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Sequence effects of city tour experiences: A tourism fatigue perspective

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ABSTRACT

City tours provide travelers with various experiences by means of a series of attractions, but little attention is paid to the effects that the sequence in which travelers visit these attractions have on their tourism evaluation. The paper aims to investigate the sequence effects of experiences along the experience economy model's two axes. This study analyzed 33,350 records that 7855 travelers on a city tour of Madrid posted of about 525 attractions on TripAdvisor. The results reveal that travelers value a sightseeing experience less if a previous attraction offered the same type of experience. Furthermore, active-participation attractions are more highly rated when visited after passive-participation ones. Similarly, travelers rate attractions providing absorption more positively after they have visited immersion ones. The findings are explained by using various tourism fatigue dimensions: affective fatigue, motivational fatigue, and cognitive fatigue. The study shows that sequence effects play an important role in helping to prevent tourism fatigue and increase tourism satisfaction, both of which have practical implications for tourism marketers' planning strategy.

1. Introduction

City tours have been part of tourism since its inception during the early years of civilization (Casson, 1994). They encompass a wide range of heritage/cultural attractions, entertainment and educational opportunities, as well as allowing tourists to relax while experiencing these (Buhalis, 2000; Mazanec, 1997; Paskaleva-Shapira, 2007). City tours' popularity has fostered the relevant attractions' attractiveness and increased the competition between companies offering these. Consequently, tourism marketers endeavor to create memorable and personalized experiences for travelers to generate travelers' loyalty, increase the visited attractions' competitiveness, and to pursue other economic interests (Coudounaris & Sthapit, 2017; Kim & Chen, 2019; Mehmetoglu & Engen, 2011; Tung & Ritchie, 2011).

Although city tours are characterized by the fact that travelers visit a series of attractions within a short time, most city tourism studies take the perspective of independent attractions rather than the perspective of a set of attractions (Ashworth & Page, 2011; Zare & Pearce, 2018). Studies that investigated sequences of attractions typically based their planning on attractions' spatial features (Paulino, Lozano, & Prats, 2021), for example, their geographic distance (Lew & McKercher, 2006), roadside facilities (Denstadli & Jacobsen, 2011), and the relevant transportation between these attractions (Garcia, Vansteenwegen, Arbelaitz, Souffriau, & Linaza, 2013). The underlying operations research perspective to city trip design may optimize the physical visiting route, it however need not optimize travelers' subjective experiences throughout the city trip.

We argue that a different approach, the experiential marketing perspective (Rather, 2020), is required to optimize attraction sequences of city trips. Tourists travel in pursuit of experiences and positive emotions (Le, Scott, & Lohmann, 2019), therefore positive experiences are key drivers of tourist satisfaction (Oh, Fiore, & Jeoung, 2007; Yuan & Wu, 2008). This requires to take a psychological perspective on trip planning to gain an in-depth understanding of how to optimize sequences of city trip experiences. A study of psychological sequence effects should help to identify attraction sequences which foster positive emotions while preventing negative psychological states such as fatigue and boredom (Sun et al., 2020). This paper thus addresses the research question of how to arrange the order of experiences that various attractions provide to avoid tourism fatigue, while generating positive city tour experiences.

Investigating these path-dependent effects of city trip experiences provides valuable conceptual insights into the design of city trips. Cities' tourism managers and travel package providers can get inspired by our study to arrange tour packages in a way to maximize travelers' experience. Marketers of single attractions might gain ideas for collaboration

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with attractions providing complementary experiences. Similarly, tourists can also benefit from this paper. The results of this research can guide them to arrange an appropriate attraction visiting order to avoid fatigue and improve satisfaction.

In the following, the current study combines research streams on the experience economy and on tourism fatigue to examine whether, how, and why previous experiences derived from recently visited attractions influence travelers' evaluation of current attractions. Subsequently, the paper analyzes the effects that sequence has on travelers' satisfaction with city tours' attractions.

2. Literature review

2.1. Tourist experience

The concept of experiential consumption has been attracting attention from researchers and practitioners since long (Loureiro, 2014; Loureiro, Breazeale, & Radic, 2019). Dating back to the 1970s, Csikszentmihalyi (1975) was the first to conceptualize flow experience as a driver of individuals' self-directed actions. Holbrook and Hirschman (1982) introduced the experiential perspective into the field of consumer research and described consumption experience as a complex phenomenon involving fantasies, feelings, and fun. In the following, Hirschman (1984) focused on experience seeking types, and differentiated cognition seeking, sensation seeking, and novelty seeking, Holbrook (1994) complemented this research by emphasizing the role of consumers' activity level in generating customer value, by linking active (passive) consumer states to high (low) collaboration opportunities. Since then, customer experiences became a key concept throughout the customer journey (Lemon & Verhoef, 2016), and experience marketing evolved as a distinct research stream in the marketing field (Tynan & McKechnie, 2009).

In a seminal work, Pine and Gilmore (1999) took up previous research streams and proposed one of the most well-known frameworks of the experience economy. This framework suggests that economic value evolved from selling commodities to making goods, thereafter to providing services, finally reaching the last phase (highest level): staging experiences. The theory that Pine and Gilmore (1999) postulated regarding the experience economy provides a conceptual lens to study tourists' trip satisfaction. More specifically, well-staged experiences result in enhanced and vivid memories about the events at an attraction. These memories can have positive effects on travelers' attitudes to an attraction, and, consequently, engender even greater satisfaction (Gilmore & Pine, 2002; Pine & Gilmore, 1998, 1999).

Pine and Gilmore (1999) proposed four realms of experiences along two axes. The horizontal axis represents consumers' participation level, with one endpoint being active participation and the other passive participation. Active participation requires tourists to actively be part of the experiential activity. Consequently, active-participated activities are more dynamic, risky, and self-achievement oriented (Pizam & Fleischer, 2005). Passive participation implies that tourists don't affect the performance meaningfully, but instead more passively listen to or watch whatever is occurring (Su et al., 2016).

The vertical axis describes consumers' connection with the surroundings or environment. Based on the psychological distance between consumers and an experience, this connection varies between immersion and absorption. Specifically, absorption describes a situation in which tourists are a certain distance from the 'stage' or the experience; for example, when watching a film from their seats; while immersion suggests that there is no distance between the tourists and the 'stage', meaning they are involved in the performance or the experience (Mehmetoglu & Engen, 2011).

The combination of two axes divides the experiences into four realms, namely: entertainment, educational, esthetic, and escapist (Pine & Gilmore, 1998, 1999). Tourists gain entertainment experiences when they absorb what is going on passively, for instance, when they go to the movies. Education experience refers to active absorption when consumers actively engage in learning something new and execute interactive activities. Visiting a museum is a typical example of this category, because it allows travelers to learn from the past, therefore enriching their cultural knowledge. Esthetics categorization refers to experiences when consumers immerse their minds passively in the environment. For instance, during a city tour, travelers may enjoy the esthetic view of monuments and sights passively. Finally, escapism experiences refer to both active participation and immersion in the activities. Tourists gain such escapist experiences when they 'diverge to a new self', for example, when relaxing in parks or public spaces by absorbing these attractions' multisensory elements. Together, one could summarize the four realms as comprising an entertainment experience that is about feeling, the educational experience as being about learning, the esthetic experience as being about presence, and the escapist experience as being about doing (Hosany & Witham, 2010).

This theory offers a conceptual framework for how experiences could be categorized, while also comprising a general umbrella term that covers the experience components identified by earlier studies (Su et al., 2016). Although there are other categorizations of experience based on different settings, the four realms of experience identified by Pine and Gilmore (1999) have been applied and proved widely applicable in empirical research related to the tourism experience (Mehmetoglu & Engen, 2011; Oh et al., 2007), tourism planning strategy (Quadri-Felitti & Fiore, 2013), and in various tourism contexts, such as cruise travel (Hosany & Witham, 2010; Hung, Huang, & Lyu, 2020), rural tourism (Kastenholz, Carneiro, Marques, & Loureiro, 2018; Loureiro, 2014), and wine tourism (Quadri-Felitti & Fiore, 2012; Thanh & Kirova, 2018). The paper therefore uses Pine and Gilmore's categorizations as the basis for conceptual model construction and hypotheses building in our study.

2.2. Tourism fatigue

During tours, tourists face various experiences, for instance, curiosity to learn new facts, relaxation to escape from reality, interest in others' lifestyles, and the harmony and pleasure of being in a specific place (Ballantyne, Packer, & Sutherland, 2011; Loureiro, 2014). The ever-lasting quest for additional experiences need not, however, result in positive outcomes. Rapid sequences of tourism activities, as well as multiple interactions between tourists and single places, could cause tourism fatigue. The latter is a negative mental state which occurs during a trip and manifests itself as a decline in terms of a tourist's physical function, motivation, affection, and cognition (Sun et al., 2020). In general, fatigue has a biological basis since, for example, brain fatigue emerges after the repeated presentation of identical or similar stimuli (Grandjean, 1979). As a phenomenon, fatigue has attracted scientists' attention in many contexts (e.g. organizational behavior and medical science), but is not yet well explored in the tourism context (Sun et al., 2020). It may, however, lead to a decline in perception of an attraction's quality, in the passion for an attraction, a deterioration in the impression of an attraction, and, consequently, a decrease in the satisfaction with a tourism attraction (Zheng, Liao, & Qin, 2017; Park, Hahn, Lee, & Jun 2018). Tourism fatigue is therefore worthy of investigation, because it is closely and negatively related to travelers' satisfaction.

According to former studies, there are two aspects of tourism fatigue: physical fatigue and psychological fatigue (Jafari, 2002; Rittichainuwat, Qu, & Mongkhonvanit, 2008; Sun et al., 2020). Physical fatigue is a physiological phenomenon that excessive energy consumption and muscle activities cause during a trip. A reduction in travelers' mobility, muscle soreness, and a physical weakening reflect this phenomenon (Lal & Craig, 2001, 2005). Psychological fatigue is a multidimensional psychological phenomenon, related to motivation, affection/emotion, and cognition dimensions. Just like excessive physical activities lead to physical fatigue, intensive mental activities, including esthetic appreciation, learning, and novelty seeking, have been found to be the main causes of psychological fatigue (Lal & Craig, 2002). Psychological

fatigue manifests itself as the weakening of motivation, a decrease in affection, and in impaired cognition (Chalder et al., 1993; Wascher et al., 2014).

This paper focuses on psychological fatigue during a city tour for the following two reasons: unlike nature-based tours (including hiking, adventure-seeking, river rafting, etc), city tours are not very physically demanding; consequently, healthy travelers who go on a city tour seldom suffer physical exhaustion (Pomfret, 2011; Varley, Schilar, & Rickly, 2020). More importantly, empirical studies have found a significant correlation between psychological fatigue and satisfaction, but without fatigue as a physical dimension (Sun et al., 2020). Thus, this research focuses on psychological fatigue in the context of a city tour. In this context, the paper differentiates between affective/emotional fatigue, motivational/need fatigue, and cognitive fatigue as the three main components of psychological fatigue (Sun et al., 2020) when developing specific hypotheses along the different experience dimensions.

3. Hypotheses

3.1. Emotional fatigue and repeated experiences

Affective/emotional fatigue indicates a decrease in tourists' affection and emotion for specific tourism activities. In general, tourism offers travelers many emotional interactions, contacts, expressions (Kim & Fesenmaier, 2015; Lee, Chang, Hou, & Lin, 2008), and, therefore, positive emotions as excitement, surprise, delight, novelty, and curiosity (Nawijn, Mitas, Lin, & Kerstetter, 2013). However, frequent exposure to affectional/emotional interaction and expression can cause a decline in these positive emotions (Schwartz & Chen, 2012; Zheng et al., 2017), which refers to affective/emotional fatigue (Sun et al., 2020). Note that affectional/emotional fatigue is not always attributed to identical tourist attractions or activities, as tourism products providing related affectional/emotional experiences can also cause affectional/emotional fatigue (Sun et al., 2020).

Novelty is key to avoiding affective/emotional fatigue (Sun et al., 2020). Numerous studies suggest that the novelty of an unusual environment can offer travelers many 'fun' ingredients, including arousal, excitement, surprise, and feelings of mystery and novelty (Apter, 1992; Lepp & Gibson, 2003; Schwartz & Chen, 2012). Consequently, novelty alleviates boredom effectively (Lee & Crompton, 1992). Positive emotions derived from novelty motivate further visits to and explorations of locations (Cohen, 1979; Schwartz & Chen, 2012). Novelty seeking is therefore defined as the willingness to search for novel, exciting, and pleasant sensations, which enable travelers to avoid affective/emotional fatigue (Coudounaris & Sthapit, 2017).

The experience economy theory informs scholars about the different tourism experiences that different attractions offer (Oh et al., 2007). The four experience realms identified by Pine and Gilmore (1999) summarize these differences along the two axes of involvement and the link between a traveler and the environment. By definition, novelty is a feeling that an experience is new, unique, and unusual (Crompton, 1979; Jang & Feng, 2007). Providing tourists with different experience types should therefore maintain the perceived novelty and keep them emotionally refreshed. In contrast, if attractions offering the same experience type are repeatedly visited, this could lead to emotional fatigue. The first hypothesis is therefore as follows:

H1. Travelers value a sightseeing experience less, if the previous attraction addressed the same experience dimension.

3.2. Motivational/need fatigue and experiences' participation

Motivational/need fatigue relates to psychological needs satisfaction (Deci & Ryan, 2011), indicating that needs are gradually satisfied, and only once people's low-level needs have been satisfied, do they desire and are motivated to satisfy their high-level needs. In the tourism context, tourists gain experiences through tourism that gradually satisfy their motivation or needs (Jang & Feng, 2007; Mitas & Bastiaansen, 2018). Once tourists' needs have been met, the desire for similar or identical needs decreases, leading to motivational/need fatigue (Jang & Feng, 2007). This motivational/need fatigue results in a decreased willingness to visit similar places (Sun et al., 2020). According to motivation theories, the satisfaction of an individual's needs occurs hierarchically from a low level to a high level (Deci & Ryan, 2011; Ryan & Deci, 2000). A possible solution to avoid motivational/need fatigue is therefore to continuously satisfy travelers' higher-level needs.

The level of participation builds on the horizontal axis of the four realms of experiences identified by Pine and Gilmore (1999), whereby travelers' participation varies between active and passive. Visiting passive-participation attractions can fulfill relatively low-level needs (for fun, joy, and goods). Conversely, active travelers simultaneously consume and create a performance that produces an experience (Mehmetoglu & Engen, 2011; Su et al., 2016). Compared to passive participation, active participation creates more value from an experience (Chan, Yim, & Lam, 2010; Scott, Laws, & Boksberger, 2009). More specifically, as travelers' participation increases, they are more likely to creatively consume resources, such as time, skills, goods, and services, which generate intrinsically rewarding experience stimuli (Andersson, 2007; Deci & Ryan, 2011; Ryan & Deci, 2000; Waterman, Schwartz, & Conti, 2008).

Active participation is therefore treated as intrinsic-motivated behaviors that can directly fulfill certain high-level psychological needs, such as autonomy and competency (Su et al., 2016). Based on self-determination theory, psychological needs like autonomy and competency, which form the cores of self-determination, are regarded as very high-level needs, which should be satisfied once the basic needs have been met (Deci & Ryan, 2011; Howell & Hill, 2009). Consequently, when tourists visit active-participation attractions after passive-participation ones, their higher-order psychological needs will be met. The latter is due to their lower-order needs having been fulfilled, which means they avoid motivational/need fatigue and their satisfaction evaluation increases. Building on the literature review, the second hypothesis is proposed:

H2. Travelers value an active sightseeing experience more if the previous attraction offered a passive experience.

3.3. Cognitive fatigue and experiences' connection

Cognitive fatigue is defined as the deterioration of the information processing capacity or resources (Eggemeier, Wilson, Kramer, & Damos, 1991; Gopher & Donchin, 1986; Hockey, 2011). This fatigue refers to the impairment of tourists' cognitive ability in terms of their psychological fatigue (Sun et al., 2020). During a trip, travelers use multiple senses when interacting with the elements of the places they visit (Kastenholz, Carneiro, Marques, & Lima, 2012; Markwell, 2001). For example, travelers need to observe, listen, perceive, memorize, and behave during a trip (Agapito, Pinto, & Mendes, 2017; Agapito, Valle, & Mendes, 2014). During this process, sensory stimuli are transformed into electrical signals that people's brains can process (Agapito, Mendes, & Valle, 2013; Zurawicki, 2010). But when there is too much workload/information for the brain to process, cognitive fatigue occurs, leading to a decline in travelers' capabilities such as their attention, thinking, reaction speed, and memory (Borragán, Slama, ; Kirillova, Fu, Lehto, & Cai, 2014).

The vertical axis of the framework developed by Pine and Gilmore (1999) relates to the extent to which a customer is connected with the surroundings. Absorption lies at one end of the connection continuum and immersion at the other end (Pine & Gilmore, 1998, 1999). Relational and physical elements give absorption and immersion different levels of connection with people and objects of attractions. More specifically, absorption and immersion allow travelers to stand on the

sidelines and absorb activities or be immersed into them despite all the accompanying sensory stimuli (Pine & Gilmore, 1998; Pullman & Gross, 2004). When travelers indulge in multisensory interactions with attractions, their experiences are not only about their reliance on the physical space, but also about their feelings and social identification with the attractions (Brown, Smith, & Assaker, 2016; Fu, Zhang, Lehto, & Miao, 2018). Consequently, multisensory interactions mean travelers need to observe, notice, learn, process, and memorize many elements during a trip (Agapito et al., 2014, 2017; Kastenholz et al., 2012; Oh et al., 2007). All of these actions consume cognitive resources. When travelers have to maintain an intense interaction with attractions' multi-dimensional elements, their brains' workload may exceed their threshold, and travelers will face a decline in their capabilities, such as their attention, thinking, reaction speed, and memory, leading to cognitive fatigue (Hockey, 2011; Pattyn, Neyt, Henderickx, & Soetens, 2008).

Cognitive fatigue causes a drop in travelers' satisfaction during a trip (Sun et al., 2020). If they visit immersion attractions first and thereafter absorption attractions, they can effectively avoid cognitive fatigue and their consequent dissatisfaction. The latter occurs, because, unlike with immersion, travelers won't integrate fully into absorption attractions, instead, they tour such attractions as 'bystanders' (Song, Ahn, & Lee, 2015). Absorption is related to effortless concentration, which does not necessarily include active thinking. Instead, it demands behavioral or mental action in response to multi-dimensional stimuli (Ellis, Freeman, Jamal, & Jiang, 2019; Ellis, Freeman, & Jiang, 2017). Consequently, travelers don't need to constantly and substantially invest their cognitive resources when visiting absorption attractions. In this vein, absorption can be regarded as a kind of relaxation by making travelers feel less exhausted, and helping them recover from the fatigue that immersion attractions cause. Accordingly, this study suggests the following hypothesis:

H3. Travelers value an absorption sightseeing experience more if the previous attraction offered an immersive experience.

4. Methodology

4.1. Data basis

To test the derived hypotheses, this study analyzes travelers' reviews of city trip attractions collected from TripAdvisor, one of the world's largest travel-related websites (Soler & Gemar, 2018; Thanh & Kirova, 2018). TripAdvisor provides a platform for travelers to share their impressions during or after a visit. Traditional methodologies, such as surveys and experimental methods might interfere with natural and normal everyday practice. Thus, data collected from daily life experience and real contexts are seen as more naturalistic and objective (Wu & Pearce, 2014). Furthermore, travelers' and tourism professionals' wide use of social media provides a new perspective for investigating tourism experiences (Lund, Cohen, & Scarles, 2018; Xiang & Gretzel, 2010). Previous studies show that travelers trust the online reviews that other tourists shared more than they do the tourist industry's online advertising (Filieri, Alguezaui, & McLeay, 2015; Kladou & Mavragani, 2015). In addition, TripAdvisor's social media data provide detailed, highly reliable, and representative ratings of customer satisfaction and attractions' attributes (Liu, Teichert, Rossi, Li, & Hu, 2017; Ma & Kirilenko, 2021).

This study utilizes travelers' reviews of city tours to Spain's capital city, Madrid. The latter plays an important role in Spain's and even Europe's tourism sectors. The tourism sector in Madrid accounts for 6.3 % of the regional GDP and 9.7 % of the total GDP of Spain's tourism activity (Bagur-Femenías, Martí, p. 381). Madrid offers many types of attractions, such as the royal palace, art galleries, museums, religious architecture, and musical theaters (Zarzuela) (Busby, Korstanje, & Mansfield, 2011; Parsons, 2003). As an example of a typical city tour, Madrid provides a combination of culture, history, aesthetics, and entertainment (Hernández, Santana-Jiménez, & González-Martel, 2021).

This study used the same sample examined in Hernández et al. (2021). The sample consisted of the online ratings of Madrid attractions on TripAdvisor posted by 7855 uniquely identified city visitors mainly from November 2013 until November 2018. In total, 33,350 data records (including specific attractions' satisfaction rating, the visit dates and tour sequence, as well as the attraction type) of 525 attractions were collected.

4.2. Measures

As a first step, the study recoded the raw data as summarized in Table 1. By modifying the attraction labels that TripAdvisor automatically provides, all 525 attractions were classified into seven different attraction types: culture, monuments, museums, places, relax, shopping, and sights. By assigning all current attractions and previous attractions to the seven attraction types that TripAdvisor defines, the study generated a 7 (current attraction types) × 7 (previous attraction types) visiting sequence combination.

TripAdvisor's attraction types were assigned to the four experience realms identified by Pine and Gilmore (1999) based on their attributes and on previous literature (Fig. 1):

- Education: When visiting museums and cultural attractions, visitors actively acquire knowledge about history, culture, and geography (Hwang & Lee, 2019). They also keep a physical as well as psychological distance to the exhibits (Mehmetoglu & Engen, 2011; Quadri-Felitti & Fiore, 2012). Thus, museum and culture are categorized into the educational realm.
- Esthetics: Monuments and sights of a city are visible esthetic expressions of the past (Braunfels, 1990) which reinforce collective memory (Cosgrove & Daniels, 1988). They also encourage tourists to immerse themselves in this past (Osborne, 2001), and gain special moments to remember (Pretes, 2003), thus emphasizes the importance of 'being there'. Accordingly, sights and monuments are allocated to the esthetics realm.
- Entertainment: Touristic shopping is unlike daily-life shopping, which often focuses on functional aspects of product purchases (Sands, Oppewal, & Beverland, 2007). It aims at enjoyment and pleasure (Way & Robertson, 2013), as well as generating memorable images (Choi, Heo, & Law, 2016). Hereby, limited foreign language skills often restrict consumer-staff interactions (Yuksel, 2004). Consistent with previous studies which view tourism shopping as a recreational activity (Murphy, Moscardo, Benckendorff, & Pearce, 2011), the study thus assigns it to the entertainment realm.
- Escapism: By walking throughout places (e.g. streets, parks, zoos, and gardens) which generates human-environment interactions (Beatley, 2017), tourists actively immerse in the environment (Church, 2018). Accordingly, this research assigns 'relax and places' to the escapist realm.

Table 1
Attractions and categorizations used in this research.

Experience	Attraction type	Number of attractions	Number of recordings
Educational	Museum	64	7790
	Culture	118	2503
Entertainment	Shopping	42	2996
Esthetics	Sights	126	8053
	Monument	111	3111
Escapist	Relax	36	5369
	Places	28	3528
Total		525	33,350

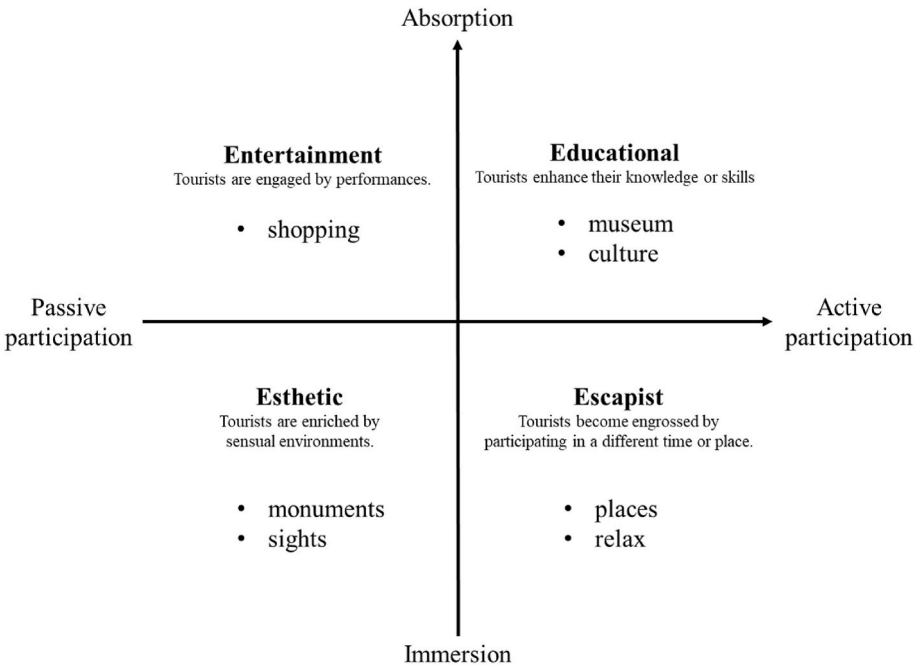

Fig. 1. City tour experiences along the four experience realms.

4.3. Data analysis

The study recoded the absolute satisfaction ratings into relative rating values to rule out individual differences' influence on rating behavior. Specifically, each traveler's relative rating values were calculated as the difference between a single attraction's rating and the mean rating of all the attractions that this traveler visited. Then, the mean value of travelers' relative ratings of each attraction type was calculated. This mean value was used as the reference/baseline of travelers' preference for this type of attraction. Table 2 illustrates the baseline rating of each attraction type and the experience realm to which it belongs.

Subsequently, this paper conducted a series of one-sample *t*-test for each of the seven attraction types, comparing the differences between the ratings given each attraction during each visiting sequence and the current attraction's baseline rating. To control the family-wise error rate (FWER) that multiple comparison cause, an FDR correction of the p-value of each 'family of tests' was carried out. The software package Matlab was used to calculate the statistics at the group level.

5. Results

One-sample t-tests with FDR correction revealed several significant visiting sequences during a Madrid city tour. First, the results in Table 3 (see the first four rows) show the effect of sequence who repeatedly visit attractions with the same experience dimension. Specifically, visiting attractions offering the same experience type as the previous ones (e.g. museum to museum, relax to relax, and culture to museum) causes a significant decrease in the current attractions' evaluation ($Mean_{sequence\text{-}baseline} < 0, p < 0.05$). The exception is repeating a shopping experience, which leads to increased satisfaction with the current shopping activity ($Mean_{sequence\text{-}baseline} = 0.04, p = 0.03$). The findings therefore partially support H1.

In addition, rows 5–8 in Table 3 show the sequence effect, as well as the participation (horizontal) axis of the four experience realms identified by Pine and Gilmore (1999). Visiting active-participation attractions (e.g. shopping and monuments) after passive-participation attractions (e.g. museums, places, and relax) significantly reduces the current attractions' rating significantly ($Mean_{sequence\text{-}baseline} > 0, p < 0.05$, see Table 3 for details). Conversely, when passive-participation attractions followed active-participation attractions during a tour, the current passive-participation attraction's rating is shown to decrease. For example, going shopping after visiting museums significantly decreases the shopping activities' rating ($Mean_{sequence\text{-}baseline} = -0.10, p = 0.03$). Together, these findings support H2.

Finally, the results of the *t*-test reveal the sequence effect along the

Table 2
Descriptive statistics of attraction types.

Experience	Attraction type	Mean	SD
Educational	Museum	0.096	0.597
	Culture	−0.004	0.659
Entertainment	Shopping	−0.081	0.632
Esthetics	Sights	−0.025	0.589
	Monument	−0.161	0.645
Escapist	Relax	0.120	0.525
	Places	−0.126	0.625

Table 3
Significant *t*-test results of different visiting sequences.

	Attraction sequence (From-To)	Experience sequence (From-To)	Mean satisfaction difference	*p*-value (corr.)
H1	museum-museum	educational-educational	−0.04	0.02
	relax-relax	escapist-escapist	−0.07	<0.001
	culture-museum	educational-educational	−0.13	0.02
	shopping-shopping	entertainment-entertainment	0.04	0.03
H2	museum-shopping	educational-entertainment	−0.10	0.03
	shopping-museum	entertainment-educational	0.09	0.02
	monument-relax	esthetic-escapist	0.11	0.01
	monument-places	esthetic-escapist	0.10	0.01
H3	monument-shopping	esthetic-entertainment	0.12	0.03
	places-shopping	escapist-entertainment	0.11	0.03

connection (vertical) axis of the four experience realms identified by Pine and Gilmore (1999). More specifically, as Table 3 (rows 9–10) shows, the ratings of absorption attractions (e.g. shopping, $Mean_{sequence\text{-}baseline} > 0$, $p < 0.05$) are significantly improved if the previous attractions offered an immersive experience (e.g. monument and places). These findings support H3, which is therefore accepted.

6. Discussion

This paper aims to investigate whether, how, and why the sequence effects of attractions influence travelers' satisfaction in a city tour context. The study chose Madrid was chosen as an example, and analyzed 33,350 ratings that 7855 travelers who visited a series of attractions during a city tour recorded on TripAdvisor. The results provided evidence that the sequence in which travelers visit attractions do have an influence on them and on similar experiences.

Most of the comparison results supported hypothesis 1 in terms of affective/emotional fatigue. Travelers do value a sightseeing experience more if the previous attraction addressed a different experience dimension. As explained above, affective/emotional fatigue refers to travelers' reduced willingness to visit attractions that offer similar or identical experiences. The latter is due to the same or similar affectional/emotional interactions and expressions weakening their novelty-related emotions, such as excitement, surprise, and thrill (Lepp & Gibson, 2003; Schwartz & Chen, 2012). This sequence effect attributes more meanings to novelty seeking from the experience economy and affective/emotional fatigue perspective. The exception was when travelers constantly went shopping and the decline in the shopping experience's rating could not, as expected, be proved. This could be attributed to the effect that gender has on a shopping experience, since females have been shown to enjoy shopping more, and have more fun doing so (Jain, Takayanagi, & Malthouse, 2014; Prendergast & Lam, 2013). This explanation is, however, difficult to test, because most of the data in the dataset lack gender information.

Along the participation axis of the four experience realms, travelers were found to value an active sightseeing experience more, if the previous attraction offered a passive one. This finding is in line with hypothesis 2 as active participation is usually a dynamic, risky, and self- and achievement-oriented experience (Pizam & Fleischer, 2005; Su et al., 2016; Waterman et al., 2008). It therefore creates psychological values to satisfy psychological needs, such as autonomy and competency (Deci & Ryan, 2011; Ryan & Deci, 2000), followed by passive consumption.

According to the needs fulfillment sequence as posited in hypothesis 3, travelers' motivation/needs fatigue can be prevented by satisfying high-order psychological needs (e.g. autonomy and competency) after their low-order emotional needs (e.g. enjoyment and pleasure) have been fulfilled. Further, along the vertical axis (connection) of the four experience realms, the results indicated that travelers value an absorption sightseeing experience more if the previous attraction offered an immersive experience. This finding provides evidence of cognitive fatigue's effect on attraction satisfaction. More specifically, immersion attractions comprise more multisensory interactions with the environment, and are therefore more cognitively demanding than absorption attractions. Visiting absorption attractions after immersion experiences, give travelers a buffer period in which they can recover from their exhaustion and reload their cognitive resources.

To summarize, the findings reveal the relationship between psychological fatigue and the experience economy. Concretely, when travelers sequentially visit attractions that offer the same type of experience, they could experience affective/emotional fatigue. Motivation/needs fatigue could relate to travelers valuing active-participation experiences more if passive-participation ones are gained first. An absorption sightseeing experience after visiting other attractions offers an immersive experience that can relieve travelers' cognitive fatigue effectively. These findings confirm the sequence effects of attractions in the context of a city tour by explaining how travelers' satisfaction changes dynamically with the order in which attractions are visited due to the psychological fatigue they might experience.

7. Implications

The current study responds to a call to promote city tours. This study aims to meet the global challenge that tourism industry practitioners and academic researchers face in respect of the way city tour destinations can be promoted (Ashworth & Page, 2011; Paskaleva-Shapira, 2007). Identifying attractive tourist attractions helps meet travelers' expectations, and contributes to the economy, environment, society, cultural specifics, and the well-being of relevant city's residents. This study presents a conceptual approach and its practical implications help tourism marketers and researchers to understand that multiple experiences provide rich tourism offers, and increase visitors' satisfaction.

7.1. Contributions for research

The current study makes the following theoretical contributions: first, the study's empirical results enrich the conceptual framework by identifying the relationship between tourism fatigue, especially psychological fatigue, and the framework presented by Pine and Gilmore (1999). Previous studies adopted this framework in different tourism contexts (e.g. cruise, wine tourism, and rural tourism) (Hung et al., 2020; Kastenholz et al., 2018; Thanh & Kirova, 2018), but focused on categorizing the current attractions' experience from a static perspective. However, in the context of a city tour, travelers experience a series of attractions in one trip, leading to dynamic changes in their satisfaction due to the sequence in which they visit these attractions. By introducing the tourism fatigue concept to the experience economy, this paper discovered interconnections between these two concepts. Specifically, the sequence of the experiences types can increase or decrease travelers' satisfaction, depending on whether their tourism fatigue (especially psychology fatigue) is triggered. Combining the concepts of tourism fatigue with the experience economy framework enhanced the explanatory power of the experiential dimensions identified by Pine and Gilmore (1999). The four dimensions already explain a considerable proportion of a consequence variable (e.g. travelers' satisfaction, memories and intentions to recommend) (Hosany & Witham, 2010; Kastenholz et al., 2018; Mehmetoglu & Engen, 2011). By shedding light on the links between experience economy and tourism fatigue, the current study provides a dynamic perspective for investigating travelers' satisfaction. The study thereby provides the Pine and Gilmore model with more explanatory power and application value.

This study extends sequence effects to the tourism field. Although sequence effects have attracted considerable attention from the psychology and behavioral economics fields, and even from the service environment (Chase & Dasu, 2001; Dixon, Karniouchina, Rhee, Verma, & Victorino, 2014; Dixon & Verma, 2013), few studies have explored the sequence effects in tourism (Oppewal, Huybers, & Crouch, 2015; Zare & Pearce, 2018). As far as we know, only one study has explored the specific sequence effects of visiting tourism attractions, but focused on specific attractions in Iran (Zare & Pearce, 2018). In this study, a broader view is adopted by analyzing all city tour attractions. Attraction types are categorized into four experience dimensions based on travelers' participation and connections. By using this experience-based typology instead of describing specific attractions, this paper could draw conclusions regarding generic experience types.

7.2. Contributions for practice

This study's findings have various practical implications. Tourism marketers should consider the order in which attractions are visited when developing a travel planning strategy for a city tour. Such a city tour planning should highlight the various experience types instead of

just mentioning the attractions' geographical features. For example, to avoid affective/emotional fatigue, attractions that provide the same type of experience should not be visited sequentially. As suggested by Poulsson and Kale (2004), a successful experience should be novel and offer an element of surprise. Similarly, active-participation attractions should be visited after passive-participation ones to avoid motivation/needs fatigue. Furthermore, absorption attractions should follow immersion attractions during a city tour to alleviate cognitive fatigue.

Although some literature suggests that tourism marketers should always develop new attractions to maintain a destination's long-term attractiveness (Chen & Xiao, 2013), it can be argued that new attractions do not guarantee satisfaction. The findings suggest that providing various experiences that fulfill different levels of needs, rather than advertising new attractions, is key to attracting tourists. King (2002) argues that tourism marketers need to shift from promoting destinations to creating and promoting experiences. For example, novelty seeking should be satisfied by gaining new experiences, but doesn't necessarily mean visiting new attractions. Likewise, visiting new attractions may cause affective/emotional fatigue if such new attractions offer similar or the same experiences, since new experiences, rather than new places, are required to avoid affective/emotional fatigue. Nevertheless, methods like developing new features for existing attractions could work effectively by allowing new experiences and creating added value for travelers (Assaker, Vinzi, & O'Connor, 2011; Jang & Feng, 2007).

7.3. Limitations and further research

This research has its limitations. First, this paper limited each attraction to just one of the four experience dimensions. Nevertheless, one attraction is not necessarily related to just one dimension (Mehmetoglu & Engen, 2011). Oh et al. (2007), for example, argue that places (often) have elements of several dimensions; they may therefore not be clearly divided into four categories along the two axes. Given that this paper's main focus is attractions' sequence effects, the categorization is simplified based on their most salient characteristics/attributes. We do, however, suggest that future studies should consider all dimensions and their weights for each single attraction. Future research could complement our study by providing a more specific city tour path planning optimization; it could so by not only considering attractions' experience types, but also their diversities. Further, as mentioned in the discussion, it is difficult to investigate demographic factors' effects due to the data's lack of relevant information. Future studies could therefore collect data comprising more demographic information to investigate the individual differences' (e.g. gender and age) influence on the sequence effects in a city tour context.

This study introduced psychological sequence effects when visiting two successive city attractions. Future research may replicate the study by looking at sequence effects of more than two consecutive experiences. For example, sequence effects may be investigated between experiences reaching far into the past (e.g. previous days) as well as to experiences planned for upcoming visits (e.g. repeated city trips). Tourist segmentation may exert a moderating effect on attractions' perceived novelty and experiential sequence effects. Some tourists might adore certain types of experiences more than others (e.g. culture lovers who are striving for cultural attractions, such as museums and sites), hence, these tourists are less likely to become bored with successively visiting attractions that are of particular interest for them. Thus, we encourage to compare sequence effects between experience types among distinct tourist groups. Moreover, different databases might be joined to derive further in-depths insights. Inspecting travelers' written comments about visited attractions might help to explore specific patterns of travelers' enthusiasm or fatigue. Text mining that integrates topic modeling with sentiment analysis may be used to retrieve experiential insights from big data, revealing even more experiential dynamics in the city tourism context.

Author statement

Thorsten Teichert: Conceptualization, Data analysis, Methodology, Review & Editing, Haoye Sun: Conceptualization, Methodology, Original draft preparation, Christian González-Martel: Data collection, Data preparation.

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