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HOW TOURISTS PERCEIVE, CREATE AND ENCODE THE MEMORABLE TOURISM EXPERIENCE

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ABSTRACT

The focus of the study was to understand and clarify the role of the senses, emotions, and memories (SEMs) on the memorable tourism experience (MTE). The main objective of the research was to map the relation between the SEMs within the tourism experience establishment. The tourism experience mapping results showed that SEMs explained part of the MTE establishment and the discovery of three map patterns of the experience based on the emotional states of joy, love, and positive surprise. The research findings are relevant to reinforce the understanding, the design and to implement MTE more effectively, in terms of experiential stage planning and acting (service staff).

Keywords: Senses, Emotions, Memories, Modelling MTE, SEM Model.

JEL Classification: Z30, Z32, Z33

1. INTRODUCTION

Memorable tourism experiences (MTE) are the ultimate goal of tourists and what the tourism industry intends to provide (Tung & Ritchie, 2011). A MTE is a multifaceted process, however, and the senses, emotions and memories (SEMs) play a crucial role in its development (Kim & Fesenmaier, 2015; Agapito, Pinto, & Mendes, 2017; Dias, Correia, & Cascais, 2017; Moyle, Moyle, Bec, & Scott, 2019). “In a context of globalization and increasing competition between organizations and tourism destinations, [...] fostering competitiveness [...] entails adopting an unequivocal quality approach to meet the balance between tourists’ expectations, needs and wants and the understanding of what they think and how they live experiences” (Mendes, Guerreiro, & Matos, 2016, p. 295).

Tourism experiences are always unique due to their highly personal and subjective nature, in which the human senses are the mediators between the tourist and surrounding world (Adhikari & Bhattacharya, 2016; Chang, 2018). It is through the senses that tourists experience and perceive environmental information, that is, the experiential stimulus (Dann & Jacobsen, 2003; Hendry, Farley, & McLafferty, 2012; Krishna, 2012; Agapito, Mendes, & Valle, 2013; Barnes, Mattsson, & Sørensen, 2014; Jensen, Scarles, & Cohen, 2015; Martins

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et al., 2017). This experiential stimulus transforms the sensations from the surrounding world into information that promotes the activation of emotional states, contributes to explaining the meaning of that stimulus information, and later to the creation of memories (Gretzel, Fesenmaier, Formica, & O'Leary, 2006; Damásio, 2011; Brunner-Sperdin, Peters, & Strobl, 2012; Esteves, Slongo, Esteves, & Barcelos, 2013; Bimonte & Faralla, 2014; Ekman, 2016; Park & Santos, 2017). The memory is the tourism experience result: the memory encodes and stores only what the tourist perceives as emotionally meaningful for the long-term (Oh, Fiore, & Jeoung, 2007).

There is also a relationship between the senses (Krishna, 2012; Meacci & Liberatore, 2015; Tiago, Amaral, & Tiago, 2015; Kim & Fesenmaier, 2017), the emotions (Gretzel et al., 2006; Brunner-Sperdin et al., 2012; Esteves et al., 2013; Bimonte & Faralla, 2014; Park & Santos, 2017) and the memories during the establishment and fruition of a tourism experience (Duarte, 2012; Kahneman, 2012; Ayazlar & Arslan, 2017; Zatori, Smith, & Puczko, 2018). Sensorial attributes allow a tourist to feel and perceive the experience, to evoke emotions and inscribe memories (Agapito et al., 2017; Dias et al., 2017). Although this is a crucial relationship, however, very few studies to our knowledge seem to have addressed it (Pedro, Mendes, Matos, & Ascensão, 2019). Mapping the MTE through the SEMs will thus increase knowledge of experience creation and will promote understanding of psychologic processing.

The focus of this study is to understand and clarify the role of the SEMs on the MTE. The research therefore first identifies and assesses the senses, the emotional states and the memorable elements within the establishment of a MTE. Secondly, the research maps and models the relationship between the SEMs in the creation of a MTE. This study helps to understand the tourism experience formation process and enriches knowledge of the design and implementation of a MTE.

2. MEMORABLE TOURISM EXPERIENCE PARADIGM

Creating memories is a crucial process in tourism, and specifically, in the tourism experience (Larsen, 2007; Cutler & Carmichael, 2010). Creating and promoting positive MTE is a strategic paradigm that destination management organisations, stakeholders and others private companies must accomplish (Kim et al., 2012; Kim & Jang, 2016; Zare, 2019). A MTE is defined as a “tourism experience positively remembered and recalled after the event has occurred” (Kim, 2014, p. 36; Kim & Ritchie, 2014, p. 323). Larsen (2007, p. 15) notes that a MTE is a tourism-related event “strong enough to have entered long term memory”. From this perspective, a MTE is a personal rewarding process, one in which emotions are awake and positive memorable landmarks are made (Csikszentmihalyi, 2014; Kim & Fesenmaier, 2017; Sthapit & Coudounaris, 2018).

Several studies have described the role of the senses in the tourism experience (Krishna, 2012; Meacci & Liberatore, 2015; Tiago, Amaral, & Tiago, 2015; Dias et al., 2017; Kim & Fesenmaier, 2017), the influence of emotions (Gretzel et al., 2006; Brunner-Sperdin et al., 2012; Esteves et al., 2013; Bimonte & Faralla, 2014; Park & Santos, 2017; Correia, Oliveira, & Pereira, 2017) and the effects that memories (Duarte, 2012; Kahneman, 2012; Ayazlar & Arslan, 2017; Zatori et al., 2018) have on the establishment and enjoyment of a MTE.

However, the relational process that allows tourists to perceive the experience (sensorial attributes), to feel and evoke meaning (emotional states), and to create and inscribe it in their memories (memory elements) seems a subject ill-defined by tourism scholars (Pedro, Mendes, Matos, & Ascensão, 2019). The memorable experience is the logical connection of the tourism industry. In order to experience a memorable event, however, there are other

aspects that precede the memory process and can also have a significant effect, such as the senses and sensorial perception (Agapito et al., 2017; Lv, Li, & McCabe, 2020), and emotional states with high arousal and positive valence (Guzel, 2014; Kastenholz, Carneiro, Marques, & Loureiro, 2017; Hui Zhang & Xu, 2019). A broad definition of foodservice quality, for example, must address both food-related (including food characteristics, culinary arts, and hygiene/safety) and consumer preference-related concerns (including environment/ambiance, marketing/promotion, and service).

2.1 The Role of Senses on Tourism Experience

According to Lv et al. (2020, p. 2) "... the senses are the basic means through which humans explore and understand the world". All the stimulus perceived by tourists is received through the five senses. The perception of the tourism experience, and specifically the MTE, is a result of sensorial or multi-sensorial stimulation (Pan & Ryan, 2009; Meacci & Liberatore, 2018). Dias et al. (2017), note that multi-sensorial stimulation has a significant effect on the tourism experience, particularly on the emotion and memories. Agapito et al. (2017) reported a positive influence of sensory impressions on the long-term memory of tourist experiences. For tourists, however, in order to experience a memorable event the sensory stimulus should also evoke positive emotional states, and thereby, increase the memory process activation (Dias et al., 2017). Pine and Gilmore (1998, p. 104) state that "the more senses an experience engages, the more effective and memorable it can be".

Multi-sensorial stimulation during a tourism experience seems to increase MTE engagement, although, despite multi-sensorial information, there appears to be a hierarchy of the senses during the perception of MTE (Tiago et al., 2015; Meacci & Liberatore, 2018). Other studies have indicated that the most relevant sense in the tourist experience perception is sight, followed by hearing, smell, taste and touch (Xiong, Hashim, & Murphy, 2015; Goggin et al., 2017). Agapito et al. (2014) found that the most important sense in the tourist experience perception in a rural context is vision/sight, followed by hearing, taste, smell and touch. Other results have suggested a different hierarchy, namely, sight, taste, touch, hearing and smell (Dias et al., 2017). However, data about the senses hierarchy during the tourism experience perception reveals a lack of consistency, and, moreover, the relationship between the senses, and between the senses and the emotions, are issues to be explored in this research. Accordingly, the following hypotheses were formulated:

Hypothesis H1A: Visual perception is positively related to the emotional states of joy.

Hypothesis H1B: Visual perception is positively related to the emotional states of love.

Hypothesis H1C: Visual perception is positively related to the emotional states of positive surprise.

Hypothesis H2A: Acoustic perception is positively related to the emotional states of joy.

Hypothesis H2B: Acoustic perception is positively related to the emotional states of love.

Hypothesis H2C: Acoustic perception is positively related to the emotional states of positive surprise.

Hypothesis H3A: Gustatory perception is positively related to the emotional states of joy.

Hypothesis H3B: Gustatory perception is positively related to the emotional states of love.

Hypothesis H3C: Gustatory perception is positively related to the emotional states of positive surprise.

Hypothesis H4A: Olfactory perception is positively related to the emotional states of joy.

Hypothesis H4B: Olfactory perception is positively related to the emotional states of love.

Hypothesis H4C: Olfactory perception is positively related to the emotional states of positive surprise.

Hypothesis H5A: Haptic perception is positively related to the emotional states of joy.

Hypothesis H5B: Haptic perception is positively related to the emotional states of love.

Hypothesis H5C: Haptic perception is positively related to the emotional states of positive surprise.

According to Demangeot and Broderick (2010), the haptic and visual senses cooperate during sensorial perception, and vision is highly associated with touch. Accordingly, the following hypothesis was formulated:

Hypothesis H11: Visual perception is positively related to haptic perception.

Consumer experience studies have indicated that smell affects taste and sound affects vision (Krishna, 2012; Lee, Lee, Seo, & Green, 2012; Lee, Heere, & Chung, 2013). Consequently, the following hypotheses were formulated:

Hypothesis H12: Olfactory perception is positively related to gustatory perception.

Hypothesis H13: Acoustic perception is positively related to visual perception.

2.2 The Influence of Emotions on Tourism Experience

Emotions are a complex subject to study, given their cultural, economic, social and personal behaviour differences (Faullant, Matzler, & Mooradian, 2011; Pomfret, 2012; Lin, Kerstetter, Nawijn, & Mitas, 2014; Correia et al., 2017; Shoval, Schvimer, & Tamir, 2018b, 2018a). Scherer (2005) stated that emotions are comprised of five related components: the cognitive (e.g. attention by Campos, Mendes, Valle, & Scott, 2016), neurophysiological (e.g. neurotransmitters by Koc & Boz (2014) and Lövheim (2012)), motivational (e.g. personal development, curiosity setting attractiveness and learning, Mendes et al., 2016; Sie, Phelan, & Pegg, 2018), expressive (e.g. facial expressions and pupil diameter, Bradley & Lang, 2015; Ekman, 2016), and subjective (e.g. personality traits, Faullant et al., 2011; Kim & Jang, 2016).

Emotional arousal is a state of heightened physiological activity (Bakker, van der Voordt, Vink, & de Boon, 2014; Damásio, 2010, 2018). This includes a strong emotional activation and mental excitement for human affective function and protection, namely, experiencing emotional states such as being excited, happy, satisfied, relaxed, alarmed and afraid (Russell, 2003; Damásio, 2010; Ekman, 2017). The emotional excitement during a tourist experience results in an increase in cognitive activation, attention, motivation, satisfaction, optimism and motor predisposition (i.e., motion) (Lempert & Phelps, 2016; Lochner, 2016; Servidio & Ruffolo, 2016; Goggin et al., 2017). Other authors have noted that emotional excitement has a positive effect on decision making processes, consumption, satisfaction, a positive destination image, experiencing high levels of joy/happiness, feelings of well-being, intention to revisit and to recommend, and creating an emotional bond between tourists versus experience (Esteves et al., 2013; Hosany & Prayag, 2013; Guzel, 2014; Prayag, Hosany, Muskat, & Del Chiappa, 2017). The following hypotheses were therefore formulated:

Hypothesis H6A: The emotional states of joy are positively related to recollection elements.

Hypothesis H6B: The emotional states of joy are positively related to vividness elements.

Hypothesis H7A: The emotional states of love are positively related to memory recollection elements.

Hypothesis H7B: The emotional states of love are positively related to memory vividness elements.

Hypothesis H8A: The emotional states of positive surprise are positively related to recollection elements.

Hypothesis H8B: The emotional states of positive surprise are positively related to vividness elements.

2.3 The Effects of Memories on Tourism Experience

The stage of memorable experiences is a central issue in experience economy (Pine & Gilmore, 1998; Schmitt, 1999; Oh et al., 2007). In a tourism context, it has been established that MTE create positive and long-term memories that allow tourists to increase their revisit intentions, experience mental reconstruction (recollection, re-experience and revisit) and share with family and friends (Kim et al., 2012; Campos et al., 2016; Seyfi et al., 2019). The establishment of memory increases tourist loyalty and levels of satisfaction for future encounters between tourists versus experiences, or tourists versus destination (Quadri-Felitti & Fiore, 2013; Ali, Hussain, & Ragavan, 2014; Barnes, Mattsson, & Sørensen, 2016).

A memorable moment is closely related to experience as something different from the day-to-day, an extraordinary encounter, spontaneous, something new and unexpected (Kim et al., 2012; Andrades & Dimanche, 2014; Campos, 2016). Campos, Mendes, Valle, and Scott (2015) noted that physical participation, cognitive function, attention and human relations increase the chance to promote a memorable event. An event also appears to be more memorable when it is actively experienced by tourists instead of just being seen in a passive way – in a volunteer learning process (van Strien, Cappaert, & Witter, 2009; Amaral, 2011). Hedonism activities or moments, which form the uniqueness of an encounter and an experience provided by the local culture, are key issues in increasing memorability (Hung, Lee, & Huang, 2016). Accordingly, the following hypotheses were formulated:

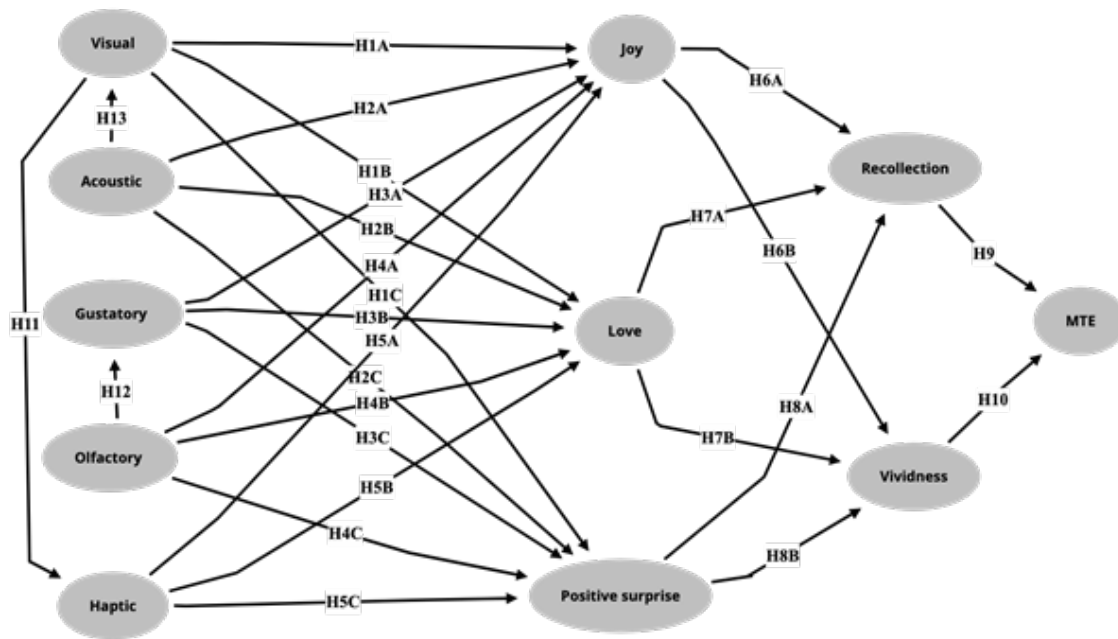
Hypothesis H9: Memory recollection elements are positively related to a MTE.

Hypothesis H10: Memory vividness elements are positively related to a MTE.

3. CONCEPTUAL MODEL AND HYPOTHESES DIAGRAM

The present conceptual model and the hypotheses diagram formulation was undertaken with the purpose of studying and mapping the relationships between the SEMs in MTE creation. In this conceptual model (Figure 1), the authors grounded MTE creation and fruition through the relationships between the senses (Krishna, 2012; Meacci & Liberatore, 2015; Tiago, Amaral, & Tiago, 2015; Kim & Fesenmaier, 2017), the emotions (Gretzel et al., 2006; Brunner-Sperdin et al., 2012; Esteves et al., 2013; Bimonte & Faralla, 2014; Park & Santos, 2017) and the memories (Duarte, 2012; Kahneman, 2012; Ayazlar & Arslan, 2017; Zatori et al., 2018). On this basis, the sensorial attributes allow a tourist to feel and perceive an experience, to activate and evoke emotions and inscribe memories (Agapito et al., 2017; Correia et al., 2017; Dias et al., 2017).

Figure 1. The Conceptual Model and Hypotheses Diagram



Source: Own Elaboration with Software XMind

4. METHODOLOGY

4.1 Research Context

The Algarve is an international tourist destination located in the south of Portugal. The region is the main tourism destination in Portugal, and the core tourism product is centred on the sun, sand and sea (Portugal Tourism Bureau, 2020). There were 8,728,876 passengers in traffic/transit in Faro International Airport in 2017, and of these 4,346,157 passengers embarked, 4,335,963 passengers disembarked and 46,746 passengers were in direct traffic/transit (Pordata, 2018). Recent figures show that the majority of foreign tourists disembarking at Faro International Airport were tourists from United Kingdom (40%), Republic of Ireland (28%), Netherlands (8%), Germany (8%), France (3%) and domestic tourists (3%) (Statistics Portugal, 2018).

4.2 Instrument

The questionnaire developed (see Appendice I) to test the hypotheses consisted of five different sections (see Appendice II). The first section examined the senses and the sensorial attributes using the scale by Haase and Wiedmann (2018). According to the same authors, "... the sensory item set represents a holistic measurement tool ... enables the capture of the magnitude of each sensory dimension (visual, acoustic, haptic, olfactory, and gustatory) ... and the respective senses can be examined in a consistent manner" (Haase & Wiedmann, 2018, p. 727). To assess the intensity of a respondent's emotional states the authors used the three dimensions emotional scale based on the emotional states of joy, love and positive surprise representing a tourist's emotional experience (Hosany & Gilbert, 2010; Hosany, Prayag, Deesilatham, Caušević, & Odeh, 2015).

In the third section of the questionnaire, the researchers operationalised the memory of the experiential encounter using two autobiographical memory constructs, recollection and vividness (Sheen, Kemp, & Rubin, 2001). The autobiographical memory scale was validated and used in previous studies, and was modified to fit the study setting, specifically tourism

(Kim, 2010; Kim & Youn, 2017) and particularly the MTE (Pedro, 2019). The MTE were also measured using the five items scale adopted from Kim et al. (2012). This condensed scale covers five dimensions of the MTE: hedonism, refreshment, meaningfulness, local culture and novelty. The MTE scale was validated in previous studies and modified to fit this research (Kim, 2018).

The last section of the questionnaire was used to collect sociodemographic data, such as gender, age, marital status, previous visits to the Algarve region, educational level, professional status and country of origin (Mendes et al., 2016; Agapito et al., 2017; Campos, Pinto, & Scott, 2019). The sensorial attributes, emotional states intensity, memory elements and MTE dimensions were assessed using a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree) and 0 (N/A – not applicable).

4.3 Data Collection

A non-probability convenience sampling technique was used, because the researchers were unaware of which tourists had a MTE in the Algarve destination. The population selected for this study comprised the national and international adult tourists (plus 18-year-old) who visited Algarve destination in November and December 2018, and declared having a MTE encounter (Kim et al., 2012). A total of 515 questionnaires were distributed at Faro International Airport and after deletion of incomplete responses (i.e., with more than 15% of missing cases/responses), 409 questionnaires were deemed complete to use further showing a response rate of 79%.

4.4 Data Analysis

The data was analysed in two stages, measurement model and structural model (Table 1). The authors first used PLS-SEM with SmartPLS 3.0 software to assess the measurement model and, secondly, assess the structural model (Henseler & Chin, 2010; Wong, 2013; Hair et al., 2014; Ringle, Silva, & Bido, 2014; Hair, Hult, Ringle, & Sarstedt, 2017; Hair, Risher, Sarstedt, & Ringle, 2019). Therefore, as presented in next table (Table 1), using PLS-SEM, the estimated model was evaluated for reflective measurement model fit and structural model fit (Hair et al., 2017, 2019).

Table 1. Guideline Values for PLS-SEM Measurement Model and Structural Model

Assessing reflective measurement model		Guideline values
1 st Reliability (indicator loadings)		≥ 0.5 Minimum (i.e., satisfactory for exploratory research) ≥ 0.708 Recommended
2 nd Internal consistency reliability	Cronbach's alpha (Cronbach's α)	Minimum 0.70 (or 0.60 in exploratory research) Recommended 0.70 to 0.90 Maximum 0.95
	Composite reliability (CR)	CR ≥ 0.70
3 rd Convergent validity (average variance extracted – AVE)		AVE ≥ 0.50
4 th Discriminant validity	Fornell-Larcker criterion	$\sqrt{\text{AVE}}$ larger than the biggest correlation with any construct
	Heterotrait-monotrait ratio of the correlation (HTMT)	HTMT < 0.90 (but they are better when lower than 0.85), and must be significantly different from 1
Assessing structural model		Guideline values
1 st Collinearity (variance inflation factor values – VIF)		VIF ≥ 5 (probable/critical collinearity issues) VIF ≥ 3 to 5 (possible collinearity issues) VIF < 3 (ideal value)

2 nd Explanatory power of the model (coefficient of determination – R ²)	R ² = 0.75 (substantial explanatory power of the model) R ² = 0.50 (moderate explanatory power of the model) R ² = 0.25 (weak explanatory power of the model)
3 rd Predictive accuracy of the PLS path model (Stone-Geisser test – Q ²) – Blindfolding procedure	Q ² > 0 (small accuracy of the model) Q ² > 0.25 (medium accuracy of the model) Q ² > 0.50 (large accuracy of the model)

Source: Adapted from Hair et al. (2017, 1029)

The PLS-SEM methodology is a comprehensive and mature technique widely used by many researchers (Wang et al., 2020), user-friendly software (Hair et al., 2019) and is a technique capable of modelling potential constructs in a non-normal sample and with small to medium sample sizes (Hair et al., 2017). It was therefore appropriate to use PLS-SEM and SmartPLS software to examine the relationships between the eleven preliminary constructs (11) and the forty-seven indicators (47) in this research.

5. RESULTS

5.1 Sample Profile

A total of 409 fully questionnaires were completed, validated and used in the study. Of the sample achieved, 49.9% of the respondents were male and 51.1% female, 26.4% within the mean age group more than 61 years old, and 22.5% in the mean age group of 51 to 60 years old. Other information includes: 63.1% married or living together/cohabiting, 49.9% employed, 42.7% had visited the Algarve more than three times, 64.1% had a higher education level and they were predominantly from the United Kingdom (52.8%) and Ireland (15.2%).

5.2 Structural Equation Model Analysis

5.2.1 Measurement Model Fit

First, the researchers tested the reliability, internal consistency and validity of the constructs to evaluate the measurement model. Reliability was evaluated using factor loadings, internal consistency was measured through the Cronbach's alpha and composite reliability (CR) and convergence validity was assessed using the average variance extracted (AVE).

Before confirming the reliability of the measurement model, the factor loading scores of all indicators were analysed (Hair et al., 2019). After deleting one indicator with low loading value (item MTE_5 Novelty = 0.674; less than the threshold values 0.708; see the indicator with * in Table 2), all other indicator factor loading scores were above the recommended threshold (≥ 0.708), indicating the satisfactory reliability of the constructs. As shown in Table 2, the Cronbach's alpha scores for all values were above the threshold values (> 0.70), and ranged from 0.800 to 0.967; the CR ranged from 0.855 to 0.976 (> 0.7 threshold values); and AVE ranged from 0.598 to 0.911 (> 0.50 threshold values). Reliability, internal consistency and convergent validity were thus established (Henseler & Chin, 2010; Wong, 2013; Ringle et al., 2014; Hair et al., 2019).

Table 2. Assessment of Measurement Model on Loading, Cronbach's α , CR and AVE

Measurements and Items	Loadings	Cronbach's α	CR	AVE
Visual		0.874	0.914	0.726
VIS_1 Aesthetic	0.828			
VIS_2 Attractive	0.811			
VIS_3 Beautiful	0.913			
VIS_4 Pretty	0.854			
Acoustic		0.934	0.953	0.836
ACT_1 Euphonic	0.905			
ACT_2 Good-sounding	0.875			
ACT_3 Melodic	0.929			
ACT_4 Sonorous	0.947			
Gustatory		0.967	0.976	0.911
GST_1 Appetizing	0.950			
GST_2 Flavourful	0.966			
GST_3 Palatable	0.941			
GST_4 Tasty	0.961			
Olfactory		0.939	0.956	0.844
OLF_1 Fragrant	0.908			
OLF_2 Nice-smelling	0.907			
OLF_3 Perfumed	0.934			
OLF_4 Scented	0.926			
Haptic		0.952	0.965	0.874
HPT_1 Comfortable	0.921			
HPT_2 Handy	0.952			
HPT_3 Soothing	0.963			
HPT_4 Well-shaped	0.903			
Joy		0.879	0.912	0.675
JOY_1 Cheerful	0.750			
JOY_2 Delight	0.857			
JOY_3 Enthusiasm	0.838			
JOY_4 Joy	0.845			
JOY_5 Pleasure	0.813			
Love		0.914	0.936	0.746
LOV_1 Affection	0.897			
LOV_2 Caring	0.889			
LOV_3 Love	0.808			
LOV_4 Tenderness	0.901			
LOV_5 Warm-hearted	0.819			
Positive surprise		0.907	0.931	0.729
SRP_1 Astonishment	0.858			

SRP_2 Amazement	0.900			
SRP_3 Fascinated	0.842			
SRP_4 Inspiration	0.822			
SRP_5 Surprise	0.845			
Recollection		0.800	0.882	0.713
RCL_1 Reliving	0.869			
RCL_2 Participate in	0.810			
RCL_3 Remember	0.853			
Vividness		0.845	0.896	0.682
VVD_1 Hear in mind	0.805			
VVD_2 See in mind	0.833			
VVD_3 Feel emotions	0.826			
VVD_4 Revisit setting	0.839			
Memorable Tourism Experience		0.874	0.855	0.598
MTE_1 Hedonism	0.710			
MTE_2 Refreshment	0.878			
MTE_3 Meaningfulness	0.767			
MTE_4 Local culture	0.727			
MTE_5 Novelty *	-----			

Source: Own Elaboration

The Fornell-Larcker criterion for assessment of the discriminant validity (Fornell & Larcker, 1981) was next performed (Table 3). The Fornell-Larcker criterion approach compares the square root of the AVE values with the latent variable correlations. The criterion states that if the square root of the AVE is larger than the biggest correlation with any construct, then discriminant validity is recognised. In this study (Table 3), all constructs met this criterion.

Table 3. Assessment of Discriminant Validity according to Fornell-Larcker Criterion

Fornell-Larcker criterion											
Constructs	ACT	GST	HPT	JOY	LOV	MTE	OLF	SRP	RCL	VIS	VVD
Acoustic	0.914										
Gustatory	0.221	0.954									
Haptic	0.518	0.415	0.935								
Joy	0.310	0.256	0.272	0.822							
Love	0.427	0.329	0.481	0.552	0.864						
MTE	0.267	0.242	0.343	0.416	0.380	0.773					
Olfactory	0.493	0.481	0.661	0.274	0.373	0.334	0.919				
Surprise	0.391	0.214	0.350	0.555	0.576	0.391	0.365	0.854			
Recollect	0.306	0.238	0.342	0.480	0.442	0.489	0.359	0.520	0.844		
Visual	0.372	0.174	0.304	0.480	0.274	0.314	0.316	0.452	0.406	0.852	
Vividness	0.325	0.245	0.373	0.490	0.391	0.558	0.363	0.472	0.651	0.397	0.826

Source: Own Elaboration

The HTMT ratio of correlation was also applied to assess the discriminant validity (Hair et al., 2019). Table 4 shows that none of the HTMT ratio of correlation values were above the recommended threshold (0.85), indicating the satisfactory discriminant validity of the constructs (Carrión, Nitzl, & Roldán, 2017).

Table 4. Assessment of Discriminant Validity on the Heterotrait-Monotrait Ratio of Correlation (HTMT_{0.85})

Heterotrait-Monotrait Ratio of Correlation (HTMT _{0.85})											
Constructs	ACT	GST	HPT	JOY	LOV	MTE	OLF	SRP	RCL	VIS	VVD
Acoustic											
Gustatory	0.230										
Haptic	0.548	0.432									
Joy	0.340	0.277	0.297								
Love	0.461	0.348	0.514	0.614							
MTE	0.309	0.277	0.392	0.497	0.441						
Olfactory	0.526	0.504	0.700	0.299	0.400	0.384					
Surprise	0.421	0.224	0.376	0.608	0.632	0.453	0.393				
Recollect	0.347	0.261	0.380	0.570	0.505	0.604	0.406	0.597			
Visual	0.408	0.187	0.334	0.543	0.298	0.376	0.346	0.489	0.479		
Vividness	0.355	0.266	0.407	0.564	0.434	0.680	0.397	0.523	0.785	0.460	

Source: Own Elaboration

5.2.2 Structural Model and Hypotheses Testing

The researchers used the SmartPLS 3.0 software to examine the structural model, and tested the hypotheses using bootstrapping (5000 re-samples) and path analysis (Ringle, Wende, & Becker, 2015). Collinearity was evaluated with variance inflation factor values, the explanatory power of the model was measured through the coefficient of determination (R² values) and the model predictive accuracy was assessed using the Stone-Geisser test (Q² values) (Henseler & Chin, 2010; Ali, Rasoolimanesh, Sarstedt, Ringle, & Ryu, 2018; Hair et al., 2019).

The collinearity of the results through the variance inflation factor show that (see Table 5) values varied in the sensorial attributes sonorous (ACT-4), appetising (GST-1), flavourful (GST-2), tasty (GST-4), handy (HPT-2), soothing (HTP-3), perfumed (OLF-3), and scented (OLF-4) from 5.860 to 8.758, which is above the common cut-off threshold of 5 (Henseler & Chin, 2010; Hair et al., 2014), thereby suggesting that the factors are not highly correlated to one another. However, as shown in Table 4, the other variance inflation factor values (VIF) related to sensorial attributes, emotional states, memorable elements, and MTE, revealed an ideal collinearity (VIF < 3).

Table 5. Variance Inflation Factor Values (VIF)

Measurement indicators	VIF	Measurement indicators	VIF	Measurement indicators	VIF	Measurement indicators	VIF
ACT_1	3.280	JOY_1	1.865	RCL_1	1.708	MTE_1	1.632
ACT_2	2.714	JOY_2	2.472	RCL_2	1.665	MTE_2	2.220
ACT_3	4.968	JOY_3	2.282	RCL_3	1.783	MTE_3	1.543
ACT_4	6.019	JOY_4	2.464	VVD_1	1.707	MTE_4	1.384
GST_1	6.375	JOY_5	1.999	VVD_2	2.393		
GST_2	8.758	LOV_1	3.684	VVD_3	1.818		
GST_3	4.839	LOV_2	3.514	VVD_4	2.499		
GST_4	8.006	LOV_3	2.247				
HPT_1	4.750	LOV_4	3.464				
HPT_2	6.243	LOV_5	2.111				
HPT_3	7.391	SRP_1	3.442				
HPT_4	3.509	SRP_2	4.609				
OLF_1	3.531	SRP_3	2.368				
OLF_2	3.658	SRP_4	2.072				
OLF_3	6.278	SRP_5	2.609				
OLF_4	5.860						
VIS_1	2.059						
VIS_2	1.970						
VIS_3	3.030						
VIS_4	2.147						

Source: Own Elaboration

The coefficient of determination (R^2 values) was used to assess the explanatory power of the model, as suggested by Ali et al. (2018) and Hair et al. (2019). Table 6 indicates that the haptic ($R^2 = 0.092$), visual ($R^2 = 0.138$) and gustatory ($R^2 = 0.231$) constructs had an unsatisfactory explanatory power in the structural model as shown by values under the cut-off threshold ($R^2 < 0.25$). All other coefficient of determination values showed satisfactory explanatory ability for the model tested. The model also showed that the relationships between the SEMs explain approximately 40% of MTE establishment ($R^2 = 39.9\%$).

Table 6. Coefficient of Determination (R^2)

Constructs	R^2 Coefficient
Acoustic	-----
Gustatory	0.231
Haptic	0.092
Joy	0.274
Love	0.301
MTE	0.399
Olfactory	-----
Surprise	0.287

Recollection	0.334
Visual	0.138
Vividness	0.301

Source: Own Elaboration

The Stone–Geisser (Q^2) value was obtained by applying the blindfolding procedure. This procedure was applied to all endogenous constructs that had reflective measurement models (Hair et al., 2017, 2019). As shown in Table 7, the Stone–Geisser values for constructs were greater than 0, and values ranged from 0.080 to 0.224, indicating they had a small to medium predictive relevance and validity in the model (Hair et al., 2017, 2019).

Table 7. Model Predictive Accuracy (Stone-Geisser test Q^2)

Constructs	Stone-Geisser Q^2 (=1-SSE/SSO)
Acoustic	-----
Gustatory	0.205
Haptic	0.080
Joy	0.176
Love	0.218
MTE	0.193
Olfactory	-----
Surprise	0.197
Recollection	0.224
Visual	0.097
Vividness	0.196

Source: Own Elaboration

Next, the researchers examined the hypothesised relationships in the structural model (Table 8), and found that 18 of the 26 hypotheses were supported and 8 hypotheses were not supported. The path coefficient values between the senses and emotions hypotheses showed that: vision had a positive and significant influence on joy ($\beta = 0.403$, $t = 6.484$, $p = 0.000^*$) and on positive surprise ($\beta = 0.325$, $t = 6.420$, $p = 0.000^*$); hearing had a positive and significant influence on joy ($\beta = 0.111$, $t = 1.984$, $p = 0.048^{***}$), love ($\beta = 0.226$, $t = 3.516$, $p = 0.000^*$) and positive surprise ($\beta = 0.167$, $t = 3.046$, $p = 0.002^{**}$); taste had a positive and significant influence on joy ($\beta = 0.149$, $t = 2.775$, $p = 0.006^{**}$) and love ($\beta = 0.160$, $t = 2.658$, $p = 0.008^{**}$); and touch had a positive and significant influence on love ($\beta = 0.298$, $t = 3.937$, $p = 0.000^*$); supporting Hypotheses H1a, H1c, H2a, H2b, H2c, H3a, H3b, and H5b.

The results between the emotions hypotheses and the memories hypotheses, shown in Table 8, demonstrated that: joy had a positive and significant influence on recollection ($\beta = 0.232$, $t = 3.284$, $p = 0.001^*$) and on vividness ($\beta = 0.305$, $t = 5.260$, $p = 0.000^*$), love had a positive and significant influence on recollection ($\beta = 0.133$, $t = 2.271$, $p = 0.024^{***}$), positive surprise had a positive and significant influence on recollection ($\beta = 0.314$, $t = 5.089$, $p = 0.000^*$) and on vividness ($\beta = 0.262$, $t = 4.085$, $p = 0.000^*$); validating Hypotheses H6a, H6b, H7a, H8a, and H8b.

Table 8. Path Coefficient Analysis of the Structural Model and Hypotheses Testing

Hypotheses	Path Coefficient (β)	S. D.	t-values	p-values	Decision
H1a: Visual -> Joy	0.403	0.062	6.484	0.000*	Supported
H1b: Visual -> Love	0.084	0.059	1.420	0.156	Not supported
H1c: Visual -> Surprise	0.325	0.051	6.420	0.000*	Supported
H2a: Acoustic -> Joy	0.111	0.056	1.984	0.048***	Supported
H2b: Acoustic -> Love	0.226	0.064	3.516	0.000*	Supported
H2c: Acoustic -> Surprise	0.167	0.055	3.046	0.002**	Supported
H3a: Gustatory -> Joy	0.149	0.054	2.775	0.006**	Supported
H3b: Gustatory -> Love	0.160	0.060	2.658	0.008**	Supported
H3c: Gustatory -> Surprise	0.035	0.060	0.596	0.552	Not supported
H4a: Olfactory -> Joy	0.000	0.068	0.004	0.997	Not supported
H4b: Olfactory -> Love	-0.039	0.076	0.519	0.604	Not supported
H4c: Olfactory -> Surprise	0.112	0.079	1.424	0.155	Not supported
H5a: Haptic -> Joy	0.030	0.060	0.503	0.615	Not supported
H5b: Haptic -> Love	0.298	0.076	3.937	0.000*	Supported
H5c: Haptic -> Surprise	0.076	0.067	1.136	0.256	Not supported
H6a: Joy -> Recollection	0.232	0.071	3.284	0.001*	Supported
H6b: Joy -> Vividness	0.305	0.058	5.260	0.000*	Supported
H7a: Love -> Recollection	0.133	0.058	2.271	0.024***	Supported
H7b: Love -> Vividness	0.071	0.067	1.060	0.290	Not supported
H8a: Surprise -> Recollection	0.314	0.062	5.089	0.000*	Supported
H8b: Surprise -> Vividness	0.262	0.064	4.085	0.000*	Supported
H9: Recollection -> MTE	0.219	0.070	3.129	0.002**	Supported
H10: Vividness -> MTE	0.415	0.075	5.514	0.000*	Supported
H11: Visual -> Haptic	0.304	0.049	6.190	0.000*	Supported
H12: Olfactory -> Gustatory	0.481	0.052	9.189	0.000*	Supported
H13: Acoustic -> Visual	0.372	0.051	7.263	0.000*	Supported

Notes: *P \leq 0.001, ** P \leq 0.01, *** P \leq 0.05

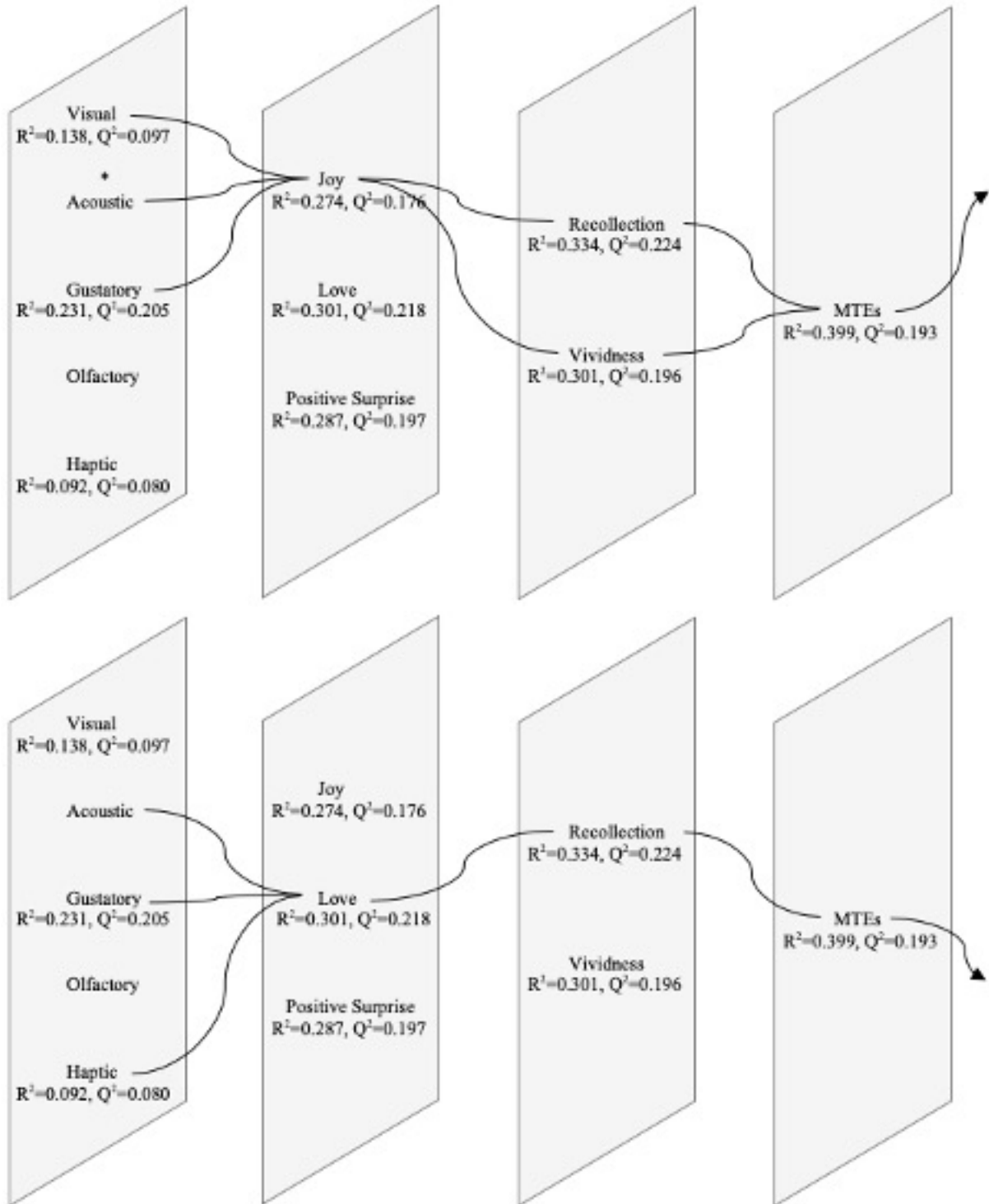
Source: Own Elaboration

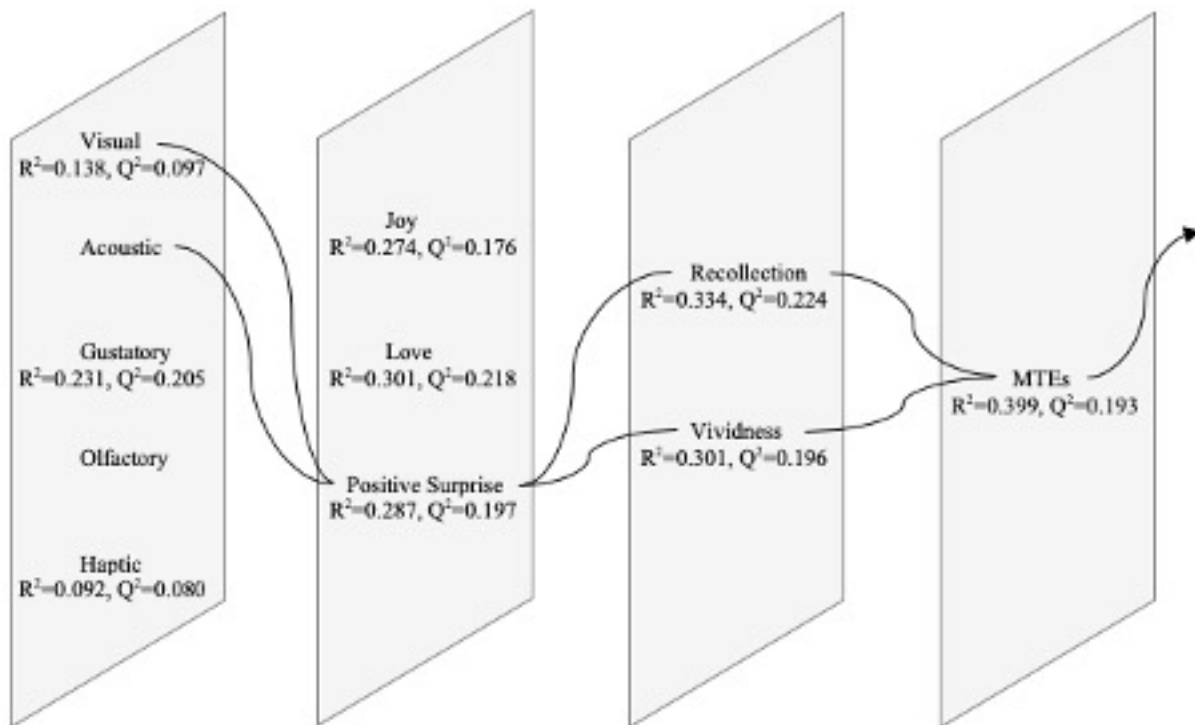
The memorable elements, recollection and vividness, revealed a positive and significant influence on the establishment of MTE, namely, recollection ($\beta = 0.219$, $t = 3.129$, $p = 0.002^{**}$) and vividness ($\beta = 0.415$, $t = 5.514$, $p = 0.000^{*}$), supporting Hypotheses H9 and H10. To verify whether vision had a positive influence on touch, smell on taste and hearing on vision, the researchers formulated H11 ($\beta = 0.304$, $t = 6.190$, $p = 0.000^{*}$), H12 ($\beta = 0.481$, $t = 9.189$, $p = 0.000^{*}$), and H13 ($\beta = 0.372$, $t = 7.263$, $p = 0.000^{*}$), and verified that all the hypotheses were supported.

The proposed model explaining the positive relationship between senses (visual, acoustic, gustatory and haptic), emotions (joy, love and positive surprise) and memories (recollection and vividness) to establish a MTE from a tourist's perspective is supported. The results of the model analysis, however, demonstrated three patterns in MTE construction according

to the emotional states experience, namely, joy, love, and positive surprise. The three final structural models are presented in Figure 2.

Figure 2. Three Final Models of the MTE based on Emotional States of Joy, Love, and Positive Surprise





Source: Own Elaboration

6. CONCLUSION

The purpose of this research was threefold: to identify and assess the contribution of the senses, the emotional states and the memorable elements within the tourism experience establishment, to map and model the relationship between the SEMs in experience creation, and to enrich knowledge of the design and implementation of a MTE. This was the first attempt to integrate SEMs and MTE in the same model and test it empirically, and the results showed:

1. An additional understanding of the MTE;
2. The relationship between the SEMs and, perhaps, the MTE construction;
3. The variance of the SEMs model explains approximately 40% of the establishment of a MTE ($R^2 = 39.9\%$);
4. The olfactory sense had no effect in any emotional states;
5. Three patterns or models of MTE construction according to the emotional states that tourists experience, namely, joy, love, and positive surprise;
6. The results of previous studies related to some senses dominance in the consumer experience context (Demangeot & Broderick, 2010; Krishna, 2012; Lee et al., 2013, 2012), and also confirmed a significant positive influence in a tourism context, namely, visual on haptic, olfactory on gustatory and acoustic on visual;
7. The first use of the sensory item set scale developed by Haase and Wiedmann (2018) in a tourism context to measure the sensory perception of tourists, however, although the results attested the validity of the scale, and allow a clear understanding of the tourism sensory dimension, it should be applied in more studies to ensure its robustness.

The ultimate aim of tourists is to obtain MTE, and the tourism industry needs to be competitive to provide this (Tung & Ritchie, 2011). The globalisation of the tourism industry, along with higher demands on service quality, better experiences, touristic products,

increased competitiveness in the private domain and tourist demands for MTE have revealed a gap in the tourism research in the, "... understanding of what they [tourists] think and how they live experiences" (Mendes et al., 2016, p. 295). Previous empirical evidence was found in the study of SEMs in tourism (e.g., Dias et al., 2017), and this study highlights the role of SEMs, and reinforces their significant positive effect on a MTE. The innovative arrangement of the constructs in the model has revealed that SEMs are related and that they are positively involved in the establishment of the tourism experience in the Algarve, despite only explaining part of the relationship (39.9%).

The relationship between constructs (i.e.: SEMs Model) has proved insufficient to explain the entire MTE construction, however, others studies have analysed the role of the senses in tourism experience (Pan & Ryan, 2009; Agapito et al., 2014; Lo, Wu, & Tsai, 2015; Jelincic & Senkic, 2017; Meacci & Liberatore, 2018), the influence of emotions (Gretzel et al., 2006; Brunner-Sperdin et al., 2012; Esteves et al., 2013; Bimonte & Faralla, 2014; Servidio & Ruffolo, 2016; Park & Santos, 2017), and the effects of memories (Ballantyne, Packer, & Sutherland, 2011; Duarte, 2012; Kahneman, 2012; Ayazlar & Arslan, 2017; Zatori et al., 2018). This research explored the gap between the relationship between the SEMs in the establishment of a MTE, and in particular, the SEMs relational map of the experience process from a tourist's perspective, one that in "... tourism is all about places and people" (Correia et al., 2017, p. 163).

6.1 Limitations and Suggestions for Future Research

Although this study makes several contributions to the study of the MTE, and particularly, the role of the senses, the influence of emotions and the effect of memories, there were several limitations, and important additional elements for future research. One limitation of this study is that it focuses on a particular point of time to develop the data collection, November and December (i.e., low season at the Algarve destination). For future research the data collection should be developed in both high season (i.e., June, July and August) and low season, in order to increase generalisability to the tourism experience. Another limitation of this study was the questionnaire length (3 pages), which was a factor in the withdrawal of participants. Future research should use smaller questionnaires, and/or they should be developed on a digital device with a touchscreen (Tablets, iPad, etc.), because these devices are more appealing and have user-friendly interfaces. The questionnaires were in the Portuguese and English languages, which made participation impossible for tourists who did not know these languages. Future studies should translate the questionnaire to other languages (e.g., German, French and Spanish) to include more tourist nationalities. This research analyses and maps the overall MTE. In the future it seems important to adopt a more detailed posture, that is, a specific experience according to the stage and/or product (e.g., gastronomy experience, wine experience, golf experience, sports and physical activity experience, wellness and well-being experience, etc.) to create a matrix for each particular tourism experience.

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Gustatory perception (taste):									
	Appetizing.	1	2	3	4	5	6	7	N/A
	Flavourful.	1	2	3	4	5	6	7	N/A
	Palatable.	1	2	3	4	5	6	7	N/A
	Tasty.	1	2	3	4	5	6	7	N/A
Olfactory perception (smell):									
	Fragrant.	1	2	3	4	5	6	7	N/A
	Nice-smelling.	1	2	3	4	5	6	7	N/A
	Perfumed.	1	2	3	4	5	6	7	N/A
	Scented.	1	2	3	4	5	6	7	N/A
Haptic perception (touch):									
	Comfortable.	1	2	3	4	5	6	7	N/A
	Handy.	1	2	3	4	5	6	7	N/A
	Soothing.	1	2	3	4	5	6	7	N/A
	Well-shaped.	1	2	3	4	5	6	7	N/A

4. To what extent do you agree with the following statements regarding your emotions during the experience?
 Circle your answer in each line (1-Strongly disagree, 2-Disagree, 3-Somewhat disagree, 4-Neither agree or disagree, 5-Somewhat agree, 6-Agree, 7-Strongly agree, N/A- Not applicable).

I feel cheerful.	1	2	3	4	5	6	7	N/A
I feel delighted.	1	2	3	4	5	6	7	N/A
I feel enthusiasm.	1	2	3	4	5	6	7	N/A
I feel joy.	1	2	3	4	5	6	7	N/A
I feel pleasure.	1	2	3	4	5	6	7	N/A
I feel affection.	1	2	3	4	5	6	7	N/A
I feel care.	1	2	3	4	5	6	7	N/A
I feel love.	1	2	3	4	5	6	7	N/A
I feel tenderness.	1	2	3	4	5	6	7	N/A
I feel warm-hearted.	1	2	3	4	5	6	7	N/A
I feel astonishment.	1	2	3	4	5	6	7	N/A
I feel amazed.	1	2	3	4	5	6	7	N/A
I feel fascinated.	1	2	3	4	5	6	7	N/A
I feel inspiration.	1	2	3	4	5	6	7	N/A
I feel surprise.	1	2	3	4	5	6	7	N/A

5. To what extent do you agree with the following statements regarding the recollection and the vividness of your memories during the experience?
 Circle your answer in each line (1-Strongly disagree, 2-Disagree, 3-Somewhat disagree, 4-Neither agree or disagree, 5-Somewhat agree, 6-Agree, 7-Strongly agree, N/A- Not applicable).

As I remember the experience, I feel as though I am reliving it.	1	2	3	4	5	6	7	N/A
As I think about the experience, I can actually remember it rather than just knowing that it happened.	1	2	3	4	5	6	7	N/A
As I remember the experience, I feel that I travel back to the time when it happened, that I am a participant in it again, rather than an outside observer tied to the present.	1	2	3	4	5	6	7	N/A

As I remember the experience, I can hear it in my mind.	1	2	3	4	5	6	7	N/A
As I remember the experience, I can see it in my mind.	1	2	3	4	5	6	7	N/A
As I remember the experience, I can feel now the emotion I felt then.	1	2	3	4	5	6	7	N/A
As I remember the experience, I can recall the setting where the experience happened.	1	2	3	4	5	6	7	N/A

6. How do you evaluate the following statements regarding the result of your experience? Circle your answer in each line (1-Not at all important, 2-Low importance, 3-Slightly important, 4-Neutral, 5-Moderately important, 6-Very important, 7-Extremely important, N/A- Not applicable).								
I really enjoyed this tourism experience.	1	2	3	4	5	6	7	N/A
I revitalized through this tourism experience.	1	2	3	4	5	6	7	N/A
I learned something about myself from this tourism experience.	1	2	3	4	5	6	7	N/A
I had a chance to closely experience the local culture of a destination area.	1	2	3	4	5	6	7	N/A
I experienced something new (e.g., food, activity, etc.) during this tourism experience.	1	2	3	4	5	6	7	N/A

7. Socio-demographic information:

Gender

- Male
- Female

Age

- Less than 21 years
- 21 to 30 years
- 31 to 40 years
- 41 to 50 years
- 51 to 60 years
- More than 61 years

Marital status

- Single
- Married
- Divorced
- Widow(er)
- Other: _____

Occupation

- Employed
- Self-employed
- Student
- Retired
- Domestic
- Unemployed
- Other: _____

Previous visit at Algarve

- 1st Visit
- 2nd Visit
- 3rd Visit
- more than 3 visits

Education level

- Primary Education
- Secondary Education
- Higher Education

Country of origin

- Portugal
- Spain
- France
- U.K.
- Ireland
- Netherlands
- Germany
- Other: _____

Thank you for your participation!

Appendice II.

Measurement Items for all Constructs

Constructs	Measurement Items	Literature Background
Senses	Visual	
	VIS_1: Aesthetic.	
	VIS_2: Attractive.	
	VIS_3: Beautiful.	
	VIS_4: Pretty.	
	Acoustic	
	ACT_1: Euphonic.	
	ACT_2: Good-sounding.	
	ACT_3: Melodic.	
	ACT_4: Sonorous.	
	Gustatory	
	GST_1: Appetizing.	Adapted from (Haase & Wiedmann, 2018).
	GST_2: Flavourful.	
	GST_3: Palatable.	
	GST_4: Tasty.	
	Olfactory	
	OLF_1: Fragrant.	
	OLF_2: Nice-smelling.	
	OLF_3: Perfumed.	
	OLF_4: Scented.	
Haptic		
HPT_1: Comfortable.		
HPT_2: Handy.		
HPT_3: Soothing.		
HPT_4: Well-shaped.		
Emotions	Joy	
	JOY_1: I feel cheerful.	
	JOY_2: I feel a sense of delight.	
	JOY_3: I feel a sense of enthusiasm.	
	JOY_4: I feel a sense of joy.	
	JOY_5: I feel a sense of pleasure.	
	Love	
	LOV_1: I feel a sense of affection.	Adapted from (Hosany & Gilbert, 2010; Hosany et al., 2015)
	LOV_2: I feel a sense of caring.	
	LOV_3: I feel a sense of love.	
	LOV_4: I feel a sense of tenderness.	
	LOV_5: I feel warm-hearted.	
	Positive surprise	
	SRP_1: I feel a sense of astonishment.	
	SRP_2: I feel a sense of amazement.	
SRP_3: I feel fascinated.		
SRP_4: I feel a sense of inspiration.		
SRP_5: I feel a sense of surprise.		

Memories	Recollection	
	RCL_1: As I remember the experience, I feel as though I am reliving it.	
	RCL_2: As I think about the experience, I can actually remember it rather than just knowing that it happened.	
	RCL_3: As I remember the experience, I feel that I travel back to the time when it happened, that I am a participant in it again, rather than an outside observer tied to the present.	
	Vividness	Adapted from (Kim, 2010; Kim & Youn, 2017; Sheen et al., 2001).
	VVD_1: As I remember the experience, I can hear it in my mind.	
	VVD_2: As I remember the experience, I can see it in my mind.	
	VVD_3: As I remember the experience, I can feel now the emotions that I felt then.	
	VVD_4: As I remember the experience, I can recall the setting where the experience happened.	
MTEs	MTE_1: I really enjoyed this tourism experience.	
	MTE_2: I revitalized through this tourism experience.	
	MTE_3: I learned something about myself from this tourism experience.	Adapted from (Kim, 2018; Kim et al., 2012).
	MTE_4: I had a chance to closely experience the local culture of a destination area.	
	MTE_5: I Experience something new (e.g., food activity, etc.) during this tourism experience.	
