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Co-creating animal-based tourist experiences: attention, involvement and memorability

Highlights

- Conceptualization of on-site co-creation experience
- Co-creation is an antecedent of attention and involvement in the animal-based experiences studied
- Application of the SEM technique shows the positive influence of antecedent constructs on experience memorability

Abstract

In this study co-creation, defined as a tourist's subjectively lived on-site experience involving actively participation and interaction, is found to enhance attention, involvement, and memorability. A conceptual model of on-site co-creation is proposed and empirically tested in the context of two experiences with dolphins in a marine life park. Results were analysed using SEM and reveal that co-creation significantly influences attention and involvement and also that the higher levels of attention and involvement generated are associated with memorability.

Keywords: Co-creation; active participation; interaction; attention; involvement; memorability

1. Introduction

Long lasting vivid memories are generally acknowledged as a desired outcome of tourism experiences (Campos, Mendes, Valle, & Scott, 2016; Kim, 2010; Neuhofer, Buhalis & Ladkin, 2012; Pine & Gilmore, 1999; Tung & Ritchie, 2011a). Recently, it has been suggested by tourism researchers that co-creation affects the memorability of the experience (Andrades & Dimanche, 2014; Bertella, 2014; Campos, Mendes, Valle & Scott, 2016; Hung, Lee & Huang, 2014; Prebensen, Vittersø, & Dahl, 2013a). The concept of co-creation has received wide recognition in the management and marketing literature (Cova & Dalli, 2009; Vargo & Lusch, 2008) and is gaining increasing attention from tourism scholars (Binkhorst & Den Dekker, 2009). In tourism research, co-creation has been advocated, discussed and empirically studied in diverse contexts, such as rural destinations (Kastenholz, Carneiro & Marques, 2012), nature- and animal-based experiences (Bertella, 2014; Mathisen, 2013), hospitality (Bharwani & Jauhari, 2013; Neuhofer, Buhalis, & Ladkin, 2013a), resorts (Kreziak & Frochot, 2011; Prebensen & Foss, 2011), destination experience networks (Binkhorst, 2007), customer-to-customer (Rihova, Buhalis, Moital, & Gouthro, 2013), and heritage tourism (Minkiewicz, Evans & Bridson, 2013).

The tourism literature characterizes co-creation as the tourist's active participation and interaction during an experience (Bertella, 2014; Binkhorst & Den Dekker, 2009; Campos, Mendes, Valle & Scott, 2015, 2016; Ek, Larsen, & Hornskov, 2012; Ihamäki, 2012; Mathisen, 2013; Mkono, 2012; Prebensen & Foss, 2011; Sfandla & Björk, 2012; Tan, Luh, & Kung, 2014). Active participation and interaction play an important role in attentional responses and involvement in experiences (Kuhl & Chun, 2014; Mathisen, 2013) and contribute positively to memorability (Chun & Turk-Browne, 2007; Kim, 2010). Both attention and involvement are considered intrinsically interwoven with the tourist experience (Andrades & Dimanche, 2014; Dimanche, Havitz & Howard, 1991; Ooi, 2010). However, little is known in tourism about the relation of co-creation and memorability, and particularly how active participation and interaction may facilitate memorability.

The present research addresses this gap, in the context of animal-based experiences, by empirically testing the influence of on-site co-creation on attention and involvement and the memorability of the experience. Theme parks, adventure, nature-

and animal-based tourism are increasingly popular (Buckley, 2009; Milman, 2008). Experiences with animals in the wild or semi-captivity settings (Burns, 2006) capture tourists' attention and activities involving proximity to animals, interplay, and sensory contact (e.g. through touching, feeding or playing) are part of a natural relationship (Holopainen, 2012). Such interactive experiences are appealing, exciting (Bulbeck, 2005), and memorable (Bertella, 2014; Mathisen, 2013; Moscardo & Saltzer, 2005).

Therefore *two* main research objectives are set for this study. The *first* objective is to test a model of the influence of co-creation on experience memorability, mediated by the tourist's attention and involvement. The *second* objective is to examine whether the constructs of the model present different magnitude depending on the level of co-creation. Two experiences involving animals characterized by different levels of co-creation were chosen for analysis: the *Dolphin Emotions Experience* (DEE) and the *Dolphin Show* (DS). The first is an encounter between participants and the dolphins in a pool, requiring from them an expected high level of active participation and interaction; the second consists of a show in which participants watch dolphins and trainers performing acrobatic behaviours.

2. Literature review and research hypotheses

2.1 Co-creation tourism experiences

Recent tourism research has highlighted the importance of activity, i.e. performing roles (Mathisen, 2013), doing things, and learning (Poulsson & Kale, 2004) in experiences. Pleasurable feelings emerge by means of performance of activities that engage people sensorially, physically, intellectually/culturally, emotionally and socially (Arnould & Price, 1993; Kastenholz et al., 2012; Morgan, Elbe & Curiel, 2009; Richards, 2011). Mansfeldt, Vestager and Iversen (2008) coined the term *performance turn* to indicate that tourists are no longer passive sightseers consuming sites in prescribed fashions (Ek et al., 2012) but are increasingly motivated by creativity, feelings of personal competence and achievement in face of challenge (Kastenholz et al., 2012), desire to learn through engaged observation of others belonging to the local culture and the experience environment (Mathisen, 2013; Prebensen & Foss, 2011; Richards, 2011), exploration and application of personal skills in the design, production and consumption of experiences (Hung et al., 2014; Mkono, 2012; Perkins & Thorns, 2001; Richards, 2011; Tan et al., 2014; Tan, Kung, & Luh, 2013; Wikström, 2008).

There is evidence of a growing interest in new kinds of tourism (Buhalis, 2001) and alternative gazes (Woodside & Martin, 2015) that involve enactment *in loco* (Mathisen, 2013), physical participation in nature, adventure, extreme sports and animal-based experiences (Bertella, 2014; Hung et al., 2014; Mathisen, 2013; Minkiewicz et al., 2013; Nordbø & Prebensen, 2015), or attendance at science, arts or crafts workshops (Richards & Wilson, 2006). Tourism has progressively evolved into *hands-on* experiences (Richards, 2011) requiring use and development of an array of tourist resources. Physical activity or physically challenging activities have been associated with the desire for experiencing nature (Bertella, 2014) and participating in sports or adventure events (Ihamäki, 2012; Minkiewicz et al., 2013; Nordbø & Prebensen, 2015), engaging in active play (Gyimóthy & Mykletun, 2004), mastering of skills and abilities (Morgan & Xu, 2009), conferring to *the tourist gaze* an active rather than passive “*from-afar*” meaning. Touristic performativity thus becomes an exercise of reflexivity grounded in a sensing and active body (Perkins & Thorns, 2001).

Minkiewicz et al. (2013) defined co-creation as the experience that is created by the customer through active participation in activities, engagement and personalization of the experience. Following a literature review, Campos, Mendes, Valle, and Scott (2015) suggested that on-site co-creation is “the sum of the psychological events a tourist goes through when contributing actively through physical and/or mental participation in activities and interacting with other subjects in the experience environment”. Mathisen (2013) found co-creation combines body and mind through the physical work involved in exploration, play and role-play during the experience activities. In a dog-sled race and a Northern Lights hunt, tourists performed roles of hunting heroes or dog-sled drivers. Ihamäki (2012) considered geocaching as an example of a transformative “learning by doing” experience embedded in skilled consumption and production. Geocaching comprises the dimension of play intertwined with physical exercise, studying and tactical thinking, in sum, the tourist active role and participation. Such active engagement leads to self-development and gaining new skills (Tan et al., 2014). Physical activities performed in adventure tourism, such as arctic trekking (Gyimóthy & Mykletun, 2004), philanthropic adventure activities (Coghlan & Filo, 2013) or hiking (Nordbø & Prebensen, 2015) are markers of engagement in play and playful role-enactment and expose the interconnectedness between the physical and mental dimensions of experiences. Minkiewicz et al. (2013) found that the consumer’s

active participation in performance of heritage activities involves co-production, engagement, and personalization through allowing tailoring of the experience to personal needs. More recently though, Prebensen, Kim and Uysal (2015) defined co-creation as the customer's physical and mental participation in the process of creation of the experience. One interesting fact noted in this definition is that it focuses on the *process* rather than on the consumption experience itself. In that study, the level of co-creation was assessed by the concepts of physical participation and interest as mental participation and it was concluded that co-creation has a moderator role in the relationship between the perceived value of the travel experience and satisfaction.

Social interaction is an important dimension of co-creation (Etgar, 2008; Prahalad & Ramaswamy, 2004; Yi & Gong, 2012) and also of major significance in the context of tourism (Andrades & Dimanche, 2014; Bharwani & Jauhari, 2013; Dong & Siu, 2013; Hjalager & Nordin, 2011; Kastenholtz et al., 2012; Kreziak & Frochot, 2011; Mehmetoglu & Engen, 2011; Obenour, Patterson, Pedersen, & Pearson, 2006; Rääkkönen & Honkanen, 2013; Tan et al., 2013). This is because tourism is a system composed of the tourist, other people and the varied environments pertaining to the overall travel experience, and characterized at any stage by a high level of interaction (Binkhorst & Den Dekker, 2009; Choo & Petrick, 2014; Neuhofer, Buhalis & Ladkin, 2013b; Ooi, 2003). Interactions form the set of social relations tourists develop before, during and after the travel experience (Binkhorst & Den Dekker, 2009; Mehmetoglu & Engen, 2011). Encounters between relatives and/or friends, other visitors, company's staff, and residents are elements, sources and influencers of the tourism experience (Kastenholtz et al., 2012; Minkiewicz et al., 2013; Mossberg, 2007; Choo & Petrick, 2014; Walls et al., 2011). As tourism evolves towards shorter supply chains (King, 2002) and a more participated role of the tourist (Choo & Petrick, 2014; Ihamäki, 2012), direct interactions become increasingly important. Recently, interaction with animals was found to contribute to experience memorability due to the animals' relational and emotional capabilities (Bertella, 2014).

Interactions are core aspects of tourism experiences because they fulfil tourists' social-psychological needs, namely of experiencing positive feelings and emotions (Bigné & Andreu, 2004; Choo & Petrick, 2014). Moreover they stimulate creativity, exploration and play (Ihamäki, 2012; Kastenholtz et al., 2012; Mathisen, 2013), support self-determination and learning (Binkhorst & Den Dekker, 2009), and induce feelings of

comfort derived from the supportive presence of others (Saxena, 2006). Consequently, tourism experiences have an affective (Choo & Petrick, 2014; De Rojas & Camarero, 2008) as well as a social dimension and carry emotional and social meaning because closely connected to tourists' needs and motivations towards pursuing pleasure in socializing with others (De Rojas & Camarero, 2008; Kreziak & Frochot, 2011), sharing enjoying and playful moments with them (Mathisen, 2013), though realizing the transient nature of relationships (Cutler & Carmichael, 2010). The quality of social interaction is found to influence satisfaction with the vacation experience (Choo & Petrick, 2014; De Rojas & Camarero, 2008; Huang & Hsu, 2009), suggesting that interactions need to be "carefully designed, integrated and managed to ensure an emotional connection, loyalty and satisfaction" with brands and destinations (Lugosi & Walls, 2013:52).

2.2 Attention

The study of attention is found in many academic fields, such as cognitive and social psychology (Bodenhausen & Hugenberg, 2009; Mundy & Newell, 2007), neuroscience (Sarter, Givens, & Bruno, 2001), education (Sylwester & Cho, 1993), economics (Brooks, 1996), management (Cho & Hambrick, 2006; Yadav, Prabhu, & Chandy, 2007) and visitor studies (Bitgood, 2010). In tourism attention remains largely under-researched with the exception of Ooi (2010), who argued for a managerial approach to tourism experiences through application of the psychology of attention. Management of attention is pivotal in getting tourists engaged in co-creation (Andrades & Dimanche, 2014).

Attention is the psychological phenomenon of processing information originating from the external (sensations) or internal (memories and thoughts) environment (Sternberg, 2006) and influences perception, memory and learning (Dayan, Kakade, & Montague, 2000). It comprises mental activity (such as awareness, information processing, reflection, mentalizing), bodily reactions (e.g. auditory zoom in, gaze and movements of the eye, body orientation or locomotion, gestures), and neural activity (Clark, 1997). Davenport and Beck (2001) define attention as *focused mental engagement* on a particular item among all those that we are aware of in the environment, whether external or internal (Ingram, 1990).

In face of the overload of stimuli and a finite information processing capacity (Davenport & Beck, 2001, Dijksterhuis & Aarts, 2010; Huberman & Wu, 2008), attention is directed towards those aspects of the environment which are perceived as particularly relevant in a concrete situation, therefore influencing behaviour and choice (Ocasio, 2011). Attention manifests itself overtly or covertly, as orienting of attention can be performed without observable head or eye movement (Posner, 1980).

The difference between levels of attentional effort has been highlighted by distinguishing *focus*, i.e. the action of directing the mind and senses to a particular stimulus and singling it out, ignoring by that reason competitor stimuli, from *concentration*, characterized by superior mind-processing effort and longer time span, habitual in the process of holding attention (Bodenhausen & Hugenberg, 2009). Focused attention occurs for no more than a few seconds and involve shallow cognitive processing (Bitgood, 2010) however it has also been found highly effective in the stimuli selection process (Yantis & Johnston, 1990). Changes in attentional effort influence action and choice, and consequently their outcomes. For instance, individuals actively engaged in activities are more attentive to the experience environment because active engagement requires strategic allocation of attention (Kuhl & Chun, 2014), and also they demonstrate better recall (Moscardo, 1996; Patterson & Bitgood, 1988). Similarly, research in learning contexts has found that environments which stimulate active participation and cooperative interaction between individuals lead to better performance in terms of maintaining interest and attention (Cavanagh, 2011). Accordingly, a first research hypothesis is proposed:

H1. Co-creation is expected to have a positive effect on the tourist's level of attention

2.3 *Involvement*

Involvement is a prominent construct in the marketing and consumer behaviour fields due to its recognised power to explain and predict changes in the behaviour and attitudes of consumers (Hwang, Lee & Chen, 2005; Kyle, Kerstetter & Guadanolo, 2002). It has contributed to understanding and predicting buying behaviour and decision-making (Mittal 1989), information searching and processing (Carneiro & Crompton, 2009), loyalty to brands (Michaelidou & Dibb, 2008) and product identification. Involvement is defined the *perceived personal relevance* individuals

experience in relation to objects or consumption contexts (Celsi & Olsen, 1988), ‘the (...) perceived *interest* consumers attach to the acquisition, consumption, and disposition of a good, service or an idea’ (Gross & Brown, 2008:1141), or ‘the degree to which consumers engage in different aspects of the consumption process’ (Gursoy & Gavcar, 2003:907). Thus involvement may be felt towards an activity, an issue, a product, a decision or situation, an advertisement (Bezençon & Blili, 2010) or even a particular spatial context, such as an art museum (Slater & Armstrong, 2010). Some researchers have distinguished between *enduring* and *situational* involvement (Michaelidou & Dibb, 2008; Richins, Bloch & McQuarrie, 1992) connecting the first with stable motivations and personal relevance towards objects or activities rooted in attitude structures and the second with personal relevance felt towards transitory, contextual stimuli (Celsi & Olson, 1988; Havitz & Mannell, 2005).

Conceptualization of involvement was developed and applied also in the leisure, recreation, and tourism fields (Havitz & Dimanche, 1990; Dimanche, Havitz & Howard, 1991, 1993; Jamrozy, Backman & Backman, 1996; Havitz & Dimanche, 1997, 1999; Gursoy & Gavcar, 2003; Hwang et al., 2005; Gross & Brown, 2006, 2008; Carneiro & Crompton, 2009). Involvement is a central component of the leisure experience (Dimanche et al., 1991), and is linked to tourism products (Chang & Gibson, 2011), activities/experiences (Josiam, Kinley & Kim, 2005; Gross & Brown, 2006) and destinations (Gursoy & Gavcar, 2003; Carneiro & Crompton, 2009). In tourism, research found that highly interested and satisfied tourists with experiences are most likely to be opinion leaders (Jamrozy et al., 1996). Involvement has been connected to lifestyle (Gross & Brown, 2006) and place attachment (Hwang et al., 2005; Gross & Brown, 2006, 2008), and international tourists’ destination knowledge and choice (Gursoy & Gavcar, 2003). For tourists visiting recreational parks, dimensions of involvement are importance and enjoyment, self-expression and sign, risk probability and risk consequence (Hwang et al., 2005).

In tourism, involvement has been studied both as an antecedent (e.g. Kim, Scott & Crompton, 1997; Gahwiler & Havitz, 1998; Kyle & Chick, 2002; Hwang et al., 2005) and as a consequent variable (e.g. Madrigal, Havitz & Howard, 1992; Zalatan, 1998; Jang, Lee, Park & Stokowski, 2000; Kyle, Absher, Hammitt & Cavin, 2006). Most researchers have assumed it as *antecedent* of behaviour (Kim et al., 1997), inducing psychological responses (Hwang et al., 2005). Involvement modifies satisfaction or

perceptions of quality (Clements & Josiam, 1995; Hwang et al., 2005), influences individuals' knowledge about a destination (Gursoy & Gavcar, 2003) and how strongly they are attached to it (Gross & Brown, 2008). The degree of involvement affects intention to participate in leisure and recreational activities and travel (Williams, 1984; Kim et al., 1997; Kyle et al., 2006; McGhee et al., 2003; Park, Yang, Lee, Jang, & Stokowski, 2002), to repeat an experience (Kyle & Chick, 2002), to engage in shopping (Josiam et al., 2005) and various types of information search behaviour, e.g. decision to search or strength of search (Carneiro & Crompton, 2009), to use the internet for search and express preferences towards information contents (Cai, Feng, & Breiter, 2004).

Several studies have studied the influence on involvement of variables such as socio-demographic characteristics (Madrigal et al., 1992; Zalatan, 1998) and motivation. Motivation is consistently found to influence involvement with destination choice, activities undertaken and perceived value (Josiam, Smeaton & Clements, 1999; Prebensen, Woo, Chen & Uysal; 2012; Prebensen, Woo & Uysal, 2013b). Prebensen et al. (2013a) found that active participation and involvement in an experience leads to increased value. In this regard, the tourist own resources and behaviours, i.e. skills and knowledge, physical, social and cultural resources, act as influencers of the tourist involvement in the conception and design of their experiences. Mathisen (2013) also found tourists more interested in nature had more pleasurable experiences in a natural setting. In this study interest in nature was raised through exploration, creating a stage to play and enact roles, and providing new knowledge through these activities. These findings lead to the second research hypothesis:

H2. Co-creation is expected to have a positive effect on the tourist's level of involvement

2.4 Memorability

Delivery of memorable experiences lies at the core of the experience economy (Pine & Gilmore, 1999; Oh, Fiore & Jeoung, 2007) and tourism creates experiences (Buhalis & O'Connor, 2006; Ihmäki, 2012; Ooi, 2010). The need for memorable tourism experiences is generally acknowledged (Morgan & Xu, 2009; Pizam, 2010; Tung & Ritchie, 2011a) and ability to deliver them is frequently related to organization and destination distinctiveness and competitive advantage (Kim, 2010; Kim, Ritchie &

McCormick, 2012; Morgan & Xu, 2009; Neuhofer et al., 2012; Oh et al., 2007; Poulsson & Kale, 2004; Tung & Ritchie, 2011a). Vivid recollections of activities, encounters, spaces and destinations are considered drivers of future consumption and travel to destinations (Braun-LaTour, Grinley & Loftus, 2006; Kim, 2010; Lehto, O’Leary, & Morrison, 2004; Marschall, 2012; Wright, 2010). These recollections are seen as filtering mechanisms influencing attitudes in a positive or negative way, although organizational and destination success depends on positive memory formation (Oh et al., 2007). Importantly, prediction of tourist behaviour depends not on the *lived* but on the *recollected experience* (Larsen, 2007; Wirtz, Kruger, Scollon, & Diener, 2003). Travel involves hedonic consumption, pleasure seeking, and positive emotions and therefore generates lasting memories which are then available to recurrent reminiscence and sharing (Andrades & Dimanche, 2014; Fesenmaier & Gretzel, 2004; Ma et al., 2013, Scott, Laws, & Boksberger, 2009).

Memorability is an important aspect of tourism experiences (Pikkemaat & Schuckert, 2007) as memory belongs to the *essence* of an experience (Poulsson & Kale, 2004) and memories of leisure experiences are likely to remain rich, vivid and detailed (Tung & Ritchie, 2011b), and never age (Cary, 2004; Wright, 2010). Memorable experiences have been described as “*special*” and “*spectacular*” (Tung & Ritchie, 2011a), “*exciting*” (Ihamäki, 2012), “*embodying superlative quality*” (Bharwani & Jauhari, 2013), “*easier to recall*” (Kim, 2010), “*unforgettable*” (Wikström, 2008). Prior research has concentrated on finding dimensions of memorable experiences (Kim, 2010; Kim et al., 2012; Tung & Ritchie, 2011a) or assessing the extent to which they were memorable (Dong & Siu, 2013; Hung et al., 2014). In this paper we seek to examine *antecedents* of memorability (Morgan & Xu, 2009: 221) and for the present purposes, memorability is understood and measured *subjectively* as the tourist’s evaluation of the recalled experience in the short term and expected to have long term memory effects.

2.4.1 The concept of memorability

2.4.1.1 The objectivist perspective

We may find in the literature sources objectivist and subjectivist approaches to the concept of memorability. The Oxford English Dictionary (1998) defines *memorability*

as the quality of an object, event, or person being memorable or worth remembered, thus presenting an objectivist point of view on memorability. In the psychology and neuroscience literature this stance is also found: memorability is an intrinsic property of things (e.g. as images, scenes or faces, Khosla, Bainbridge, Torralba & Oliva, 2013) that makes them to be easily recalled, in detail, in the short or the long term and across individuals (Anderson & Shimizu, 2007; Khosla et al., 2013; Khosla, Xiao, Torralba & Oliva, 2012; Huh, Kim, Bobba, Bashir & Beznosov, 2015; Mancas & Le Meur, 2013; Reisberg, Heuer, McLean & O'Shaughnessy, 1988; Saket, Endert & Stasko, 2016; Schraagen & Van Dongen, 2005).

2.4.1.2 The subjectivist perspective

In other studies however, memorability is considered *relative to a subject*. According to the subjectivist viewpoint, it refers (i) a personal ability to maintain and recall information (Saket et al., 2016) or (ii) “the subjective feeling that one will remember in the future” (Zimmerman & Kelley, 2010) vividly, confidently and accurately (Rimmele, Davachi, Petrov, Dougal, & Phelps, 2011). So two senses of memorability are identified under this perspective: on the one hand, memorability as the performance of memory itself and the degree to which that performance is accurate (Bless, Strack & Walther, 2001; Rimmele et al., 2011), and, on the other, memorability as the feelings, judgements and predictions people develop about how memorable events will be. These are related to lay assumptions people hold about phenomena and memory processes, such as the contribution of saliency to memorability, or the memory encoding conditions under which they were perceived, or about personal memory capacities (Bless et al., 2001). In this latter sense for instance, experiences, events or objects are considered memorable if perceived by the individual as *distinctive* or *salient* (Hosie & Milne, 1995; Bless et al., 2001) and potentially portrayed through vivid and detail-rich reports (Anderson & Shimizu, 2007; Reisberg et al., 1988). This is called in the literature *subjective memorability* and is considered important in guiding individual behaviour towards memory monitoring (Zimmerman & Kelley, 2010) or to explain the degree to which individuals are sensitive to the influence of others (Bless et al., 2001).

2.4.1.3 The measurement of memorability

To measure memorability, researchers use either or both subjective and objective measures (Arnold, 2011). Objective measures rely on behaviour-based evidence, such

as ratings, scores and tests of performance (Schraagen & Van Dongen, 2005), and are intended to evaluate the accuracy of memory (memory performance) while subjective measures depend on individuals' judgements or beliefs about how memorable an event or thing is or will be (Bless et al., 2001). Some research draws attention to the lack of convergence between subjective and objective memorability evidence (Rimmele et al., 2011) however other studies indicate there is high correlation between objective and subjective measurements of memorability (Schraagen & Van Dongen, 2005).

2.4.2 Attention and memorability

Psychology and neuroscience have begun to unravel the dynamic interconnectedness of attention and memory processes (Cowan, 2011; Fournie, 2008). Memory is a collective name for a set of processes comprising encoding, storage, and retrieval of information which apply to the short or the long term (Braisby & Gellatly, 2012; Chun & Turk-Browne, 2007; Paller & Wagner, 2002). Evidence from these fields indicates that attention is a factor influencing memorability because encoding for immediate (Fournie, 2008) or posterior recollection requires application of attentional resources and selection (Kuhl & Chun, 2014; Scerif & Wu, 2014; Sternberg, 2006). It is also accepted that episodic memory depends on externally oriented attention (Kuhl & Chun, 2014). Good short term memorability and successful recollection in the long term (Chun & Turk-Browne, 2007; Kuhl & Chun, 2014; Schraagen & Van Dongen, 2005) depend on the strategic allocation of attention, and, in turn, the ability to allocate it effectively is impacted by active physical and mental engagement (Kohl III & Cook, 2013). Correspondingly, in the context of this research, a third hypothesis is:

H3. The tourist's level of attention is expected to have a positive effect on the memorability of the experience

2.4.3 Involvement and memorability

Involvement impels the individual's physical, mental, emotional, social, or spiritual engagement in an experience, leading to increased satisfaction and memorability (Andrades & Dimanche, 2014). Kim (2010) found that involvement, characterized by motivation and interest in experience, led to recollection and memory vividness. Kim, Ritchie and McCormick (2012) found that involvement, defined as personal relevance, contributes to memorability. Thus:

H4. The tourist's level of involvement is expected to have a positive effect on the memorability of the experience

2.4.4 Experience co-creation and memorability

In tourism, researchers have linked tourism experiences with specific consequences and in particular with enhanced memory, vividness or memorability, which can be either positive or negative (Oh et al., 2007). Oh et al. (2007) explored an application of Pine & Gilmore's (1999) framework of the experience realms to the lodging sector and assessed the memorability of the tourism experience based on the positivity of outcomes ("wonderful memories", "positive things") and judgements about the expected durability of the memories of the experience, thus approaching the concept of memorability from a subjectivist perspective and using subjective measures. And a recent study conducted by Hung, Lee & Huang (2014) on creative tourism explored memorability as an outcome of the creative experience and to what extent subjective memorability would be a predictor of the intention to repeat it. Memorability was measured using a single item based on the judgement on the degree of memorability of the experience (low versus high) and the study's findings reported the full mediating contribution of memorability to the intention of repeating the creative experience.

Researchers have also sought what makes tourism experiences memorable (Tung & Ritchie, 2011a) and to identify and measure the components of this memorability (Kim et al., 2012). However to date there is no empirical research examining the relation between co-creation experiences and experience memorability (Campos et al., 2016). Dong et al. (2008) have examined the influence of co-creation behaviour on perception of value of future co-creation experiences and also on satisfaction with service recovery. Grisseman and Stokburger-Sauer (2012) studied the effect of customers' co-creation on satisfaction with the service company. The impact of social interactions on memorability (Bharwani & Jauhari, 2013; Hung et al., 2014) indicates the importance of interaction with staff and instructors involved in the experience. Prebensen et al. (2013a) suggest that the tourist's active participation and interaction with other people leads to increased memorability and value for the experience. Social interaction contributes to experience meaning and thus to memorability (Andrades & Dimanche, 2014). Campos et al. (2016) found support for a relationship between co-

creation experiences and higher memorability. As a result, two hypotheses will be investigated:

H5. Co-creation is expected to have a positive effect on the level of memorability of the experience through **attention**

H6. Co-creation is expected to have a positive effect on the level of the memorability of the experience through **involvement**

Figure 1 shows the conceptual model adopted in this study. In Figure 1, continuous lines represent hypotheses stating direct effects (**H1**, **H2**, **H3** and **H4**) while dashed lines show indirect effects (**H5** and **H6**).

Fig. 1. Conceptual model

3. Research methodology

3.1 Context and study population

The setting of this study is *Zoomarine*, a major theme park focused on marine wildlife located in Albufeira in the Algarve region of Portugal. *Zoomarine* provides a wide range of opportunities for educational, leisure, entertainment, and service experiences, combined with attractions related to marine animal life for both adults and children. This park was chosen as the setting of this study and considered an ideal location for testing the hypotheses as it offers hedonic consumption experiences (Bigné Andreu, & Gnoth, 2005; Ma et al., 2013) with varying degrees of visitor active participation and interaction.

National and international tourists over 18 years old attending two attractions offered by Zoomarine, the *Dolphin Show* (DS) and the *Dolphin Emotions Experience* (DEE) were considered to participate in the present study. The *Dolphin Show* consists of a 30-minute show performed before an audience by a team of trainers enacting acrobatic behaviours with dolphins. The *Dolphin Emotions Experience* involves participants swimming and playing with the animals in a pool for one and a half hours. This required active participation and direct interaction with the dolphins, trainers, instructors, and a small number of other participants in an isolated area.

3.2 Data Collection

In order to accomplish the research's objectives, a survey was implemented to collect the data. However, to help with the design of the questionnaire and as preparation for the main study, both in-depth interviews and a pilot survey have been conducted beforehand, as described below.

3.2.1 Preliminary Study

3.2.1.1 In-depth Interviews

In-depth interviews were performed with participants in the *Dolphin Emotions Experience* in order to clarify key constructs of the research and generate items to develop the quantitative data collection instrument (Dong & Siu, 2013; Leech & Onwuegbuzie, 2007). This context was selected for the qualitative study based on two criteria: the location, as this experience takes place in a secluded area with appropriate conditions to perform in-depth interviews; and because swimming with dolphins involves a high level of active participation and interaction. Themes explored in the interviews were *active participation*, *interaction*, *attention*, and *memorability*. The construct of *involvement* was not included in the interviews as measurement scales for this construct were available (Havitz & Dimanche, 1997). Purposive sampling was adopted (Kensbock & Jennings, 2011; Morse, Olson, & Spiers, 2002; Patton, 1990; Ritchie & Lewis, 2003) and during May 2014 interviews with 22 participants were conducted immediately after the experience to allow rich and vivid information to be collected.

Interviews revealed that active participation was pleasurable and highly valued by tourists. Participants described themselves as actors, playing the roles of temporary animal trainers, gymnasts or trained swimmers executing planned behaviours while enjoying funny and playful moments with the dolphins, getting emotionally involved with them through overt affective behaviours (kissing, caressing). They distinguished between being spectators of the experience and living it as active participants. Actively participating in the experience involved physical effort. Participants valued interaction with family and friends, other visitors, specialized staff and dolphins. The experience was recalled as interaction-intense because of the dolphins. Visitors spontaneously characterized dolphin facial features as almost human, and saw them as able to develop close relationships with people, and thus more than “mere animals” or stage props. For these participants, attention meant focus and concentration on mental and physical activity and was enhanced by playing a role. Participants characterized encounters with the dolphins as “unforgettable”, “enduring”, an “everlasting memory”, and something “I’ll never forget”. They could easily recollect events, describing them enthusiastically in detail and stating they could clearly picture in mind the moments of closest proximity with the dolphins. The most vivid and detailed memories referred to sensations (tactile, auditory, visual...) and the particular emotional states (happiness, joy, delight, excitement) when participants were in the water. These results provided support for the research hypotheses and helped design the questionnaire.

3.2.1.2 Pilot Survey

A questionnaire composed of three sections was then prepared. The first section addressed visitor motivation, the second asked questions specific to the constructs of this study, and the last asked for respondents’ sociodemographic data (gender, age, professional status, educational level and country of origin). The instrument was first developed and written in English and afterwards translated into Portuguese, back-translated and then re-translated to ensure comparability of data between the English and Portuguese versions of the questionnaire (Harkness, 2003). The items included in the provisional questionnaire derived from the qualitative interviews and the literature review, but were also informed by opinions of experts acquainted with the research’s themes (see Table 1 further below).

The experimental version of the survey was performed with the tourists visiting *Zoomarine* during June and July 2014. The application of this was considered important to assess question formulation and simplicity of language (Balnaves & Caputi, 2001), to evaluate the layout and length of the questionnaire, and to refine scales, if needed, to measure the constructs. The internal reliability of the scales was assessed in this stage using Cronbach's alpha (Hair, Black, Babin, & Anderson, 2006). The results for this measure showed that the alphas of all constructs ranged from 0.70 to 0.93, matching or exceeding the cutoff of 0.70 (Hair et al., 2006).

3.2.2 Main Study

3.2.2.1 Measurement of the research's constructs

The questions used in the survey were adapted to the *Zoomarine* experiences involving dolphins. **Co-creation** was measured with **four** items based on the concepts of physical and mental active participation and interaction with experience subjects (Campos et al., 2016). A total of **six** items were used to measure **attention** following a combination of behaviours related to focus and concentration (Bitgood, 2010; Sternberg, 2006). The set of **nine** items belonging to **involvement** were derived from prior research which has extensively tested and adapted Laurent and Kapferer's (1985) CIP scale. This construct was assumed as multidimensional and measured using items associated with the three dimensions of *interest* (or *importance*) *pleasure* and *sign value*. The selection of dimensions for analysis is based on the assumption that interest, pleasure and sign value are key dimensions of the construct in the context of leisure and tourism activities because these are associated with hedonic consumption where self-expression becomes relevant to the individual (Dimanche et al., 1991). In this study no assumption was made as to a difference between enduring and situational involvement considering that conceptual overlapping between the two results in common measures (Havitz & Mannell, 2005). **Memorability** was measured with six items related to short- and expected long term memory effects, covering psychological processes linked to vividness, such as easiness of recollection and perceived detail recollection (Reisberg et al., 1988), and also the subjective feelings about the persistence of memories (Oh et al., 2007). As literature establishes that memorability applies to events experienced as positive or negative (Reisberg et al., 1988; Oh et al., 2007), the items used in this study to measure memorability did not include a valence in the statement - and contrary to Oh

et al. (2007) which used two items to measure the *positive* quality of memorability. Instead, in this study the measurement of memorability focused only on elements of the experience perceived as memorable (sensations, feelings or external events). All constructs were assessed through 5-point Likert-type scales using the anchors (1) “strongly disagree” to (5) “strongly agree”.

Table 1
Constructs, definitions and literature sources

Constructs	Construct definition	Literature source
Co-creation	The tourist’s subjectively lived experience by contributing with physical and/or mental participation in activities and interaction with experience subjects	Adapted from Campos et al. (2015)
Attention	The tourist’s focusing and concentration on a specific item of the experience	Adapted from Campos et al. (2016); Bitgood (2010)
Involvement	An unobservable state of motivation, arousal or interest toward a recreational activity or associated product, evoked by a particular stimulus or situation, and which has drive properties	Havitz & Dimanche (1997)
Memorability	The tourist’s subjective evaluation of the recalled experience relative to short- and expected long-term memory effects (vividness and durability)	Adapted from Campos et al. (2016), Oh et al. (2007) Reisberg et al. (1988)

3.2.2.2 Implementation of the survey

The questionnaire used in the survey was applied to respondents who chose to visit *Zoomarine* during the summer season of 2014 (August and September months) and participated *either* in the *Dolphin Show* (DS) or the *Dolphin Emotions Experience* (DEE). The questionnaire was administered at various assigned days and time, and respondents were randomly invited to participate in the study. After agreeing they were informed of the study’s objectives and a signed consent form was obtained. The questionnaires were distributed immediately after the experience took place and collected as soon as they were completed. A total of 385 fully completed questionnaires were collected, validated and included in the analysis. Of the total sample, 202 tourists attended the *Dolphin Show* and 183 participated in the *Dolphin Emotions Experience*.

4. Results

4.1 Sample profile

The socio-demographic characteristics of the total sample are shown in Table 2. About half of the total respondents are male and the other half female. The mean age is 36 years-old. Approximately 80% of the respondents were employed, 14.3% reported

they were students, 3.1% domestic duties, 2.3% unemployed, 2.1% retired and 0.3% declared other occupations.

Table 2
Sample demographics

	Sample (%) (n= 385)	
Gender	N	%
Male	202	47.5
Female	183	52.5
Age (mean: 36; sd: 11.4)		
< 25	91	23.6
26-35	89	23.1
36-45	126	32.7
46-55	63	16.4
56+	16	4.2
Education		
Primary	7	1.8
Secondary	161	41.8
Higher	217	56.4
Occupation		
Employed	300	77.9
Domestic duties	12	3.1
Student	55	14.3
Retired	8	2.1
Unemployed	9	2.3
Other	1	0.3
Country of origin		
Portugal	175	45.5
UK	140	36.4
Netherlands	22	5.7
Spain	12	3.1
France	10	2.6
Germany	9	2.3
Other	17	4.4

Some 56.4% held higher education degrees, 41.8% completed secondary education and 1.8% completed primary level education. Some 45.5% of the sample were Portuguese and 36.4% were from the United Kingdom. Other nationalities were less represented: Netherlands (5.7%), Spain (3.1%), France (2.6%), Germany (2.3%), and 4.4% from other countries.

4.2 Exploratory factor analysis

Prior research on involvement extensively corroborates its multidimensionality (Gross & Brown, 2006; Jamrozy et al., 1996; Kyle et al., 2002). However as multifaceted scales are claimed to be more susceptible to operationalization difficulties due to the larger number of items needed to measure a construct, it is recommended to first conduct analyses in order to identify the dimensions more likely to be most useful in a given context (Carneiro & Crompton, 2009). Hence, an exploratory factor analysis (EFA) was performed preceding the SEM analysis, to determine possible sub-dimensions of the construct based on patterns of correlations among the items. The analysis was conducted using the principal factoring extraction method with varimax rotation (Hair et al, 2006). The scree plot, the Kaiser's criterion, the eigenvalues, the percentage of explained variance, the item loadings and communalities were observed in order to determine the most adequate factor solution. One item with loading lower than 0.4 in all factors was eliminated. The results for the final two-factor solution are reported in Table 3. The two factors explain 70.24% of the total variance and have eigenvalues higher than 1. This two-factor solution is also in accordance to the readings provided by the scree plot and the communalities of the eight items ranged from 0.60 and 0.87, indicating that the variability of each original item is well captured by this factorial solution. Cronbach's alpha for the two factors are higher than 0.85 suggesting high levels of internal consistency. Findings of this study are consistent with previous research on involvement, according to which interest and pleasure in the context of leisure and tourism become synonymous (Dimanche et al., 1991) and accordingly items related to interest and pleasure merged into one factor. The final two factors were labelled as *Pleasure/Interest* and *Sign value*. These sub dimensions are in accordance with those found by Madrigal et al. (2002).

Table 3
Underlying dimensions of "involvement"

Involvement Factors and items	Factor loading	Variance explained	Cronbach's alpha
<i>F1 Pleasure/Interest</i>		48.10%	0.86
Inv 1. It gives me pleasure to participate in this experience	0.84		
Inv 2. Participating in this experience is like giving a gift to myself	0.77		
Inv 3. This experience is somewhat of a pleasure to me	0.82		
Inv 4. I attach great importance to this experience	0.78		
Inv 5. One can say this experience interests me a lot	0.78		
<i>F2 Sign value</i>		22.14%	0.85
Inv 6. You can tell a lot about a person by whether or not he/she chooses to have this experience	0.86		
Inv 7. This experience gives a glimpse of the type of man/woman I am	0.92		
Inv 8. This experience tells a little bit about you	0.82		

4.3 Testing the conceptual model and the research hypotheses

The proposed model linking the constructs of co-creation and memorability, through the two constructs of attention and involvement, was estimated and tested using a SEM procedure employing the software AMOS Graphic 21. The most commonly used estimation methods in SEM require that data follow a multivariate normal distribution. In our study, all items are ordinal and report absolute values for skewness and kurtosis lower than 1 and 3, respectively. Moreover, the coefficient of multivariate kurtosis equal 5.72. Previous studies show that only values higher than 2 and 7 for skewness and kurtosis produce biased SEM estimates using the maximum likelihood estimation method (Finney & Distefano, 2006). Prior testing the research hypotheses, the overall model fit was assessed which was then followed by an evaluation of the measurement model and structural model.

4.3.1 Overall model fit

Results at this level show that the model reports an acceptable overall fit. Regarding absolute overall fit, a nonsignificant χ^2 value would be desirable. In the present case, the χ^2 value (681.31; $p < 0.01$) is statistically significant, which is an expected and not problematic result given the large sample size (Anderson & Gerbing, 1988). However, other measures of fit, at incremental and parsimonious levels, suggest an acceptable fit: RMSEA = 0.07, ECVI = 2.13 and RMR = 0.09. In fact, values for the RMSEA lower than 0.08, for the ECVI lower than 5 and low values for RMR are indicative of acceptable fit. Moreover, other indexes that ranges from 0 to 1, with 1 indicating perfect fit, also report good results: GFI = 0.87; NFI = 0.91; RFI = 0.89; IFI = 0.94; TLI = 0.93 and CFI = 0.94.

4.3.2 Measurement model fit

An adequate measurement model fit is necessary before the assessment of the structural relations and consequently of the research hypotheses. Reliability and validity are the key concepts in evaluating the measurement model. Co-creation is measured by three items related to the concept of active participation (roleplay, play and physical activity) and one item to the concept of interaction (direct contact)). An attempt at using the two concepts separately was found to compromise discriminant validity. Table 4

presents the reliability of the latent constructs using the final items. Firstly, all alpha coefficients and composite reliability (CR) coefficients are high and exceed the recommended level of 0.7 (Bagozzi & Yi, 1988). Additionally, the average variance extracted (AVE) of the five constructs surpasses the threshold value of 0.5. These results suggest that the indicators of each constructs are strongly related and measuring the same latent variable.

Table 4
Results for the measurement model

Constructs and items	Mean Overall (Experience/Show)	Loading	Cronbach's alpha	CR	AVE
<i>Co-creation</i>	2.77 (4.49 /1.20)		0.97	0.92	0.75
CC1. In this experience I directly interacted with the dolphins	2.88	0.95			
CC2. In this experience I've been able to act as if I were a dolphin trainer	2.50	0.83			
CC3. In this experience I had a great play time with the dolphins	2.85	0.96			
CC4. In this experience with the dolphins I have been physically active	2.83	0.96			
<i>Attention</i>	4.07 (4.55 /3.64)		0.88	0.90	0.51
ATT1. I talked with others about the learning materials and presentations	3.97	0.50			
ATT2. I concentrated on my own behaviours and interactions with the dolphins	3.91	0.84			
ATT3. I listened carefully the educator/trainer	4.19	0.73			
ATT4. I was completely aware of my bodily sensations and sensory stimuli	3.96	0.82			
ATT5. I was conscious of my own emotions and thoughts	4.09	0.88			
ATT6. I often discussed with others the on-going experience	4.34	0.76			
<i>Involvement</i>					
<i>F1. Pleasure/Interest</i>	4.25 (4.63 /3.92)		0.86	0.91	0.67
INV1. It gives me pleasure to participate in this experience	4.50	0.74			
INV2. Participating in this experience is like giving a gift to myself	4.17	0.72			
INV3. This experience is somewhat of a pleasure to me	4.36	0.81			
INV4. I attach great importance to this experience	4.12	0.84			
INV5. One can say this experience interests me a lot	4.13	0.72			
<i>F2 Sign value</i>	3.04 (3.28 /2.83)		0.85	0.84	0.63
INV6. You can tell a lot about a person by whether or not he/she chooses to have this experience	2.92	0.73			
INV7. This experience gives a glimpse of the type of man/woman I am	2.99	0.96			
INV8. This experience tells a little bit about you	3.21	0.76			
<i>Memorability</i>	4.17 (4.56 /3.84)		0.88	0.90	0.61
MM1. Interaction with the dolphins is	4.64	0.52			

something unforgettable		
MM2. I have strong images of my own behaviours and interactions that will persist	3.93	0.77
MM3. The learning experience with the educator/trainer will remain in my memory	4.06	0.65
MM4. I can describe in detail my bodily sensations and the sensory stimuli	3.94	0.79
MM5. I'll always remember my own emotions and thoughts	4.09	0.83
MM6. The overall experience setting will be an everlasting memory	4.38	0.75

The convergent validity of each measurement scale was examined by observing each loading's magnitude and statistical significance. All loadings range from 0.50 and 0.96 and report a t value significant at the 0.01 level (all $p = 0.00$) (Table 5). To assess the discriminant validity, the AVEs of the constructs were compared with the correlations between the constructs (Fornell & Larcker, 1981). Table 5 shows that the squared root of each AVE, in the principal diagonal, surpass the correlation between each pair of variables, therefore providing support for the discriminant validity between the latent constructs.

Table 5
Correlations and squared roots of the AVEs

Constructs and items	1	2	3	4	5
1. Co-creation	0.87				
2. Attention	0.61	0.71			
3. Inv1. Pleasure/Interest	0.56	0.59	0.82		
4. Inv2. Sign value	0.26	0.42	0.34	0.80	
5. Memorability	0.54	0.70	0.64	0.48	0.78

Table 4 also shows the mean of each item and the overall mean of the items within each construct. The means are higher in the involvement dimension of *pleasure/interest* and memorability (overall averages of 4.25 and 4.17, respectively) and lower in the construct *co-creation* (overall averages of 2.77). In view of the second research objective defined to this study, the average values of the constructs were compared between the two groups of tourists: those that performed the *Dolphin Emotions Experience* and those who participated in the more passive *Dolphin Show*. One important result is that all items and constructs report larger average values for the tourists that performed the *Dolphin Emotions Experience* in comparison to those who attended the *Dolphin Show*. All differences are significant at a 0.01 level. Table 4 shows these values regarding each construct. As anticipated, the larger differences are observed in the *co-creation* construct: mean=4.49 for tourists who had the *Dolphin Emotions Experience* and mean=1.20 for tourists who only attended the *Dolphin Show*.

Thus, co-creation led to higher levels of active participation and direct interaction. Moreover, higher levels of *involvement*, measured by *pleasure/interest* and *sign value*, *attention* and *memorability*, were reported by tourists who participated in the *Dolphin Emotions Experience*. In order to answer the first research objective, an analysis of the structural model was performed, allowing confirmation of the extent to which the construct *co-creation* positively and significantly affects the other constructs of *attention* and *involvement* (directly) and *memorability* (indirectly).

4.3.3 Hypotheses testing

The four hypotheses involving direct relationships between the latent constructs, H1 to H4, were evaluated by observing the sign and statistical significance of each path coefficient (Table 6). The estimates for the corresponding path coefficients have all the correct sign, positive, and are significant at a 0.01 level (all $t > 1.645$; $p = 0.00$). Therefore, we can conclude that the hypotheses **H1** to **H4** have been supported by the data. **H1** assumed a positive relationship between the co-creation experience and tourist attention ($\gamma = 0.657$; $p < 0.01$), thus meaning that the more co-creative the experience, the higher the level of tourist attention is expected to be. **H2** stated a positive relationship between the co-creation experience and tourist involvement ($\gamma = 0.643$; $p < 0.01$), and by the same reasoning the more co-creative the experience the higher the level of tourist involvement is likely to be. **H3** conjectured a positive relation between the level of attention and experience memorability ($\gamma = 0.603$; $p < 0.01$) and following statistical results, the higher the tourist attention, the higher too the memorability. Lastly, **H4** ($\gamma = 0.432$; $p < 0.01$) postulated a positive relation between the level of involvement and experience memorability. So similarly, the higher the tourist involvement, the higher the memorability is expected to be.

Regarding the hypotheses implying mediating effects, **H5** and **H6**, the indirect effect was computed by multiplying the direct effects involved. Given that AMOS does not test the significance of indirect effects, the Sobel's (1982, 1986) test was implemented was implemented by computing a Z statistics which follows a standard normal distribution. The results for this statistics considering each mediating effect are presented in Table 6. They also surpass the critical value of 1.65. Thus, hypotheses **H5** and **H6** are supported as well, that is, both attention and involvement play a mediating role between the co-creation experience and memorability. Another important result is

the high squared multiple correlation coefficient for memorability (0.771), meaning that 77.1% of the variance of this construct is explained by the proposed model.

Table 6
Structural model results

Research hypotheses	Standardized coefficients	Standard error	T/Z statistics	Hypotheses
H1. Co-creation--->Attention	0.657	0.026	13.617	H1 is supported
H2. Co-creation--->Involvement	0.643	0.021	10.518	H2 is supported
H3. Attention--->Memorability	0.603	0.028	8.037	H3 is supported
H4. Involvement--->Memorability	0.432	0.044	5.590	H4 is supported
H5. Co-creation -->Attention--->Memorability	0.396	0.024	16.49	H5 is supported
H6. Co-creation-->Involvement--->Memorability	0.277	0.023	11.904	H5 is supported

5. Discussion and conclusion

In this study a conceptual model relating co-creation experiences, attention, involvement and memorability was proposed and tested. A number of findings are noted. Firstly, the results agree with the conceptualization of the co-creation experience as that characterized by direct interaction with a core subject, the performance of an activity through role enactment, the engagement in play and physical activity. These results partially corroborate prior studies of co-creation based on the concept of active participation (Hung et al., 2014; Lee, 2015; Prebensen et al., 2015).

Secondly, all constructs (co-creation, attention, involvement and memorability) had moderately to high means. The highest overall mean was obtained in the dimension of pleasure/interest of involvement (4.25), followed by memorability (4.17), attention (4.07), sign value (3.04), and co-creation (2.77). Generally, tourists felt moderately to actively participate and interact in the experience, but achieved high levels of interest and pleasure in participating, were very attentive to external and internal details and to the total experience environment, believe that partaking in these experiences says something about who they are and, finally, that they have and will maintain vivid memories of the events.

As prior studies in psychology have shown, the items that scored the highest for attention are people-related suggesting the importance of direct human interaction to tourist attentive behaviour (Laidlaw, Foulsham, Kuhn & Kingstone, 2011). The highest attention items were “I listened carefully the educator/trainer” (4.19) and “I often discussed with others the on-going experience” (4.34). In contrast, memorability of the experience was highest for the encounter with the dolphins (4.64) and the overall setting of the experience (4.38). Service and

marketing theory had already elaborated on the concept of *servicescape* and *experiencescape* and how it highly links to perception of quality (Bitner, 1992; Sekhon & Roy, 2015). Regarding memorability, it should be noted that, on average, items corresponding to judgements on expected long term memorability (durability) scored higher than items relative to short term effects (strong images, detailed description). More particularly, the results for this construct show that the core element of interaction in the experience (the dolphin) is felt to persist in the long term memory. This suggests the on-site environment also plays an important part in the process of enriching autobiographic memory and should be managed accordingly.

Additionally, the structural model substantiates the study's assumptions on the direct impact of co-creation on the tourist level of attention and involvement in the experience and the indirect effect on memorability. The strongest direct causal relationship was observed between co-creation and attention (0.657), and then between co-creation and involvement (0.643). Here co-creation was measured using the concepts of active participation and direct interaction, thereby supporting prior theoretical claims (Andrades & Dimanche, 2014; Campos et al., 2016). Interestingly, attention influences memorability more strongly than involvement (respectively 0.603, 0.432), although scores for both relationships are high. The direction of these influences (i.e. between attention and memorability and involvement and memorability) is consistent with findings from fields other than tourism (Cavanagh, 2011; Kuhl & Chun, 2014). The model also hypothesised that both attention and involvement also help to explain the relationship between co-creation and memorability. Results confirm such assumptions but scores again are higher for attention (0.396), leading to the conclusion that focus and concentration are more important to the memorability of the experience than pleasure/interest and sign value (0.277). These results corroborate research that consistently demonstrates a strong link between attention and memorability (Kuhl & Chun, 2014; Chun & Turk-Browne, 2007; Reisberg et al., 2013; Sternberg, 2006).

Comparing the *Dolphin Emotions Experience* and the *Dolphin Show*, differences emerge across all constructs with the most significant being co-creation: *DEE* (4.49) against *DS* (1.20). Here the *Dolphin Show* involves a *from-afar*, passive observation of an event and *Dolphin Emotions Experience* requires acting a part by

doing and creating the experience. This result is consistent with findings from other studies. If individuals actively participate in experiences with a high degree of interaction, attention increases. Interestingly, the least significant difference between these two experiences was the dimension of sign value of involvement. Apparently both *watching* dolphins and *swimming* with dolphins were perceived by participants as having similar symbolic meaning.

5.1 Contributions to theory

This study contributes to understanding the relationship between co-creation experience, tourist psychological processes and outcomes. Empirical studies on co-creation experience are still scarce and this investigation has shown that active participation and interaction are conducive to memorability, and notably that attention and involvement are both important in that process. The study's results provide evidence that the level of co-creation influences direct and indirect outcomes, during (attention and involvement) and immediately after the experience. In fact, in this study, memorability has been considered the effect of the experience in terms of easiness and richness of description in the short term, and also of expectations towards long term memory effects. Data provided evidence that co-creative experiences affect this type of memorability which emerges in the short term, as well the subjective feeling that events will be remembered in the future. The extent these experiences affect long term memorability was not studied and would require a different methodological approach.

Prior research on tourist experience has neglected the study of attention, though there has been recent voices arguing for its inclusion in the research agenda (Campos et al., 2016; Ooi, 2003, 2010). This study is a first attempt at including attention in the stream of empirical research on tourism experience. Furthermore, this study supports prior research that memorable experiences are more meaningful and carry higher value to tourists than mere satisfactory ones (Morgan & Xu, 2009). Memorability has been conceptualized as the subjective evaluation of immediate and long-term memory effects, thus departing from conceptualizations that seek to define the memorable experience through essential attributes (Kim et al., 2012). Instead, the perspective of memorability here adopted centres on tourist psychology by defining it in terms of mental processes and consequences (Larsen, 2007).

Research on co-creation in tourism is still in its infancy, and this research adds to tourism studies by adopting an experience-based definition and empirically testing and measuring it. Prior research has already empirically used active participation as a concept inherent to co-creation experiences (Prebensen et al., 2015) and experiential service consumption (Dong & Siu, 2013). However, in this study, the meaning of active participation has been specified and expanded to include concepts, such as play (Gyimóthy & Mykletun, 2004), role enactment (Mathisen, 2013), and physical activity (Ihamäki, 2012; Prebensen et al., 2015).

5.2 Managerial implications

Recent studies in tourism support the idea that tourists are seeking new ways of living their tourism experiences (Morgan et al., 2009). This study used the co-creation experience construct to capture these desires and behaviour (Prebensen et al., 2015). In addition the study examined memorability as an outcome rather than experience value (Andrades & Dimanche, 2014; Prebensen et al., 2012; Prebensen et al., 2013b) or satisfaction with experience (Dong & Siu, 2013; Prebensen et al., 2015). This study found that co-creation experiences are more memorable if anchored in direct interaction with a key attribute (i.e. dolphin) and it is important that providers design and communicate such central attributes. In this study, animals but also instructors, professionals, local experts were “*attention capturers*”. Furthermore, attention is a psychological process that permeates the tourist experience (Ooi, 2010), and a co-creative context increases attention bringing affective, social and mental benefits. Impersonation, joyful play, physical activity and direct interaction are found to raise attentional responses with indirect gains to memorability. The same can be said of involvement: the dimension of *pleasure/interest* was found the most important for tourists participating in both experiences but a significant difference exists between those that are more actively and directly engaged in the experience and those less so engaged.

A first recommendation based on these findings is that experience designers and managers need to articulate the experiential dimensions that are more likely to capture and maintain tourist attention and involvement during experience. Tourists are able to focus on activities such as role play that incorporate a degree of physical effort and demand performative capabilities. This could be achieved by offering

themed activities with well identified roles and core attributes for tourists to interact with (e.g. an animal, an instructor). Researchers have previously noted that experiences attractive to tourists are able to engage them deeply (Gupta & Vajic, 2000). As attention and involvement are expected to increase with co-creation, the experiencescape should include stimuli orienting attention to a principal attribute and incorporating opportunities for physical action and enactment.

Secondly, as observed in this study, animals can be focal attributes and serve as leading interactive elements of an experience, influencing memorability. Thus these findings may guide future options related to experience development in nature-based tourism considering focusing on animal-human interaction, where the role of animal caretaker could fill the tourist's concurrent needs of sensing, feeling and thinking through play and learning.

5.3 Limitations of the study and directions for future research

This investigation presents several limitations that future research should address. The first limitation concerns methodology. Although contrastingly designed and requiring from participants a different level of co-creative behaviour, only two experiences with dolphins offered by *Zoomarine* have been examined in this study. The methodological procedures followed in the research process included a qualitative and quantitative approach to the development of the data collection instrument however the focus on only one type of experience (animal-based) in only one theme park may compromise the generalizability of the findings. It remains to be seen how the model applies to other types of tourism experiences (sport and adventure, gastronomy) and in alternative experiential contexts. Animals, particularly those perceived as closer to humans in nature and behaviour (Bertella, 2014; Campos et al., 2016), are great attention capturers due to the emotions they are able to elicit but other contexts should be explored. Creative experiences (Hung et al., 2014; Richards & Wilson, 2006) offer interesting opportunities, but nature-based, sports and adventure tourism are equally suitable settings for analysis. Application of scales used to measure co-creation, attention and memorability in other contexts would contribute to scale validation and improvement.

Time restrictions imposed also theoretical limitations to this research which did not allow exploring and examining the potential mutual influence of attention and

involvement during experience and how this mutual influence would function in co-creation experiences. There is an intuitive link between the dimension of pleasure/interest and attention that prior psychological research has already attempted to explore (O'Donnell & Cohen, 1993), namely through the concept of mindfulness (Moscardo, 1996) and Csikszentmihalyi's (1990) theory of flow. However future research should further examine to what extent these approaches fit in the context of tourism experiences due to the variety of co-creative settings. In this study the difference discussed in literature between enduring and situational involvement has been neglected, and co-creation was assumed a situational factor influencing the involvement in the experience. But contact, and the degree of interaction and physical proximity, with an animal species can be hypothesized as linked to enduring interest and perception of the self, and thus future research could explore the relevance of enduring involvement as antecedent of both co-creation experience and situational involvement. Furthermore it would be important to consider other potential mediating constructs apart from attention and involvement worthy of consideration in the context of co-creation, and emotion qualifies in this respect as a top construct. There is already a significant amount of research conducted in tourism highlighting the importance of emotions in tourism experiences (Brunner-Sperdin, Peters, & Strobl, 2012; Li, Scott & Walters, 2014; Ma, Gao, Scott & Ding, 2013) and psychological theory supports the link of emotions to attention and to memorability (Reisberg et al., 1988; Sander, Grandjean, Pourtois, Schwartz, Seghier, Scherer, & Vuilleumier, 2005; Zimmerman & Kelley, 2010). Regarding the topic of the memorability of tourism experiences, studies involving long term effects and evaluations require longitudinal approaches (Dong & Siu, 2013). Comparison of psychological phenomena following experience events, in particular short term and subjective memorability, would allow a more precise analysis of memory effects by investigating if the expected memorability would verify in the long term (durableness) and concurrently if tourists would describe the experiences in a similar way (vividness). This kind of comparative analysis would additionally allow a more accurate evaluation of the extent of the contribution of co-creation to long term memories. Lastly, as psychology theory and research become more closely related to neuroscience approaches and methodologies, future investigations could consider the integration of instruments of analysis from this area, calling for a more inclusive and up-to-date study of attention in tourist experiences.

From this discussion, three areas for future exploration in tourism research pertaining to co-creation and the field of attention are highlighted. The first is to conceptually and empirically explore the relation between attention and emotion in tourism experiences. This relationship has been studied in general psychology and neuroscience (Sander et al., 2005), but not in the context of tourism, although it has been argued that emotional tourism experiences can be elicited through attention (Ooi, 2003). The second is to examine if and how co-creation experiences contribute to a better management of top-down and bottom-up attentional processes during the consumption experience (Ocasio, 2011) as a way to better reconcile the experience environment with the tourist's needs and goals. The third is to discuss and analyse the potential use of attention-based profiles for marketing segmentation.

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