071
Kinesthetic_2	0.507	0.000	0.480	0.000	-0.305

*: Significant at 0.05, **: Significant at 0.01

Scaler Invariance

	Male		Female		
	β_0	ρ-value	β_0	ρ-value	Δ
Gustatory_5	3.845	0.000	3.720	0.000	-0.38
Gustatory_7	3.700	0.000	3.591	0.000	-0.336
Gustatory_2	3.764	0.000	3.530	0.000	-0.728
Gustatory_6	3.609	0.000	3.477	0.000	-0.414
Gustatory_1	3.791	0.000	3.674	0.000	-0.351
Gustatory_3	3.673	0.000	3.508	0.000	-0.522
Gustatory_4	3.727	0.000	3.682	0.000	-0.14
Gustatory_8	3.673	0.000	3.462	0.000	-0.655
Gustatory_9	2.891	0.000	2.742	0.000	-0.564
Auditory_1	4.973	0.000	4.841	0.000	-0.439
Auditory_4	4.518	0.000	4.364	0.000	-0.532
Auditory_3	4.791	0.000	4.924	0.000	0.443
Auditory_6	4.973	0.000	4.735	0.000	-0.793
Auditory_8	4.445	0.000	4.205	0.000	-0.849
Auditory_7	4.755	0.000	4.598	0.000	-0.52
Auditory_11	4.945	0.000	4.856	0.000	-0.302
Auditory_10	4.645	0.000	4.697	0.000	0.18
Auditory_13	4.491	0.000	4.439	0.000	-0.172
Visual_2	6.136	0.000	6.614	0.000	2.224*
Visual_1	6.127	0.000	6.242	0.000	0.56
Visual_9	6.027	0.000	6.242	0.000	1.055
Visual_3	5.809	0.000	6.273	0.000	2.095*
Visual_5	5.991	0.000	6.174	0.000	0.912
Visual_8	6.545	0.000	6.500	0.000	-0.23
Visual_7	6.118	0.000	6.386	0.000	1.287
Visual_11	5.973	0.000	6.136	0.000	0.758
Visual_14	5.973	0.000	6.098	0.000	0.617
Visual_15	6.109	0.000	6.212	0.000	0.469
Autonomy_4	4.282	0.000	4.424	0.000	0.534
Autonomy_5	4.182	0.000	4.371	0.000	0.701
Autonomy_7	4.391	0.000	4.674	0.000	1.05
Autonomy_8	4.491	0.000	4.985	0.000	1.752
Autonomy_10	4.509	0.000	4.932	0.000	1.574
Autonomy_9	4.427	0.000	4.538	0.000	0.394
Autonomy_3	3.982	0.000	4.189	0.000	0.748
Autonomy_11	4.427	0.000	4.561	0.000	0.47
Autonomy_12	4.945	0.000	5.568	0.000	2.306*
Autonomy_1	4.191	0.000	4.364	0.000	0.656
Spatial_3	5.282	0.000	5.614	0.000	1.32
Spatial_4	5.455	0.000	5.583	0.000	0.527
Spatial_2	5.418	0.000	5.614	0.000	0.812

	Male		Female		
	β_0	ρ-value	β_0	ρ-value	Δ
Spatial_5	5.500	0.000	5.598	0.000	0.415
Spatial_6	5.409	0.000	5.689	0.000	1.175
Spatial_7	5.773	0.000	5.788	0.000	0.065
Spatial_1	5.055	0.000	5.227	0.000	0.684
Olfactory_5	3.982	0.000	4.061	0.000	0.248
Olfactory_1	4.136	0.000	4.038	0.000	-0.31
Olfactory_6	4.018	0.000	4.076	0.000	0.179
Olfactory_2	4.073	0.000	4.205	0.000	0.409
Olfactory_4	3.955	0.000	4.015	0.000	0.192
Olfactory_8	3.936	0.000	4.114	0.000	0.57
Olfactory_3	3.827	0.000	4.008	0.000	0.585
Tactile_3	4.745	0.000	4.409	0.000	-1.198
Tactile_1	4.618	0.000	4.508	0.000	-0.405
Tactile_4	4.573	0.000	4.424	0.000	-0.524
Tactile_6	4.936	0.000	5.197	0.000	0.995
Kinesthetic_4	5.318	0.000	5.311	0.000	-0.027
Kinesthetic_3	5.227	0.000	5.311	0.000	0.297
Kinesthetic_2	5.836	0.000	5.992	0.000	0.702

Factor Variance Invariance

Direct Comparison

	Male		Female		
	σ	***ρ*-value**	**σ**	***ρ*-value**	**Δ**
Gustatory	6.194	0.000	6.336	0.000	0.119
Auditory	4.239	0.000	4.960	0.000	0.738
Visual	2.164	0.000	1.656	0.000	-1.033
Autonomy	3.634	0.000	3.286	0.000	-0.451
Spatial	3.920	0.000	2.729	0.000	-1.706
Olfactory	5.529	0.000	6.030	0.000	0.455
Tactile	4.376	0.000	3.782	0.000	-0.683
Kinesthetic	4.151	0.000	4.479	0.000	0.372

Levene's Test

	Levene Statistic	**df1**	**df2**	***ρ*-value**
Kinesthetic	0.237	1	240	0.627
Tactile	0.005	1	240	0.947
Olfactory	0.411	1	240	0.522
Spatial	10.164	1	240	0.002
Autonomy	2.180	1	240	0.141
Visual	1.680	1	240	0.196
Auditory	1.051	1	240	0.306
Gustatory	0.000	1	240	0.996

Factor Covariance Invariance

		Male		Female		
		Φ	***ρ*-value**	**Φ**	***ρ*-value**	**Δ**
Gustatory	↔ *Auditory*	2.806	0.000	2.686	0.000	-0.149
Gustatory	↔ *Visual*	1.298	0.000	1.048	0.000	-0.502
Gustatory	↔ *Autonomy*	2.163	0.000	1.643	0.000	-0.763
Gustatory	↔ *Spatial*	1.983	0.000	1.524	0.000	-0.701
Gustatory	↔ *Olfactory*	4.322	0.000	4.793	0.000	0.475
Gustatory	↔ *Tactile*	2.820	0.000	2.814	0.000	-0.008
Gustatory	↔ *Kinesthetic*	2.246	0.000	2.612	0.000	0.478
Auditory	↔ *Visual*	1.795	0.000	1.569	0.000	-0.469
Auditory	↔ *Autonomy*	1.096	0.007	1.865	0.000	1.328
Auditory	↔ *Spatial*	0.999	0.016	1.347	0.000	0.635
Auditory	↔ *Olfactory*	2.998	0.000	2.990	0.000	-0.01
Auditory	↔ *Tactile*	2.517	0.000	2.945	0.000	0.605
Auditory	↔ *Kinesthetic*	2.911	0.000	2.607	0.000	-0.423
Visual	↔ *Autonomy*	1.081	0.000	0.442	0.045	-1.679
Visual	↔ *Spatial*	1.649	0.000	1.135	0.000	-1.236
Visual	↔ *Olfactory*	1.401	0.000	1.217	0.000	-0.376
Visual	↔ *Tactile*	1.461	0.000	1.306	0.000	-0.348
Visual	↔ *Kinesthetic*	1.698	0.000	1.442	0.000	-0.554
Autonomy	↔ *Spatial*	1.908	0.000	0.544	0.053	-2.671**
Autonomy	↔ *Olfactory*	1.766	0.000	1.524	0.000	-0.377
Autonomy	↔ *Tactile*	1.493	0.000	1.236	0.000	-0.461
Autonomy	↔ *Kinesthetic*	1.803	0.000	1.197	0.001	-1.061
Spatial	↔ *Olfactory*	1.621	0.000	0.990	0.008	-1.034
Spatial	↔ *Tactile*	1.525	0.000	1.541	0.000	0.029
Spatial	↔ *Kinesthetic*	1.858	0.000	1.246	0.000	-1.095
Olfactory	↔ *Tactile*	2.074	0.000	2.590	0.000	0.709
Olfactory	↔ *Kinesthetic*	2.276	0.000	1.773	0.000	-0.699
Tactile	↔ *Kinesthetic*	2.191	0.000	2.331	0.000	0.213

APPENDIX H: IMAGINATION/PROSPECTION INVARIANCE CHECK

Configural Invariance

Chi-square test

Assuming model Unconstrained to be correct	DF	χ^2	P	NFI	IFI	RFI	TLI
Measurement weights	59	93.548	0.003	0.004	0.004	-0.001	-0.001
Structural covariances	87	123.236	0.006	0.005	0.006	-0.001	-0.002
Measurement residuals	152	397.98	0.000	0.016	0.019	0.005	0.006

Fit Indices' Comparison

Indices	Imagination	Prospection
χ^2/df	1.772	1.84
RMR	0.262	0.307
GFI	0.595	0.583
AGFI	0.557	0.544
CFI	0.88	0.874
NFI	0.763	0.762
IFI	0.881	0.875
TLI	0.873	0.867
RMSEA	0.079	0.085
ECVI	25.779	28.043
AIC	3170.774	3281.049
BIC	3599.457	3702.193

Residual Invariance

	Imagination		Prospection		
	β/Cronbach's α	**ρ-value**	**β/Cronbach's α**	**ρ-value**	**Δ**
Gustatory	**0.985**		**0.986**		
Gustatory_5	0.184	0.000	0.293	0.000	2.066*
Gustatory_7	0.222	0.000	0.214	0.000	-0.158
Gustatory_2	0.380	0.000	0.412	0.000	0.412
Gustatory_6	0.338	0.000	0.186	0.000	-2.693**
Gustatory_1	0.404	0.000	0.513	0.000	1.184
Gustatory_3	0.250	0.000	0.243	0.000	-0.144
Gustatory_4	0.316	0.000	0.232	0.000	-1.441
Gustatory_8	0.455	0.000	0.375	0.000	-0.966
Gustatory_9	2.133	0.000	2.734	0.000	1.333
Auditory	**0.968**		**0.980**		
Auditory_1	0.994	0.000	0.553	0.000	-2.613**
Auditory_4	0.693	0.000	0.336	0.000	-2.895**
Auditory_3	0.965	0.000	0.464	0.000	-3.122**
Auditory_6	0.670	0.000	0.384	0.000	-2.286*
Auditory_8	1.261	0.000	0.856	0.000	-1.902*
Auditory_7	0.814	0.000	0.727	0.000	-0.53
Auditory_11	0.986	0.000	1.346	0.000	1.536
Auditory_10	1.470	0.000	1.664	0.000	0.639
Auditory_13	1.846	0.000	1.776	0.000	-0.202
Visual	**0.903**		**0.950**		
Visual_2	0.525	0.000	1.101	0.000	3.23**
Visual_1	0.333	0.000	0.775	0.000	3.377**
Visual_9	0.458	0.000	0.783	0.000	2.355*
Visual_3	0.538	0.000	1.006	0.000	2.74**
Visual_5	0.670	0.000	1.323	0.000	3.158**
Visual_8	1.228	0.000	1.277	0.000	0.206
Visual_7	0.965	0.000	1.235	0.000	1.239
Visual_11	1.677	0.000	1.219	0.000	-1.646
Visual_14	0.627	0.000	1.202	0.000	2.997**
Visual_15	1.187	0.000	1.425	0.000	0.93
Autonomy	**0.931**		**0.950**		
Autonomy_4	0.656	0.000	0.895	0.000	1.274
Autonomy_5	0.557	0.000	0.752	0.000	1.135
Autonomy_7	1.155	0.000	1.048	0.000	-0.454
Autonomy_8	2.023	0.000	1.595	0.000	-1.175
Autonomy_10	2.081	0.000	1.735	0.000	-0.928
Autonomy_9	3.270	0.000	1.973	0.000	-2.545*
Autonomy_3	1.320	0.000	1.567	0.000	0.826
Autonomy_11	3.581	0.000	1.930	0.000	-3.063**
Autonomy_12	3.293	0.000	1.861	0.000	-2.861**
Autonomy_1	2.116	0.000	2.179	0.000	0.154

	Imagination		Prospection		
	***β*/Cronbach's α**	***ρ*-value**	***β*/Cronbach's α**	***ρ*-value**	**Δ**
Spatial	**0.956**		**0.960**		
Spatial_3	0.199	0.000	0.544	0.000	3.349**
Spatial_4	0.399	0.000	0.824	0.000	3.045**
Spatial_2	0.261	0.000	0.715	0.000	3.807**
Spatial_5	1.065	0.000	0.591	0.000	-2.757**
Spatial_6	0.829	0.000	0.703	0.000	-0.796
Spatial_7	0.903	0.000	1.046	0.000	0.735
Spatial_1	1.230	0.000	1.533	0.000	1.127
Olfactory	**0.991**		**0.986**		
Olfactory_5	0.259	0.000	0.274	0.000	0.237
Olfactory_1	0.324	0.000	0.773	0.000	3.764**
Olfactory_6	0.199	0.000	0.477	0.000	3.532**
Olfactory_2	0.335	0.000	0.557	0.000	2.329*
Olfactory_4	0.271	0.000	0.187	0.000	-1.51
Olfactory_8	0.537	0.000	0.799	0.000	1.953
Olfactory_3	0.469	0.000	0.761	0.000	2.328*
Tactile	**0.881**		**0.924**		
Tactile_3	0.711	0.000	0.490	0.000	-1.034
Tactile_1	0.963	0.000	1.012	0.000	0.197
Tactile_4	1.809	0.000	1.143	0.000	-2.037*
Tactile_6	2.127	0.000	1.701	0.000	-1.121
Kinesthetic	**0.892**		**0.846**		
Kinesthetic_4	0.443	0.000	0.408	0.016	-0.172
Kinesthetic_3	0.109	0.318	0.482	0.004	1.865
Kinesthetic_2	1.231	0.000	2.526	0.000	3.477**

Measurement Invariance

Metric Invariance

	Imagination		**Prospection**		
	β	***ρ*-value**	***β***	***ρ*-value**	**Δ**
Gustatory_7	0.967	0.000	0.991	0.000	0.7
Gustatory_2	0.938	0.000	0.968	0.000	0.729
Gustatory_6	0.950	0.000	0.959	0.000	0.251
Gustatory_1	0.986	0.000	0.986	0.000	0.014
Gustatory_3	0.946	0.000	0.953	0.000	0.191
Gustatory_4	0.981	0.000	0.968	0.000	-0.357
Gustatory_8	0.960	0.000	0.949	0.000	-0.266
Gustatory_9	0.420	0.000	0.584	0.000	2.007*
Auditory_4	1.059	0.000	0.932	0.000	-1.692
Auditory_3	1.019	0.000	0.996	0.000	-0.462
Auditory_6	1.064	0.000	0.982	0.000	-1.082
Auditory_8	0.935	0.000	0.867	0.000	-0.809
Auditory_7	1.055	0.000	0.963	0.000	-1.138
Auditory_11	1.004	0.000	0.900	0.000	-1.199
Auditory_10	0.871	0.000	0.854	0.000	-0.181
Auditory_13	0.894	0.000	0.853	0.000	-0.416
Visual_1	1.009	0.000	1.009	0.000	0.006
Visual_9	0.903	0.000	1.019	0.000	0.952
Visual_3	1.063	0.000	1.052	0.000	-0.08
Visual_5	0.866	0.000	0.866	0.000	-0.004
Visual_8	0.574	0.000	0.832	0.000	1.854
Visual_7	0.744	0.000	0.932	0.000	1.37
Visual_11	0.801	0.000	0.859	0.000	0.37
Visual_14	0.885	0.000	0.920	0.000	0.267
Visual_15	0.884	0.000	0.936	0.000	0.349
Autonomy_5	0.991	0.000	1.089	0.000	1.063
Autonomy_7	0.960	0.000	0.973	0.000	0.134
Autonomy_8	0.885	0.000	0.967	0.000	0.714
Autonomy_10	0.773	0.000	0.882	0.000	0.948
Autonomy_9	0.687	0.000	0.867	0.000	1.407
Autonomy_3	0.952	0.000	0.965	0.000	0.119
Autonomy_11	0.606	0.000	0.898	0.000	2.245*
Autonomy_12	0.545	0.000	0.841	0.000	2.365*
Autonomy_1	0.712	0.000	0.819	0.000	0.9
Spatial_4	0.919	0.000	0.945	0.000	0.368
Spatial_2	0.970	0.000	0.890	0.000	-1.193
Spatial_5	0.695	0.000	0.985	0.000	3.67**
Spatial_6	0.736	0.000	0.958	0.000	2.899**
Spatial_7	0.697	0.000	0.887	0.000	2.316*
Spatial_1	0.778	0.000	0.869	0.000	0.965

	Imagination		Prospection		
	β	***ρ*-value**	***β***	***ρ*-value**	**Δ**
Olfactory_1	0.986	0.000	0.967	0.000	-0.391
Olfactory_6	1.037	0.000	0.965	0.000	-1.706
Olfactory_2	1.011	0.000	0.994	0.000	-0.375
Olfactory_4	1.013	0.000	0.976	0.000	-0.98
Olfactory_8	0.947	0.000	0.939	0.000	-0.164
Olfactory_3	0.965	0.000	0.907	0.000	-1.158
Tactile_1	0.930	0.000	0.914	0.000	-0.18
Tactile_4	0.921	0.000	0.886	0.000	-0.345
Tactile_6	0.733	0.000	0.715	0.000	-0.176
Kinesthetic_3	1.078	0.000	0.983	0.000	-1.322
Kinesthetic_2	0.599	0.000	0.431	0.000	-1.818

Scaler Invariance

	Imagination		Prospection		
	β_0	ρ-value	β_0	ρ-value	Δ
Gustatory_5	3.766	0.000	3.788	0.000	0.067
Gustatory_7	3.669	0.000	3.610	0.000	-0.184
Gustatory_2	3.669	0.000	3.602	0.000	-0.212
Gustatory_6	3.573	0.000	3.500	0.000	-0.23
Gustatory_1	3.782	0.000	3.669	0.000	-0.341
Gustatory_3	3.621	0.000	3.542	0.000	-0.251
Gustatory_4	3.798	0.000	3.602	0.000	-0.611
Gustatory_8	3.613	0.000	3.500	0.000	-0.353
Gustatory_9	2.565	0.000	3.068	0.000	1.933
Auditory_1	5.210	0.000	4.576	0.000	-2.124*
Auditory_4	4.750	0.000	4.102	0.000	-2.264*
Auditory_3	5.226	0.000	4.483	0.000	-2.495*
Auditory_6	5.282	0.000	4.381	0.000	-3.054**
Auditory_8	4.669	0.000	3.941	0.000	-2.603**
Auditory_7	4.927	0.000	4.398	0.000	-1.776
Auditory_11	5.169	0.000	4.610	0.000	-1.896
Auditory_10	4.710	0.000	4.636	0.000	-0.258
Auditory_13	4.726	0.000	4.186	0.000	-1.821
Visual_2	6.815	0.000	5.958	0.000	-4.134**
Visual_1	6.677	0.000	5.678	0.000	-5.051**
Visual_9	6.524	0.000	5.746	0.000	-3.943**
Visual_3	6.516	0.000	5.585	0.000	-4.362**
Visual_5	6.460	0.000	5.703	0.000	-3.844**
Visual_8	6.734	0.000	6.297	0.000	-2.239**
Visual_7	6.573	0.000	5.941	0.000	-3.113**
Visual_11	6.339	0.000	5.771	0.000	-2.68**
Visual_14	6.395	0.000	5.669	0.000	-3.646**
Visual_15	6.468	0.000	5.847	0.000	-2.87**
Autonomy_4	4.097	0.000	4.636	0.000	2.055*
Autonomy_5	4.073	0.000	4.508	0.000	1.634
Autonomy_7	4.419	0.000	4.678	0.000	0.975
Autonomy_8	4.685	0.000	4.839	0.000	0.55
Autonomy_10	4.508	0.000	4.983	0.000	1.796
Autonomy_9	4.315	0.000	4.669	0.000	1.277
Autonomy_3	3.927	0.000	4.271	0.000	1.252
Autonomy_11	4.331	0.000	4.678	0.000	1.244
Autonomy_12	5.161	0.000	5.415	0.000	0.958
Autonomy_1	4.282	0.000	4.288	0.000	0.022
Spatial_3	5.782	0.000	5.127	0.000	-2.682**
Spatial_4	5.815	0.000	5.220	0.000	-2.494*
Spatial_2	5.847	0.000	5.186	0.000	-2.835**

	Imagination		Prospection		
	β_0	ρ-value	β_0	ρ-value	Δ
Spatial_5	5.911	0.000	5.178	0.000	-3.173**
Spatial_6	5.992	0.000	5.110	0.000	-3.853**
Spatial_7	6.137	0.000	5.407	0.000	-3.241**
Spatial_1	5.524	0.000	4.754	0.000	-3.151**
Olfactory_5	3.992	0.000	4.059	0.000	0.212
Olfactory_1	4.040	0.000	4.127	0.000	0.273
Olfactory_6	4.048	0.000	4.051	0.000	0.008
Olfactory_2	4.177	0.000	4.110	0.000	-0.208
Olfactory_4	4.048	0.000	3.924	0.000	-0.396
Olfactory_8	4.048	0.000	4.017	0.000	-0.101
Olfactory_3	4.032	0.000	3.814	0.000	-0.71
Tactile_3	4.710	0.000	4.407	0.000	-1.081
Tactile_1	4.702	0.000	4.407	0.000	-1.08
Tactile_4	4.597	0.000	4.381	0.000	-0.762
Tactile_6	5.081	0.000	5.076	0.000	-0.017
Kinesthetic_4	5.855	0.000	4.746	0.000	-4.048**
Kinesthetic_3	5.766	0.000	4.754	0.000	-3.688**
Kinesthetic_2	6.169	0.000	5.661	0.000	-2.312*

Factor Variance Invariance

Direct Comparison

	Imagination		Prospection		
	σ	***ρ*-value**	**σ**	***ρ*-value**	**Δ**
Gustatory	6.415	0.000	6.128	0.000	-0.241
Auditory	3.607	0.000	5.471	0.000	1.912
Visual	1.029	0.000	2.448	0.000	2.922**
Autonomy	3.544	0.000	3.151	0.000	-0.526
Spatial	3.069	0.000	3.329	0.000	0.398
Olfactory	5.797	0.000	5.765	0.000	-0.029
Tactile	3.383	0.000	4.802	0.000	1.615
Kinesthetic	2.891	0.000	5.205	0.000	2.676**

Levene's Test

	Levene Statistic	**df1**	**df2**	***ρ*-value**
Kinesthetic	22.152	1	240	0.000
Tactile	4.937	1	240	0.027
Olfactory	0.246	1	240	0.620
Spatial	5.679	1	240	0.018
Autonomy	0.007	1	240	0.934
Visual	20.456	1	240	0.000
Auditory	5.172	1	240	0.024
Gustatory	0.094	1	240	0.760

Factor Covariance Invariance

			Imagination		Prospection		
			Φ	***ρ*-value**	**Φ**	***ρ*-value**	**Δ**
Gustatory	↔	*Auditory*	2.074	0.000	3.467	0.000	1.729
Gustatory	↔	*Visual*	0.486	0.049	1.794	0.000	2.689**
Gustatory	↔	*Autonomy*	1.465	0.002	2.282	0.000	1.22
Gustatory	↔	*Spatial*	1.504	0.000	1.942	0.000	0.69
Gustatory	↔	*Olfactory*	4.752	0.000	4.438	0.000	-0.315
Gustatory	↔	*Tactile*	2.484	0.000	3.181	0.000	0.888
Kinesthetic	↔	*Gustatory*	1.497	0.000	3.306	0.000	2.404*
Auditory	↔	*Visual*	0.783	0.000	2.316	0.000	3.174**
Auditory	↔	*Autonomy*	1.309	0.000	1.795	0.000	0.849
Auditory	↔	*Spatial*	0.620	0.049	1.537	0.000	1.708
Auditory	↔	*Olfactory*	2.433	0.000	3.599	0.000	1.458
Auditory	↔	*Tactile*	2.090	0.000	3.400	0.000	1.824
Kinesthetic	↔	*Auditory*	1.513	0.000	3.703	0.000	3.071**
Visual	↔	*Autonomy*	0.565	0.004	1.121	0.000	1.55
Visual	↔	*Spatial*	0.906	0.000	1.659	0.000	1.938
Visual	↔	*Olfactory*	0.727	0.003	1.884	0.000	2.406*
Visual	↔	*Tactile*	0.491	0.010	2.175	0.000	3.698**
Kinesthetic	↔	*Visual*	0.816	0.000	1.903	0.000	2.426*
Autonomy	↔	*Spatial*	0.857	0.007	1.731	0.000	1.798
Autonomy	↔	*Olfactory*	1.456	0.001	1.764	0.000	0.488
Autonomy	↔	*Tactile*	1.107	0.002	1.720	0.000	1.115
Kinesthetic	↔	*Autonomy*	1.237	0.000	1.887	0.000	1.185
Spatial	↔	*Olfactory*	1.207	0.003	1.432	0.001	0.377
Spatial	↔	*Tactile*	1.075	0.000	1.960	0.000	1.629
Kinesthetic	↔	*Spatial*	1.057	0.000	1.636	0.000	1.103
Olfactory	↔	*Tactile*	2.154	0.000	2.568	0.000	0.566
Kinesthetic	↔	*Olfactory*	1.211	0.002	2.728	0.000	2.155*
Kinesthetic	↔	*Tactile*	1.277	0.000	3.200	0.000	2.9**

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