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Another look at 'being there' experiences in digital media: exploring connections of telepresence with mental imagery

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Abstract

Substantial multidisciplinary research has established foundational support for the consumer behaviour phenomenon that underlies the experience of telepresence within online social networks and other digital media products that provide hedonistic value. A review of major perspectives in this field provides justification of the important role mental imagery processes play in the phenomenon of telepresence. In line with this, we propose to extend existing approaches to mental imagery to reach the context of user experiences in digital media, and to theoretically connect telepresence with mental imagery. On this basis, and in conjunction with investigations bringing to light processes that intervene in the terrain of mental imagery, we present an integrative conceptual framework concerned with telepresence, and discuss the role of telepresence within a user's hedonistic usage of digital media products.

Introduction

Imagine someone, mid-forties, who accepts an invitation through an online social network to reunite with their class from secondary school. After years without any news from most of their former classmates, they join the online group, surf the content and chat. When they access the network, they feel that they are present in a shared and virtual space, where they meet their classmates again and have the opportunity to enjoy a conversation. The content triggers reminiscences about their school days and other associated memories from that time. While they surf and interact, they think about what their classmates have become, and they fantasise online about a face-to-face school reunion. The online experience turns out to be so enjoyable that they lose interest in their immediate physical environment. Nothing but events related to the online social network seem to matter.

As the vignette above suggests, an attractive element of the use of online social networks banks on the user 'being there', in the heart of the virtual space afforded by the technology. This sensation, equally termed telepresence and spatial presence (Schubert, 2009), manifests as seeing things and 'living' events presented through the digital technology as if they were actually happening right there and then on terra firma (Lombard and Ditton, 1997; Steuer, 1992). Feelings of 'being there' accompany the elaboration of thought, via recreated memories, anticipatory construction or by using the imagination (Kim and Biocca, 1997), which intensifies the enjoyment of using the technology (Klimmt and Vorderer, 2003; Skalski *et al*., 2011; Tamborini, and Skalski, 2009). This capacity of telepresence to provide enjoyment makes it a central facet of hedonistic and entertaining consumption experiences, through which users take pleasure in imaginative constructions of reality (Hirschman and Holbrook, 1982). In recent years consumers have adopted online social networks, and many other interactive media products based on computer technologies (including websites, e-books, videogames, and virtual worlds) attracted, precisely, by the on-demand access to digital representations, where they can situate themselves, and the creative co-creation being provided (Manovich, 2003). Often known as digital media, these interactive products have increasingly gained legitimacy. They have done so among businesses willing to offer the type of hedonistic services and ubiquitous entertainment that many consumers now demand (Deloitte, 2010).

Due to the possible impact of feelings of 'being there' on the formation of optimal online-experiences for consumers and their willingness to re-use the digital media (Jung, 2011), a thorough understanding of telepresence is crucial to the design and marketing of digital media products. Not surprisingly, the consumer's sense of telepresence in digital media has garnered attention from a range of disciplines including computer sciences, behavioural sciences, and communication sciences. Until now, many useful and valuable insights have been offered about the antecedents of telepresence in virtual environments (for a review, see for example Lee, 2004b), its variety of forms (e.g. Keng and Lin, 2006; Lombard and Ditton, 1997; Shen and Khalifa, 2008), as well as its consequences in the formation of enjoyment feelings and the state of flow (e.g. Novak *et al.*, 2000; Nah *et al.*, 2011). Yet attempts to establish the domain and nature of telepresence have been scarce (see Lee, 2004a), and the connections between telepresence and important constructs in consumer behaviour and media psychology – such as cognitive elaboration, narrative transportation or mental imagery – remain unclear (Wirth *et al.*, 2007). For instance, Schubert *et al.* (2001) delimitated telepresence and distinguished it from other explanatory constructs on the basis of a factor-analytic study. However, they failed to elaborate this distinction starting from a theoretical framework, which explains what telepresence is and how it is formed. For their part, attempts to theoretically conceptualise telepresence (e.g. Minsky, 1980; Steuer, 1992) have been

majorly oriented by technological approaches, so they did not consider other constructs related to cognitive and mental imagery processes nor the possible areas where they overlap with telepresence.

Importantly, there is scant knowledge about the possible demarcation lines and bonds between telepresence and mental imagery's subjective processes. We do know that media provides the pertinent external stimuli that lead users to vividly see things in their minds' eye (Finke, 1989). By using these internal processes, users reconstruct actual perceptions or generate brand new ideas, feelings, objects or events that resemble the experience of actually perceiving (see Roeckelein, 2004). Like the online consumer in the opening vignette, individuals energised by digital media content might take part in mental imagery processes that place them in other worlds. These other worlds are worlds that fire up memories, and anticipate or create (fiction) events. These can all come in the shape of multisensory images, flights of fancy, or fantasies that involve other users who are on the virtual network.

Mental imagery is a central construct with strong potential to explain consumers' hedonistic experiences (Hirschman and Holbrook, 1982; Holbrook and Hirschman, 1982), like countless experiences on the social web (and other digital media) in which users are there purely to enjoy themselves and have fun. However, most previous research in telepresence has not given attention to mental imagery processes and has ignored possible intersections between these two concepts (e.g. Minsky, 1980; Paulos and Canny, 2001). Instead of recognizing the role of cognition and mental imagery on the formation of telepresence, they position telepresence in the terrain of perceptional and non-internal phenomena (for a discussion, see section 2). Only a smattering of studies has looked into the links between telepresence and non-central elements of mental imagery processes. These include analyses about the influence of the individual's ability to engage in mental imagery in their sense of telepresence (e.g. Keng and Lin, 2006; Sas and O'Hare, 2003; Thornson *et al.*, 2009; Weibel *et al.*, 2011). Others (e.g. Kim and Biocca, 1997) have connected telepresence with the mental imagery elicited in pure imaginative and inner terrains, different from virtual environments. Rather than the person feeling present in a virtual environment, here the user creates a fictional story in their mind, then imagines and feels that they are present within it.

Interestingly, investigation into the role of mental imagery in the specific context of consumption has been heavily focused on conventional environments and media (e.g. Bolls, 2007; Mikhailitchenko *et al*., 2009). Besides, imagery research in consumption has mostly concentrated its studies on pre-purchase stages and analysed the persuasive impact of imagery-evoking communications (e.g. Burns *et al.*, 1993; Oliver *et al.*, 1993; Unnava and Burnkdrant, 1991). In addition, many of these studies, instead of directly examining mental imagery, have inferred the existence of imaginal processes from the effects of imagery-evoking marketing strategies on certain consumption-related outcomes, such as brand recall, attitude and purchase intention (see Babin *et al.*, 1992). Now though, mental imagery is drumming up interest in consumer behaviour research to examine its effect on the purchase intention of individuals who vicariously daydream about consuming a marketed product (Denegri-Knott and Molesworth, 2010; Molesworth, 2009). Few studies have delved into the impact of mental imagery on consumption experiences (e.g. Hirschman and Holbrook, 1982; Holbrook and Hirschman, 1982; MacInnis and Price, 1987), and, as far as we can tell, only three have ever assessed mental imagery's role in the actual usage of digital media products (Jenkins *et al.*, 2010; Molesworth, 2009; Simon, 2010). Moreover, in none of these cases has an explicit link been built between the imagery processes, elicited by the digital media, and the feelings of being present in the virtual (and sometimes purely fictional) domain afforded by the technology.

This article seeks to connect the dots and merge those distinct lines of investigation currently being developed in telepresence and mental imagery. By doing so, we propose to extend current knowledge regarding the user's experience of mental imagery within traditional media, and explore unchartered territory of their imaginal processes in digital media usage. This will offer a clearer understanding of the role that complex internal processes play in the phenomenon that is telepresence in digital media.

A sense of 'being there' and the mental imagery domain: a primer

Many users feel like they are actually present in the virtual environment created by the medium when they use online social networks and other digital media products. Their attention is deflected from paramount reality (Lombard and Ditton, 1997). The sensation can be vivid and pleasurable for users. They might feel thrilled at the opportunity to meet other real people (Biocca *et al.*, 2003; Shen and Khalifa, 2008), or interact with objects, content and artificial characters that do not exist in physical environments (Biocca, 1997).

The concept of telepresence (Minsky, 1980; Steuer, 1992) – also termed virtual presence (Sheridan, 1992) and spatial presence (Schubert, 2009; Wirth *et al.*, 2007) – stems from researchers working in engineering and computer sciences (e.g. Minsky, 1980; Sheridan, 1992; Slater and Usoh, 1993). These researchers started to explore the illusion of being present in remote spaces mediated by a computer while they were dealing with design aspects in robotics and computer-based environments. Shortly afterwards, a wider spectrum of disciplines – including marketing, communication sciences and behavioural sciences – focussed their attention on the feeling of telepresence and acknowledged it as a central concept in the study of digital media usage experiences (e.g. Fiore *et al.*, 2005; Fortin and Dholakia, 2005; Nelson *et al.*, 2006; Weisberg *et al.*, 2011; Jung, 2011). In line with this, the concept of telepresence spread to include different forms or typologies of feelings throughout a range of digital media products (e.g. Baños *et al.*, 2004; Lessiter *et al.*, 2001). Since interest in telepresence has risen, substantial research has been developed to identify technological and user factors that trigger telepresence formation (see Lee, 2004b; Mennecke *et al.*, 2011; Sacau *et al.*, 2008). Some attempts have also been made to address the role of telepresence activating states of flow (Novak *et al.*, 2000; Nah *et al.*, 2011; Rose *et al.*, 2012; Zaman *et al.*, 2010), which in turn produce the hedonistic outcome of an enjoyable experience (Novak *et al.*, 2000; Nah *et al.*, 2011). In addition, many other studies have explored various forms of telepresence (Lombard and Ditton, 1997; Shen and Khalifa, 2008). Some of the forms examined are of a consumer's feelings of one's own existence in the virtual environment (Biocca, 1997; Lee, 2004b; Schubert, 2009). These may correspond to consumer's unique traits in real life or they may relate to a fictional or craved identity (Schau and Gilly, 2003). Other forms involve feelings surrounding the existence of third-person entities in digital media, either human, computer-generated designs that mimic human qualities, or creations that exhibit human traits (Lombard and Ditton, 1997; Schroeder, 2006).

Despite this accumulated knowledge about antecedents, consequences and forms of telepresence, the nature and domain of this concept of telepresence remains a fascinating issue (Biocca, 1997; Lee, 2004b; Schubert, 2009). Tracing early contributions in the field, one major research stream sketches the concept within the computer-based terrain, and considers a priori differentiation between the computer technology and the individual. It defines telepresence as a user's perception of actual stimuli that come from the technology (e.g. Lee, 2004a; Slater, 2002; Waterworth and Waterworth, 2001, 2003; Sanchez-Vives and Slater, 2005). Early conceptions framed around this perspective are that sensory and motor

feedback is offered by the device, which triggers the sense of being in a virtual environment (see stage 1 in Figure 1). This occurs when sensorimotor information is transmitted and links the user's body with the external virtual world (Biocca, 1997; Paulos and Canny, 2001). However, this line of reasoning leads to an inconsistency: the existence of digital products – such as digital music and electronic fiction books – which are able to arouse a strong telepresence but do not provide visual or very realistic computer-generated cues and do not include sensorimotor functionalities (Biocca, 2003; Mennecke *et al.*, 2011). To resolve this contention, Waterworth and Waterworth (2003) suggest the distinction between 'core consciousness' (the area that enables us to understand our immediate physical surroundings through mechanisms of perception, and where telepresence is located) and 'extended consciousness' (the area that lets us picture future scenarios and produce original solutions through mental imagery) – step 2 in Figure 1. With this distinction, the authors also consider the human ability to clearly differentiate core consciousness from the extended consciousness arena.

Nevertheless, the thinking that telepresence in digital media products is a perception of incoming external stimulus from the interface raises question marks. One crucial point that falls short, teeters on situating telepresence in an opposite terrain of cognitive processing and mental imagery (Jones, 2007), and demoting it to a non-internal domain (Schubert, 2009). If external cues cannot relate to cognition and mental imagery, the user cannot infer that the incoming stimuli perceived are from an external world, and that he or she 'is part of' that external world. Put another way, when the imagery processes are taken out of the equation, the experience of using digital media might only manifest in a succession of interactions with the technological device – and users would only see what their senses perceive on the interface (i.e. a technological creation) (Franceschi *et al.*, 2009). As Saunders *et al.* (2011) have shown, only consumers who have mental representations of an imagined place can interact in a virtual environment. This is because space dimensions in virtual domains are not physical but conceptual, so consumers try to develop a meaningful understanding of the virtual environment by employing their perceptions and building cognitive spaces in their minds. Due to this, we reach a logical possibility that it is the type of internal processes responding to perceived, external cues (not the perception) that triggers telepresence. It might well help resolve the conundrum about why some interactive games (like online scrabble) do not elicit imagery and do not evoke telepresence, whereas digital products that immerse users into alternative worlds by way of mental imagery (like fantastic engrossing virtual environments, e-books and videogames with narrative content) do elicit telepresence (Pinchbeck and Stevens, 2005). Furthermore, the supposed human ability to differentiate perception from extended consciousness can be questioned. With this in mind, there is an argument to suggest that consumers do not always distinguish where the line is drawn that separates the end of perception and the beginning of imagery, as has been reported in research about mental imagery and false memory creation (e.g. Braun *et al.*, 2002; Rajagopal and Montgomery, 2011).

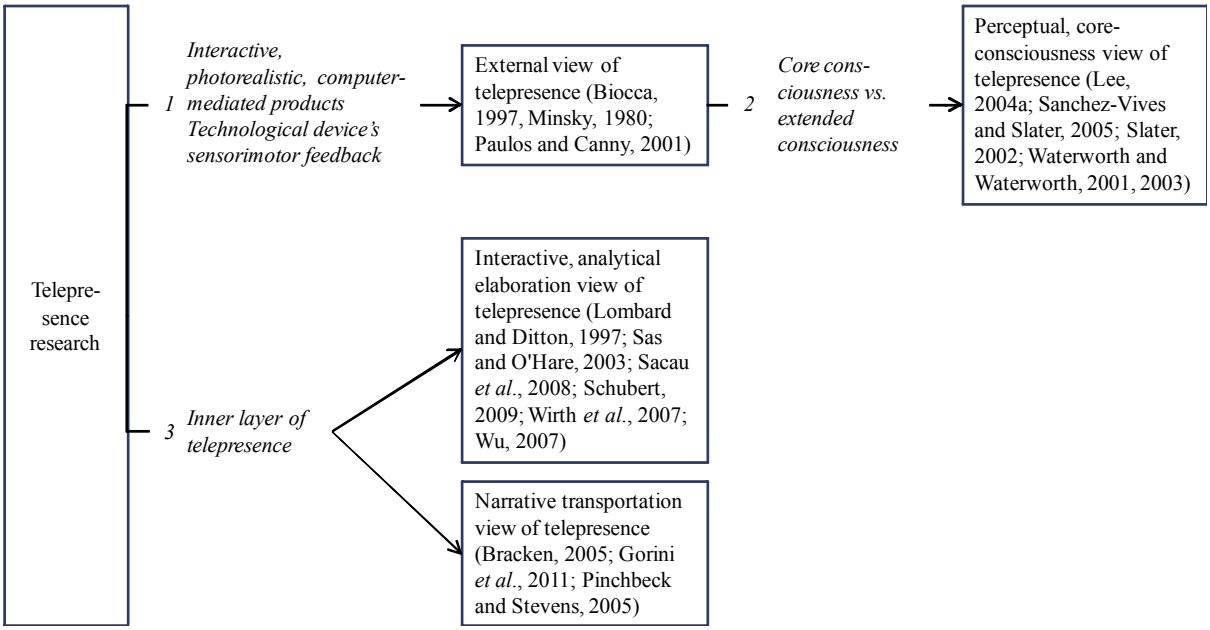
The idea that pure mental imagery experiences are not real, as presented by researchers who deny the inner domain of telepresence (e.g. Lee, 2004a), brings up another unresolved issue. Research repeatedly indicates (Jones, 2007; Baños *et al.*, 2005; Schultze and Orlikowski, 2010; Sjölie, 2012) that user's feelings are real: they have been elicited either by internal or external cues, and they relate to real, virtual or entirely imagined events. Moreover, external cues provided by digital media can prompt mental constructions that involve complex elaboration and mental imagery such as daydreams and fantasies (Biocca, 2003; Gordon *et al.*, 2009). They make the claim seem unfounded that virtual and mental domains are isolated and exclusive.

In contrast, an alternative line of investigation comes up with an inner view of telepresence (stage 3 of Figure 1). This stream of research acknowledges a mental domain for the concept of telepresence (e.g. Bouchard *et al.*, 2012; Lindsay *et al*., 2007; Lombard and Ditton, 1997; Sas and O'Hare, 2003; Schubert, 2009; Sacau *et al.*, 2008; Wu, 2007). Consistent with this, it conceives telepresence within digital media products as a psychological phenomenon which happens in the user's mind in relation to the outside virtual environment. On the basis of this perspective, there is certainly weight to the idea that even in empowered and highly immersive interfaces, like many prompted by digital media, users ultimately complete incoming information through mental imagery to fashion a compelling and cohesive environment (Jacobson, 2001; Lauria, 1997) – and they imagine being there (Coman and Rauh, 2003). It is not a surprise that value propositions offering hedonistic value, like many that come from digital media products, are designed to confuse and blend reality with fiction (Schultze and Orlikowski, 2010) and use mental imagery to whisk users off to alternative destinations (Bracken, 2005; Jones, 2007; Lauria, 1997; Wu, 2007).

Yet there is an area open to discussion: the underlying processes by which online users elaborate incoming external stimuli. Some researchers allege that telepresence is a subjective phenomenon born out of interaction with the mind's activity in the virtual world (Schubert *et al.*, 2001; Wu, 2007). The mind's representation is formed from external cues originated by the medium and inner cues stored in memory (Baños *et al.*, 2004; Coman and Rauh, 2003; Schubert, 2009; Schubert and Crusius, 2002). These cues may refer to real events or they might be utterly fictional (Jones, 2007). Regardless, consumers analytically elaborate incoming content and give it meaning by comparing it with their own mental schemes. In this way, both external and internal cues help form mental representations that users respond to: they create the illusion of being in an alternative world (Biocca *et al.*, 2003; Lombard and Ditton, 1997; Saunders *et al.*, 2011). Other recent research points out that rather than bearing in mind their own knowledge, beliefs or experiences, users who feel telepresence hook their mental efforts on the stimuli being sent to them by the digital media (Bracken, 2005; Gorini *et al.*, 2011; Pinchbeck and Stevens, 2005). They become absent from the real world, or so absorbed in the virtual environment, that they temporarily suspend disbelief in the realness of the virtual domain.

[Insert Figure 1]

Figure 1. External and internal views of telepresence



To summarise: it becomes theoretically relevant to put a spotlight on the user's internal domain in order to dig deeper into the evocative complexities of telepresence in digital media products. Instead of following an isolated research stream, it appears particularly relevant to explore the connections between research into telepresence and the theories explaining consumers' underlying mental imagery processes (Jacobson, 2001; Kim and Biocca, 1997; Sas and O'Hare, 2003).

A critical view of the imagery domain and its extension to digital media usage: connecting the imagery layer with the telepresence concept

Mental imagery is now nowhere near being viewed simply as a dumping ground for images and visual information in individuals' minds, and neither is it just a mental domain where imagination takes place. Since being studied extensively within the field of psychology (see, for example, Roeckelein, 2004), often to show its effects on memory and learning, mental imagery is thought to have a broad selection of inner processes that are gathered up in the collective term 'non actual' (Childers and Houston, 1983). Not only is it tantamount to perception by its intrinsic qualities (Richardson, 1969), it is also functionally equivalent to perception (Marks, 1977). The individual who is immersed in lively, solid representations that have come from mental imagery will experience emotions and reactions akin to those that are propagated by perception (Richardson, 1983); the result is a surrogate experience. (MacInnis and Price, 1987). Mental imagery generated by hedonistic usage experiences (like listening to digital music, reading an e-book or playing a videogame) might translate into recapturing experiences that are filed as a pleasurable memory. This could be picturing a vividly imaginative story from a third-person perspective, inhabiting a fictional world, or anything which might become a source of warm nostalgic feelings, enjoyment and pleasure, and escapism from routine (Belk and Costa, 1998; Jenkins *et al.*, 2010; Le Bel and Dubé, 1998).

Initially, mental imagery was trumpeted by fields of communications and marketing to explain the value of mental imagery activation on marketing communications in traditional

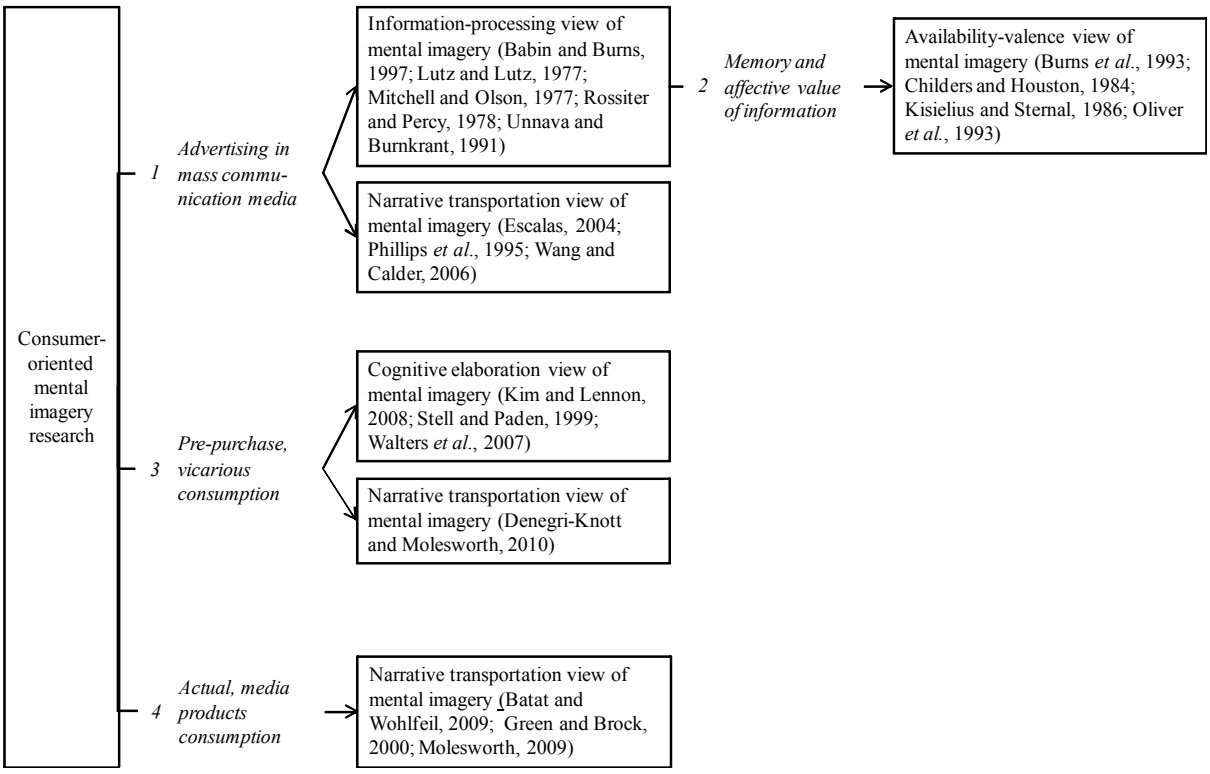
mass media (see section 1 of Figure 2). However, these endeavours to better understand imagery processes were heavily centred on visual mental imagery experiences that entail limited elaboration (see Ellen and Bone, 1991) – they focused on static inner images of a promoted product – whereas mental imagery can result in a more extensive choice of inner representations, some of which can be fairly complex constructions and involve vast elaboration (Goossens, 2000; MacInnis and Price, 1987). Besides, imagery processes can not only be a driver of ulterior purchase decisions but can also become a key aspect during consumption experiences, as seminal research on hedonistic consumption has revealed (Hirschman and Holbrook, 1982; Holbrook and Hirschman, 1982). Nevertheless, this first path of investigation has been restricted to the specific context of the effects of marketing programmes in pre-purchase stages. In fact, most research efforts have been devoted to studying the effectiveness of imagery-evoking advertising messages (e.g. Babin and Burns, 1997; Burns *et al.*, 1993; Childers and Houston, 1984; Lutz and Lutz, 1977; Oliver *et al.*, 1993; Rossiter and Percy, 1978; Unnava and Burnkdrant, 1991), embedded instructions to use imagination (e.g. Babin and Burns, 1997; Escalas, 2004), the focal character and the plausibility of the imagined situations (Bone and Ellen, 1992; Rajagopal and Montgomery, 2011).

Later, consumer behaviour research turned its attention to mental imagery in order to study the future-oriented visions and daydreams that occur during the pre-consumption stages (section 3 in Figure 2). Through these fantasies, users develop solid riveting representations of possible consumption activities, imagining themselves utilising a product and anticipating the effects of using it (Goossens, 2000; Jasper and Ouellette, 1994; Petrova and Cialdini, 2005; Walters *et al*., 2007). This, in turn, facilitates a learning of products and drives actual consumption (Belk *et al*., 2003; Phillips *et al*., 1995). The study of pre-purchase daydreaming has received renewed interest ever since the emergence of innovative ways of sensory substitution and vicarious consumption in digital media which go beyond browsing catalogues (Stell and Paden, 1999). Here mental imagery is treated as a fundamental element of consumption visions that are stirred by virtual worlds and e-retailers utilizing the type of virtual model technology that goads users to really desire promoted products and make use of their virtual versions (e.g. Denegri-Knott and Molesworth, 2010; Fiore *et al*., 2005; Schlosser, 2003; Song and Fiore, 2007).

By contrast, what has been largely ignored is mental imagery at the time of actual consumption of digital media products (section 4 in Figure 2). This is when it manifests in the use of digital music, e-books, videogames, online social networks and many websites that are oriented to hedonistic usage. While a few previous studies have examined imagery processes in consumption of conventional media products (Batat and Wohlfeil, 2009; Green and Brock, 2000), as far as we have found, only the papers by Simon (2010), Molesworth (2009) and Jenkins *et al.* (2010) explore the role of mental imagery in the specific territory of digital media usage. Simon tests mental imagery impact when searches are done on the Internet, and both Molesworth (2009) and Jenkins et al. offer theoretical classifications of mental imagery forms in virtual environments, from nostalgia and reminiscences, related to memories and past real events, to daydreams and fantasies involving strong use of imagination. None of these taxonomies, however, contemplate telepresence feelings.

[Insert Figure 2]

Figure 2. Mental imagery and consumer-oriented explanatory theories



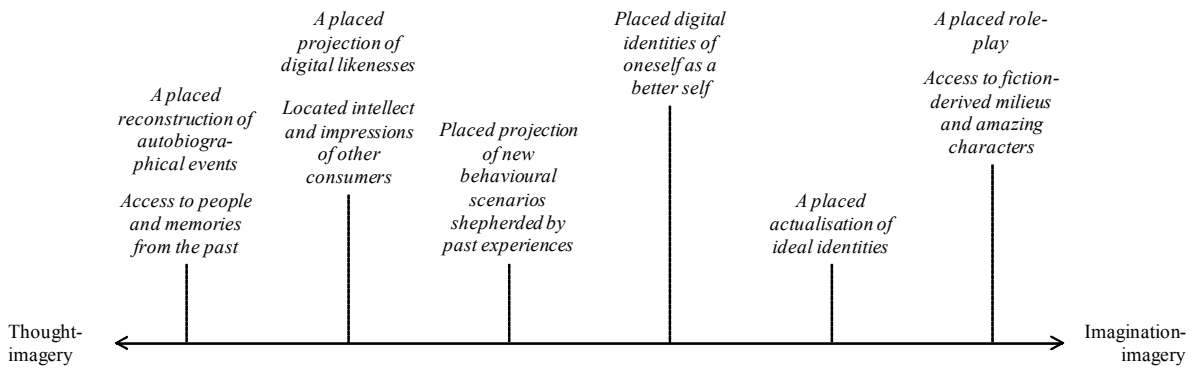
There is a stark lack of interest directed at mental imagery in digital media usage. This contrast is given even more weight because of the importance of this consumer behaviour construct. As a matter of fact, many leisure and digital media products are especially conducive to mental imagery (Simon, 2010), so much so that they can be used particularly for the fantasies they evoke. Instead of readying and jostling for actual subsequent consumption, in this case mental imagery directly improves the value proposition (MacInnis and Price, 1987). It offers escapism and intrinsic enjoyment (Jenkins *et al.*, 2010) that the individual pursues by using digital media. However, imagery literature seems to be poorly equipped to deal with this phenomenon within the scenarios outlined by digital media products. Partly, this is because imagery theory has traditionally drawn a fixed distinction between the consumer and the media. This distinction has less sense in highly dynamic and interactive virtual environments where consumers can utilise identities created by themselves and continuingly produce content and events (Schultze and Orlikowski, 2010). Even more importantly, imagery literature has not considered a key distinguishing oddity of consumption experiences within this new virtual terrain: the use of underlying imagery processes to produce inferences that equip users to be able to settle media content and events in a virtual environment (Gordon *et al.*, 2009). Precisely, diverse research on digital media has documented an abundant spread of experiences of mental imagery answering these characteristics, and some of these are consistent with feelings of telepresence. The range includes forms, prompted by online information, that necessitate the recall or evocation of past events. These include digital recollections of former interpersonal interactions, reminiscences of past events, chosen representations of the self and user's relationships with individuals, objects and places, and picturing oneself with a background that has been made up (Jacobson, 2001; Jenkins *et al.*, 2010; Molesworth, 2009; Schau and Gilly, 2003); the sense of 'being part' of a virtual community (Jenkins *et al.*, 2010); coming up with 'what if' scenarios that are imagined individually or in a group (Hughes and Stapleton, 2005); idealizing individuals who are currently in the online network (Jacobson, 2001); generating

daydreams and creative thinking – such as being somewhere fictitious, conjuring a fantastical milieu where users base themselves, concocting an outlandish story populated with fictitious characters, and playing in an alternative world that is peppered with the impossible – like having magical powers (Jenkins *et al.*, 2010; Molesworth, 2009; Psomos and Kordaki, 2012).

In agreement with earlier mental imagery taxonomies (Richardson, 1969, 1983), and to tie in with these reports, we can consider that mental imagery in digital media usage lies on a thought-imagination continuum (as seen in Figure 3). The continuum moves from mental imagery that solely involves realistic thoughts, to mental imagery that leads to the construction of purely novel thoughts (Denegri-Knott and Molesworth, 2010; Hirschman and Holbrook, 1982; Jenkins *et al.*, 2010). The left of the continuum gravitates around thought-imagery processes which include remembering past events, or else with anticipating future initiatives related to experiences from the past. Some examples within the context of digital media usage are the online experiences that lead users to recover pleasing pictorial memories linked to events and people (Molesworth, 2009), to reconstruct autobiographical events (Escalas, 2007), to feel the intentions, intelligence and sensory impressions of other users are accessible (Biocca, 1997), to present a digital likeness (Schau and Gilly, 2003), or to mull over a new encounter and other possible behavioural scenarios that are guided by today's reality and past experiences (Jenkins *et al.*, 2010). Similar to evocations of previously purchased products or the planning of future purchases in the context of exposure to advertising, these experiences go hand in hand with a type of mental imagery that cognitive psychologists and neuroscientists unearthed (Richardson, 1969, 1983; Chen, 1991) in many areas of everyday life and that surface because of the relentless changing demands that arise from the external world (Richardson, 1969, 1983). Here, however, the experiences are specifically elicited through the user's exposure to external stimuli that are sent from the digital media (i.e. text, interpersonal modes of communication, audiovisual resources), which contain mental imagery temptations or indirect suggestions. There are pure imagination-imagery processes at the far right of the continuum (Figure 3). Even though imagination-imagery might appear dynamic and real, the self-creation of content or events unrelated to actual experiences is involved and this is, apparently, novel for users (Richardson and McAndrew, 1990). When it is translated into the context of digital media usage, imagination-imagery is able to let users: picture themselves as better selves, reflecting life aspirations; live out an ideal and non life-related identity; or 'be' in a virtual and fiction-derived territory (Molesworth, 2009). By contrast with mental imagery that is conjured up by standard films and books, where users experience fictitious places and people in the third person, digital media products give them the tools to build fantastical customised virtual spaces, where they can play out a relevant persona and interact with fascinating characters.

[Insert Figure 3]

Figure 3. The thought-imagination continuum for imaginal processes in digital media and virtual-space location



Source: Own compilation

Based on this rationale of mental imagery for digital media, we suggest an understanding of telepresence in virtual environments as a distinct psychological phenomenon, within the collective mental imagery battery. It occurs when users direct their attention to stimuli sent from the medium and they have the illusion of being in a specific virtual space sparked by cues from the medium; this is regardless of whether this space truly exists. So there are inner mechanisms that go along with digital media users when they feel as if they are in a real milieu. The construction of likeness – a digital portrait for 'others' consumption (Schau and Gilly, 2003); the interaction within a community of people known to them based on current reality and from things that have gone before (Jenkins *et al.*, 2010); the planning of future scenarios, elicited by the content in the virtual environment and where the user places themself, all fit as forms of mental imagery. Additionally, because realistic thinking is involved, these internal processes are viewed as thought-imagery forms. Analogously, two examples of imagination-imagery phenomena are those experiences of telepresence where users elaborate their fantasies in online environments by using characters and events that are unlikely to take place (Jenkins *et al.*, 2010), and where users feel placed in a fictional terrain that is brought to light by the digital media.

The proposed conception of telepresence as an imagery process, prompted by consumer exposure to digital media, contrasts with previous definitions that understand telepresence as a perception that is restricted to a virtual domain, fundamentally different from the purely imagined, not real and inner terrain configured by the consumer's mind (e.g. Lee, 2004a). In order to capture a phenomenon that involves a suspension of disbelief and that places the consumer apart from the immediate, material reality, we propose to conceive telepresence as an outcome of imagery processes, and therefore as a quasi-perception. As imaginary literature has shown, boundaries between perception and imagery are very fuzzy (Gordon *et al.*, 2009; Rajagopal and Montgomery, 2011). Not only because both phenomena can be triggered by incoming external stimulation but also because they share common mechanisms of conscious processing (Marks, 1977), which often make them indistinguishable and have outcomes that are functionally equivalent (Finke, 1986; Thomas, 1999). This might explain how mediated, non-physical, and sometimes fantastical spaces evoked by digital media eventually turn out to be felt as if they are real.

Furthermore, our conception of telepresence might contribute to overcome the pitfalls of considering the virtual and the imaginary domains as mutually exclusive, as seen in section 2. Any materiality consumers inhabit is filtered or made by themselves (Denegri-Knott and Molesworth, 2010) so that there is no consumer feeling of being located in a virtual terrain

without an underlying information-processing system (Saunders *et al.*, 2011; Wirth *et al.*, 2007). Even though consumers experiencing telepresence centre their attention on the events in the virtual environment and distance themselves from the physical environment surrounding them (Chen, 1991), this does not inevitably imply an entire loss of contact with the real, material world. Following the imagery line of reasoning, a plethora of degrees of contact with reality might be considered, which allows delineating a thought-imagination continuum along which telepresence feelings can be distributed. Mental imagery accompanies inner mechanisms through which users feel they are in a virtual, non-real space whether they experience more realistic or more novel quasi-sensory events. However, it is within imagination-imagery processes where users can reach the heights of distancing themselves from reality and turn their attention to the alternative reality. This can be to such an extent that they might engross themselves in a pure mental domain and enter a dissociative state (Chen, 1991).

In introducing this new approach to the concept of telepresence, we do not aim to convey that current perspectives on telepresence are not appropriate or do not provide benefits. Rather, we propose to reframe the concept in order to complement previous work and offer additional insights. For instance, the inner, imagery view of telepresence that we are suggesting leads us to reconsider existing presumptions about the boundaries between the domains of materiality, virtuality and the consumer's imagination. Moreover, it challenges the traditional circumscription of telepresence to the virtual and non-inner terrain, and acknowledges that, in telepresence formation, both external cues and inner imagination might be involved.

Under the umbrella of mental imagery: towards understanding the role of inner processes linked to telepresence

Research about mental imagery offers a good base to examine the internal mechanisms that go with feelings of telepresence in digital media usage. Yet the absolute role of mental imagery in user experiences is not airtight. An earlier perspective on mental imagery's role defines mental imagery as a specific mode of processing information (MacInnis and Price, 1987) – see again stage 1 in Figure 2. In contrast with discursive or language-like information elaboration, which is based on abstract words and symbolic artefacts, mental imagery enables users to encode incoming information expressed in sensory forms, and blend it into their existing thoughts, beliefs and experiences (Childers and Houston, 1983; MacInnis and Price, 1987). On the basis of the dual coding hypothesis (Paivio 1978, 1986), it is presumed that while discursive information is processed first and symbolically encoded second, sensory information uses symbolic and sensory codes that are processed and encoded in tandem. This coding redundancy allows imagery-evoking content to trigger more store locations and retrieval paths. In turn, these facilitate its accessibility and memorability (Paivio, 1978, 1986; Paivio and Csapo, 1973).

Unexpectedly, the results collected for advertising and media content elaboration have not fully clarified the mediating role of mental imagery in information processing and its presumed superiority with respect discursive information elaboration (for a review, see Kisielius, 1982). Even though there are studies that document an augmenting effect of mental imagery on consumption-related outcomes (e.g. Mitchell and Olson, 1977), other studies do not find any effect (e.g. Bone and Ellen, 1992) and some even find superior effects for discursive information (e.g. Kim and Lennon, 2008) that are contrary to predictions. Kisielius (1982) considered the availability-valence view in order to solve these inconsistencies and

thus take into account the role of both memory and the affective value of marketing information (see stage 2 in Figure 2). Within the context of marketing communications, it is argued that dual coding accounts for a superior impact on the memorability of imagery-evoking information, and that the final result on users is accentuated by the affective value of sensory information (which can be favourable, or not). To paraphrase, imagery-evoking content helps favourable and unfavourable information to be accessed and retrieved. This leads to the formation of more extreme opinions, attitudes and behaviours about value proposition.

Research unearths several findings that support the availability-valence rationale when it comes to the consequences of thought-imagery fired up by advertising in pre-purchase stages (Burns *et al.*, 1993; Childers and Houston, 1984; Kisielius and Sternal, 1986; Oliver *et al.*, 1993; Petrova and Cialdini, 2005). Different results have been found though when looking into imagination-imagery's role in processing information (Escalas, 2004; Petrova and Cialdini, 2008; Phillips *et al.*, 1995; Wang and Calder, 2006; Wohlfeil and Whelan, 2012), and not only for imagery-evoking marketing communications but also in the consumption of media hedonic products (Batat and Wohlfeil, 2009; Molesworth, 2009). In these cases, imagery does not seem to facilitate that consumers access their own mental systems and compare the incoming information with them (Lofman, 1991; Schlosser, 2003). This compels us to consider that the effects of imagination-imagery are not always dictated by cognitive elaboration but that other kinds of processes can intervene (see stages 3 and 4 in Figure 3). In particular, the theory of narrative transportation (Gerrig, 1993; Green and Brock, 2000), at first developed to explain readers' story processing, sheds new light on the mechanisms of imagination-imagery (Escalas, 2007; Petrova and Cialdini, 2008). As users do not see the effect that mental imagery could have on them (or they do not wish to interrupt the imagination-imagery experience, which requires many mental resources and proves to be fun), they might be temporarily disconnected from their surrounding reality and feel engrossed in a fantastical milieu (Escalas, 2004, 2007; Green and Brock, 2000). Rather than considering their own knowledge structures and analytically processing incoming information, users direct their entire mental systems and capacities to an alternative world (Green and Brook, 2000). They do it in such a way that they put together discussions and events into a storyline format and then process the information as if they are creating a story (Nielsen and Escalas, 2010). Under these circumstances, they become less critical of persuasive content (Green and Brock, 2000) and produce lasting beliefs consistent with the story (Green *et al.*, 2004); ultimately this increases their attitudinal yielding (Mazzocco, 2005).

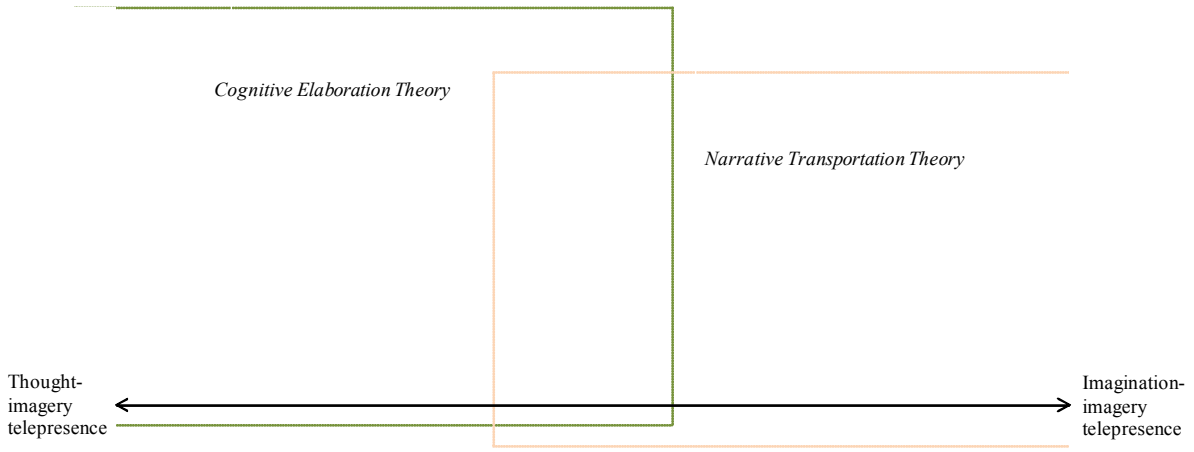
Given the similarities of transportation experiences detected across various media (Gordon *et al.*, 2009; Green *et al.*, 2008), research suggests narrative transportation applicability in contexts and channels that are different from literature and conventional works of fiction. Pursuing this train of thought, within non-real milieus stirred up and supplied by digital media products, users can feel absorbed via mental imagery. Users can cast specific traits and features in the role of a fantastical character, and the storyline and the structure of the narrative can be flexible so that the users themselves can customise it. The episodic processing of content frees an internal dialogue in which users produce a flow of representations formally related to mental imagery forms that are in the shape of stories or narratives (Green and Brock, 2000; Simon, 2010). They include pleasurable inner images, retrospective and anticipatory constructions of autobiographical events and pure fantasies (Escalas, 2007). This spurs users on to build lasting emotional associations with the story and the online social network or media product. It reduces counter-arguments and enhances judgment of the content and the media (Escalas, 2007). It comes as no surprise that recent

research on telepresence claims to resort to narrative transportation theory to help to explain the underlying mechanisms that accompany the sensation of being present and being with others (Bracken, 2005; Gorini *et al.*, 2011; Pinchbeck and Stevens, 2005). In addition, empirical research begins to point-out the transportation's explanatory power of specific digital media usage experiences such as those with videogames (Schneider *et al.*, 2004) – see section 3 in Figure 2.

We suggest reconciling these two different theoretical bases to examine the underlying processes accompanying telepresence evoked by digital media. To do so, a telepresence taxonomy could be employed that puts forward the extent to which realistic thinking and imagination are involved (see Figure 3). This opens up the potential to differentiate telepresence experiences that are more related to thought-imagery from other types of telepresence phenomena that have stronger ties to imagination-imagery processes. So cognitive elaboration would intervene in thought-imagery experiences and be facilitated by telepresence-evoking content. This content, together with user knowledge and beliefs about previous events, would be used to construct mental models in and around the consumers' location within the virtual environment. In contrast, we propose to turn to narrative transportation theory to study telepresence experiences with a high fictional component, as it comes with a conceptual grounding that is a better fit below imagination-imagery conditions. In this case, users are pulled even farther away from immediate reality, and also their knowledge structures, to such an extent that they turn all of their attention to being engulfed by an alternative and fictitious world. Consequently, both cognitive elaboration perspectives and the narrative transportation theory come into action and, combined, present an integrative picture of encompassing processes that result in telepresence experiences.

[Insert Figure 4]

Figure 4. Connecting telepresence and underlying imagery theories



Source: Own illustration

Implications of the conceptual framework and further research

The implications are threefold regarding the conceptualisation of telepresence as a distinct mental imagery form and the adoption of an integrative framework that, as proposed, adopts cognitive elaboration's and narrative transportation's arguments to explain telepresence

formation. What follows is a succinct sketch of these implications, and suggestions for possible avenues of future research.

First, the acceptance of telepresence as one modality of mental imagery justifies the enrichment and adaptation of current scales and verbal reports on imaginal processes in consumption (Babin and Burns, 1998; MacInnis, 1987) to capture how deep mental imagery aroused in digital products usage incorporate feelings of 'being there'. A good starting point for the development of new scale items can be the comparison with those that have been employed to capture the subjective sense of telepresence (e.g. Lessiter *et al*., 2001; Witmer and Singer, 1998). Telepresence scales can offer up new inspiration to adapt mental imagery questionnaires for the particular context of digital media consumption. Analogously, telepresence research can explore and test the introduction, in telepresence scales, of the interplay between media stimulation and internal imaginal processes in an attempt to tap into a more comprehensive picture about the telepresence phenomenon.

Second, the understanding of telepresence as a mental imagery form leads to differentiate inner imaginal processing that produces the feeling of telepresence, from the telepresence sense itself. This grounds the investigation in their relationship.

Third, the recognition of feelings of 'being there' as an outcome of imaginal processes allows for better comprehension of these phenomena. Telepresence literature – especially the predominant stream of research that defends a perceptual and external view of telepresence – has been challenged by the fact that feelings of 'being there' seem irrational, illogical: mere users' illusions. By contrast, our conceptualisation deflects the light away from the supposed irrationality of the sense of telepresence and shines it onto the inner facet of this phenomenon. Precisely, the theoretical framework we offer here explains why telepresence feelings do not always have to have a truth-value. They can also happen despite the user's awareness of the virtual environment's artificiality.

Future research could consider the fundamental mental imagery processes studied here and employ the model that we propose in empirical analyses regarding the hedonistic consumption of digital media. However, the call for empirical assessment of the model does not indicate that there is a lack of evidence to support the model's presumptions if they are taken individually. What it does imply is that no integrated testing has ever explored the interaction of imagery processing with telepresence.

Besides the requirement of empirical validation for the integrated model, the allocation of telepresence feelings under the theoretical umbrella of mental imagery further leads to formulate new concrete questions that have not been addressed before. One interesting example of a question is whether telepresence feelings, those that result from thought-imagery, differ in intensity from forms of telepresence emerging through high-imagination imagery processes. Another example lays in the presumed, though unexplored, connection of imaginal processes with the affective value of telepresence feelings. As Schubert (2009) adduced, it is likely that telepresence is marked positively: while experiencing telepresence the user might feel capable and productive in their use of the digital media. Again, a mental imagery theoretical framework (Kisielius, 1982; Kisielius and Sternthal, 1986) can shed light on the interplay of imagery-evoking content with a positive valence. In addition to this, our conceptual model offers a strong degree of generality, which enables researchers to employ it to study the use, for hedonistic and escapism purposes, of any kind of digital media products.

Summary and concluding remarks

Two key elements are at the centre of a crucial and ongoing elusive issue of the study into hedonistic usage of digital media products. They are: the conceptual delimitation of the phenomenon of telepresence; understanding the mental mechanisms that accompany its formation.

What is more, there is a missing link in literature between telepresence and the illusion mechanisms that trigger its formation. Indistinguishable from perception as these internal processes might be, they allow users to produce further details from digital media content, and also infer incoming external stimuli that users can incorporate into a virtual, alternative world where they feel they are based. Given how well suited the theoretical backgrounds are on imagery to investigate the phenomena under the umbrella of the non-factual, we suggest, for the first time in literature, to challenge these questions through the eyes of this particular theoretical framework.

By acknowledging the illusion layer of telepresence, it seems futile to be curbed by the conceptually traditional feeling of 'being present' within the landscape of perception. In turn, the understanding of telepresence as a distinct mental imagery form offers imagery research an entire new set of mental imagery experiences to be studied. It also gives investigators the opportunity to delve into digital media usage's fertile lands, where, in contrast to other mental imagery contexts, users often yearn for events that are anchored in a specific location and experienced in the first person.

Under mental imagery's theoretical umbrella, a continuum is proposed that ranges from forms of telepresence fully connected to autobiographical memories, current events, places and people, or the anticipation of likely experiences, to feelings that show up within representations – although perhaps vivid and real in their appearance – unrelated to actual experiences and completely novel to the consumer. We further propose to integrate the two main accounts for imagery processes by suggesting that cognitive elaboration comes into action in the formation of telepresence that mostly involves realistic thinking, whereas narrative transportation tends to take place in the context of novel or pure fantastical representations. In the first case, telepresence-evoking content is used along with consumer knowledge and beliefs to construct mental models in and around the virtual environment. In the second, consumers shift their attention to the fantastical virtual contexts and, distanced from their own cognitive structures, fully immerse themselves in the alternative virtual domain.

As proposed, a deeper integration of mental imagery research and telepresence is urged to define the precise nature and extent of telepresence experiences and extend today's mental imagery theories to the context of novel consumption. From a theoretical point of view, it is beneficial to gain a more complete comprehension of the complexity of underlying processes in digital media usage and the psychological changes they can produce. Furthermore, greater integration and a broad-based approach can provide a new perspective to companies and digital media managers to craft more vibrant and impactful marketing strategies that take into account the mode by which users elaborate digital content, augment the mental imagery element of hedonistic experiences with digital media, and incorporate imagery as a hedonistic value for digital media products.

Content can lead consumers to evoke real events from the past and place themselves within them, visualise themselves in future scenarios related to previous experiences, or allow interaction with amazing characters. All three scenarios spark compelling and satisfactory

telepresence experiences, although the intervening mechanisms might differ in each case. At any rate, mental imagery will has given a competitive advantage to businesses offering hedonistic value propositions through digital media products. The interesting thing is that the link of thought-imagery telepresence with cognitive elaboration, and imagination-imagery telepresence with narrative transportation, has not been articulated until now. Additionally, the conceptual framework suggested can help policy-making institutions to take the content further, and also weigh up the effects of imagery-evoking appeals on users.

References

Babin, L.A. and Burns, A.C. (1997). "Effects of print ad pictures and copy containing instructions to imagine on mental imagery that mediates attitudes", *Journal of Advertising*, Vol. 26, No. 3, pp. 33-44.

Babin, L.A. and Burns, A.C. (1998). "A modified scale for the measurement of communication-evoked mental imagery", *Psychology & Marketing*, Vol. 15, No. 3, pp. 261-278.

Babin, L.A., Burns, A.C. and Biswas, A. (1992). "A framework providing direction for research on communications effects of mental imagery-evoking advertising strategies", *Advances in Consumer Research*, Vol. 19, No. 1, pp. 621-628.

Baños R., Botella C., Alcañiz M., Liaño V., Guerrero B., Rey B. (2004). "Immersion and emotion: their impact on the sense of presence", *Cyberpsychology & Behavior*, Vol. 7, No. 6, pp. 734-741.

Baños, R. M., Botella, C., Guerrero, B., Liaño, V., Alcañiz, M. and Rey, B. (2005). "The third pole of the sense of presence: comparing virtual and imagery spaces", *PsychNology Journal*, Vol. 3, No. 1, pp. 90-100.

Batat, W. and Wohlfeil, M. (2009). "Getting lost 'Into the Wild': understanding consumers' movie enjoyment through a narrative transportation approach", *Advances in Consumer Research*, Vol. 36, No. 1, pp. 372-377.

Belk, R.W. and Costa, J.A. (1998). "The mountain man myth: a contemporary consuming fantasy", *Journal of Consumer Research*, Vol. 25, No. 3, pp. 218-240.

Belk, R.W., Ger, G. and Askergaard, S. (2003). "The fire of desire: a multisited inquiry into consumer passion", *Journal of Consumer Research*, Vol. 30, No. 3, pp. 326-51.

Biocca, F. (1997). "The cyborg's dilemma: progressive embodiment in virtual environments", *Journal of Computer-Mediated Communication*, Vol. 3, No. 2.

Biocca, F. (2003). "Can we resolve the book, the physical reality, and the dream state problems? From the two-pole to a three-pole model of shifts in presence", *Presence Initiative Meeting*, *EU Future and Emerging Technologies*. Venice, Italy, May 5-7.

Biocca, F., Harms, C. and Burgoon, J.K. (2003). "Toward a more robust theory and measure of social presence: review and suggested criteria", *Presence*, Vol. 12, No. 5, pp. 456-480.

Bolls, P.D. (2007). "The effects of dual-task processing on consumers' responses to high-and low-imagery radio advertisements", *Journal of Advertising*, Vol. 36, No. 4, pp. 35-47.

Bone, P.F. and Ellen, P.S. (1992). "The generation and consequences of communication-evoked imagery", *Journal of Consumer Research*, Vol. 19, No. 1, pp. 93-104.

Bouchard, S., Dumoulin, S., Talbot, J., Ledoux, A.-A., Phillips, J., Monthuy-Blanc, J., Labonté-Chartrand, G., Robillard, G., Cantamesse, M. and Renaud, P. (2012). "Manipulating subjective realism and its impact on presence: preliminary results on feasibility and neuroanatomical correlates", *Interacting with Computers*, Vol. 24, No. 4, pp. 227-236.

Bracken, C.C. (2005). "Are we together? Exploring the similarities between the concepts of transportation imagery model and presence and their possible impact on persuasion", *Proceedings of the 8th Annual International Workshop on Presence*, pp. 125-129. London, England.

Braun, K.A., Ellis, R. and Loftus, E.F. (2002). "Make my memory: how advertising can change our memories of the past", *Psychology & Marketing*, Vol. 19, No. 1, pp. 1-23.

Burns, A.C., Biswas, A. and Babin L.A. (1993). "The operation of visual imagery as a mediator of advertising effects", *Journal of Advertising*, Vol. 22, No. 2, pp. 71-85.

Chen, A.C.N. (1991). "Cognitive neuropsychophysiology of thought imagery versus imagination imagery", *International Journal of Neuroscience*, Vol. 60, No. 1, pp. 65-77.

Childers, T.L. and Houston, M.J. (1983). "Imagery paradigms for consumer research: alternative perspectives from cognitive psychology", *Advances in Consumer Research*, Vol. 10, No. 1, pp. 59-64.

Childers, T.L. and Houston, M.J. (1984). "Conditions for a picture-superiority effect on consumer memory", *Journal of Consumer Research*, Vol. 11, No. 2, pp. 643-654.

Coman, E. and Rauh, C. (2003). "The impact of imagination on computer mediated telepresence", *Proceedings of the Annual Conference of the International Communication Association, Presence Panel of the Information Systems Division*. San Diego, California.

Deloitte (2010). "Where the true growth lies: the market for digital media". Deloitte Development LLC.

Denegri-Knott, J. and Molesworth, M. (2010). "Concepts and practices of digital virtual consumption", *Consumption Markets & Culture*, Vol. 13, No. 2, pp. 109-132.

Ellen, P.S. and Bone, P.F. (1991). "Measuring communication-evoked imagery processing", *Advances in Consumer Research*, Vol. 18, No. 1, pp. 806-812.

Escalas, J.E. (2004). "Imagine yourself in the product: mental simulation, narrative transportation, and persuasion", *Journal of Advertising*, Vol. 33, No. 2, pp. 37-48.

Escalas, J.E. (2007). "Self-referencing and persuasion: narrative transportation versus analytical elaboration", *Journal of Consumer Research*, Vol. 33, No. 4, pp. 421-429.

Finke, R.A. (1986). "Mental imagery and the visual system", *Scientific American*, Vol. 254, No. 3, pp. 88-95.

Finke, R.A. (1989). *Principles of mental imagery*. Cambridge, Massachusetts: MIT Press.

Fiore, A.M., Jin, H.-J. and Kim, J. (2005). "For fun and profit: hedonic value from image interactivity and responses toward an online store", *Psychology & Marketing*, Vol. 22, No. 8, pp. 669-694.

Fiore, A.M., Kim, J. and Lee, H.-H. (2005). "Effect of image interactivity technology on consumer responses toward the online retailer", *Journal of Interactive Marketing*, Vol. 19, No. 3, pp. 38-53.

Fortin, D.R. and Dholakia, R.R. (2005) "Interactivity and vividness effects on social presence and involvement with a web-based advertisement", *Journal of Business Research*, Vol. 58, No. 3, pp. 387-396.

Franceschi, K., Lee, R.M., Zanakis, S.H., and Hinds, D. (2009). "Engaging group e-learning in virtual worlds", *Journal of Management Information Systems*, Vol. 26, No. 1, pp. 73-100.

Gerrig, R.J. (1993). *Experiencing narrative worlds*. New Haven, Connecticut: Yale University Press.

Goossens, C. (2000). "Tourism information and pleasure motivation", *Annals of Tourism Research*, Vol. 27, No. 2, pp. 301-321.

Gordon, R.G., Gerrig, R.J. and Franklin, N. (2009). "Qualitative characteristics of memories for real, imagined, and media-based events", *Discourse Processes*, Vol. 46, No. 1, pp. 70-91.

Gorini, A., Capideville, C. S., De Leo, G., Mantovani, F. and Riva, G. (2011). "The role of immersion and narrative in mediated presence: the virtual hospital experience", *Cyberpsychology, Behavior, and Social Networking*, Vol. 14, No. 3, pp. 99-105.

Green, M.C. and Brock, T.C. (2000). "The role of transportation in the persuasiveness of public narratives", *Journal of Personality and Social Psychology*, Vol. 79, No. 5, pp. 701-721.

Green, M.C. Kass, S., Carrey, J., Herzig, B., Feeney, R. and Sabini, J. (2008). "Transportation across media: repeated exposure to print and film", *Media Psychology*, Vol. 11, No. 4, pp. 512-539.

Green, M.C., Brock, T.C. and Kaufman, G.F. (2004). "Understanding media enjoyment: the role of transportation into narrative worlds", *Communication Theory*, Vol. 14, No. 4, pp. 311-327.

Hirschman, E.C. and Holbrook, M.B. (1982). "Hedonic consumption: emerging concepts, methods and propositions", *Journal of Marketing*, Vol. 46, No. 3, pp. 92-101.

Holbrook, M.B. and Hirschman, E.C. (1982). "The experiential aspects of consumption: consumer fantasies, feelings, and fun", *Journal of Consumer Research*, Vol. 9, No. 2, pp. 132-140.

Hughes C.E. and Stapleton, C.B. (2005). "The shared imagination: creative collaboration in augmented virtuality", *Proceedings of the 11th International Conference on Human-Computer Interaction International Conference*. Lawrence Erlbaum Associates.

Jacobson, D. (2001). "Presence revisited: imagination, competence, and activity in text-based virtual worlds", *Cyberpsychology & Behaviour*, Vol. 4, No. 6, pp. 653-673.

Jasper, C.R. and Ouellette, S.J. (1994). "Consumers' perception of risk and the purchase of apparel from catalogs", *Journal of Direct Marketing*, Vol. 8, No. 2, pp. 301-321.

Jenkins, R., Molesworth, M. and Eccles, S. (2010). "Alternative hedonism, digital virtual consumption, and structures of the imagination", in M.K. Brady and M.D. Hartline (Eds.), *Marketing Theory and Applications: 2010 AMA Winter Educator's Conference*, Vol. 21, pp. 275-284. Chicago, Illinois: American Marketing Association.

Jones, M.T. (2007). "Presence as external versus internal experience: how form, user, style, and content factors produce presence from the inside", *Proceedings of the 10th Annual International Workshop on Presence*, pp. 115-126. Barcelona, Spain.

Jung, Y. (2011). "Understanding the role of sense of presence and perceived autonomy in users' continued use of social virtual worlds", *Journal of Computer-Mediated Communication*, Vol. 16, No. 4, pp. 492-510.

Keng, C.J. and Lin, H.-Y. (2006). "Impact of telepresence levels on Internet advertising effects", *Cyberpsychology & Behavior*, Vol. 9, No. 1, pp. 82-94.

Kim, M. and Lennon, S. (2008). "The effects of visual and verbal information on attitudes and purchase intentions in Internet shopping", *Psychology & Marketing*, Vol. 25, No. 2, pp. 146-178.

Kim, T. and Biocca, F. (1997). "Telepresence via television: two dimensions of telepresence may have different connections to memory and persuasion", *Journal of Computer-Mediated Communication*, Vol. 3, No. 2.

Kisielius, J. (1982). "The role of memory in understanding advertising media effectiveness: the effect of imagery on consumer decision making", *Advances in Consumer Research*, Vol. 9, No. 1, pp. 183-186.

Kisielius, J., and Sternthal, B. (1986). "Examining the vividness controversy: an availability-valence interpretation", *Journal of Consumer Research*, Vol. 12, No. 4, pp. 418-431.

Klimmt, C. and Vorderer, P. (2003). "Media psychology 'is not yet there': introducing theories on media entertainment to the presence debate", *Presence: Teleoperators and Virtual Environments*, Vol. 12, No. 4, pp. 346-359.

Lauria, R. (1997). "Virtual reality: an empirical-metaphysical testbed", *Journal of Computer-Mediated Communication*, Vol. 3, No. 2.

Le Bel, J.L. and Dubé, L. (1998). "Understanding pleasures: source, experience, and remembrances", *Advances in Consumer Research*, Vol. 25, No. 1, pp. 176-180.

Lee, K.M. (2004a). "Presence, explicated", *Communication Theory*, Vol. 14, No. 1, pp. 27-50.

Lee, K.M. (2004b). "Why presence occurs: evolutionary psychology, media equation, and presence", *Presence*, Vol. 13, No. 4, pp. 494-505.

Lessiter, J., Freeman, J., Keogh, E. and Davidoff, J. (2001). "A cross-media presence questionnaire: the ITC-Sense of Presence Inventory", *Presence: Teleoperators & Virtual Environments*, Vol. 10, No. 3, pp. 282-297.

Lindsay, E., Naidu, S. and Good, M. (2007). "A different kind of difference: theoretical implications of using technology to overcome separation in remote laboratories", *International Journal of Engineering Education*, Vol. 23, No. 4, pp. 772-779.

Lofman, B. (1991). "Elements of experiential consumption: an exploratory study", *Advances in Consumer Research*, Vol. 18, No. 1, pp. 729-735.

Lombard, M. and Ditton, T. (1997). "At the heart of it all: the concept of presence", *Journal of Computer-Mediated Communication*, Vol. 3, No. 2.

Lutz, K.A. and Lutz, R.J. (1977). "Effects of interactive imagery on learning: application to advertising", *Journal of Applied Psychology*, Vol. 62, No. 4, pp. 493-498.

MacInnis, D. J. (1987). "Constructs and measures of individual differences in imagery processing: a review", *Advances in Consumer Research*, Vol. 14, No. 1, pp. 88-92.

MacInnis, D.J. and Price, L.L. (1987). "The role of imagery in information processing: review and extensions", *Journal of Consumer Research*, Vol. 13, No. 4, pp. 473-491.

Manovich, L. (2001). *The language of new media*. Cambridge, Massachusetts: MIT Press.

Marks, D. (1977). "Imagery and consciousness: a theoretical review from an individual differences perspective", *Journal of Mental Imagery*, Vol 1, No. 2, pp. 275-290.

Mazzocco, P.J. (2005). "Moderators of the effects of mental imagery on persuasion: the cognitive resources model and the imagery correction model", *Dissertation*. Ohio State University.

Mennecke, B.E., Triplett, J.L., Hassall, L.M., Conde, Z.J. and Heer, R. (2011). "An examination of a theory of embodied social presence in virtual worlds", *Decision Sciences*, Vol. 42, No. 2, pp. 413-450.

Mikhailitchenko, A., Javalgi, R.R.G., Mikhailitchenko, G. and Laroche, M. (2009). "Cross-cultural advertising communication: visual imagery, brand familiarity, and brand recall", *Journal of Business Research*, Vol. 62, No. 10, pp. 931-938.

Minsky, M. (1980). "Telepresence", *Omni*, Vol. 2, No. 9, pp. 45-51.

Mitchell, A. and Olson, J. (1977). "Cognitive effects of advertising repetition", *Advances in Consumer Research*, Vol. 4, No. 1, pp. 213-220.

Molesworth, M. (2009). "Adults' consumption of videogames as imaginative escape from routine", *Advances in Consumer Research*, Vol. 36, No. 1, pp. 378-383.

Nah, F.F.-H., Eschenbrenner, B. and DeWester, D. (2011). "Enhancing brand equity through flow and telepresence: a comparison of 2D and 3D virtual worlds", *MIS Quarterly*, Vol. 35, No. 3, pp. 731-747.

Nelson, M.R., Yaros, R.A. and Keum, H. (2006). "Examining the influence of telepresence on spectator and player processing of real and fictitious brands in a computer game", *Journal of Advertising*, Vol. 35, No. 4, pp. 87-99.

Nielsen, J.H. and Escalas, J.E. (2010). "Easier is not always better: the moderating role of processing type on preference fluency", *Journal of Consumer Psychology*, Vol. 20, No. 3, pp. 295-305.

Novak, T.P., Hoffman, D.L. and Yung, Y.-F. (2000). "Measuring the customer experience in online environments: a structural modeling approach", *Marketing Science*, Vol. 19, No. 1, pp. 22-42.

Oliver, R.L., Robertson, T.S. and Mitchell, D.J. (1993). "Imaging and analyzing in response to new product advertising", *Journal of Advertising*, Vol. 22, No. 4, pp. 35-50.

Paivio, A. (1978). *Imagery and verbal processes*. New York: Psychology Press.

Paivio, A. (1986). *Mental representations: a dual coding approach*. New York: Oxford University Press.

Paivio, A. and Csapo, K. (1973). "Picture superiority in free recall: imagery or dual coding", *Cognitive Psychology*, Vol. 5, No. 2, pp. 176-906.

Paulos, E. and Canny, J. (2001). "Social tele-embodiment: understanding presence", *Autonomous Robots*, Vol. 11, No. 1, pp. 87-95.

Petrova, P.K. and Cialdini, R.B. (2005). "Fluency of consumption imagery and the backfire effects of imagery appeals", *Journal of Consumer Research*, Vol. 32, No. 3, pp.442-452.

Petrova, P.K. and Cialdini, R.B. (2008).”Evoking the imagination as a strategy of influence”, in C.P. Haugtvedt, P.M. Herr and F.R. Kardes (Eds.), *Handbook of Consumer Psychology*, pp. 505-524. New York: Psychology Press.

Phillips, D.M., Olson, J.C. and Baumgartner, H. (1995). “Consumption visions in consumer decision making”, *Advances in Consumer Research*, Vol. 22, No. 1, pp. 280-284.

Pinchbeck, D. and Stevens, B. (2005). “Schemata, narrative, and presence”, in M. Slater (Ed.), *Proceedings of the 8th Annual International Workshop on Presence*, pp. 227-230. London, United Kingdom.

Psomos, P. and Kordaki, M. (2012). “Analysis of educational digital storytelling software using the ‘dimension star’ model”, *International Journal of Knowledge Society Research*, Vol. 3, No. 4, pp. 22-32.

Rajagopal, P. and Montgomery, N.V. (2011). “I imagine, I experience, I like: the false experience effect”, *Journal of Consumer Research*, Vol. 38, No. 3, pp. pp. 578-594.

Richardson, A. (1969). *Mental imagery*. London, United Kingdom: Routledge & Kegan Paul.

Richardson, A. (1983). “Imagery: definition and types”, in A.A. Sheikh (Ed.), *Imagery: current theory, research, and application*. New York: Wiley.

Richardson, A. and McAndrew F. (1990). “The effects of photic stimulation and private self-consciousness on the complexity of visual imagination imagery”, *British Journal of Psychology*, Vol. 81, No. 3, pp. 381-394.

Roeckelein, J.E. (2004). *Imagery in Psychology: a reference guide*. Westport, Connecticut: Praeger.

Rose, S., Clark, M., Samouel, P. And Hair, N. (2012). “Online customer experience in e-retailing: an empirical model of antecedents and outcomes”, *Journal of Retailing*, Vol. 88, No. 2, pp. 308-322.

Rossiter, J.R. and Percy, L. (1978). “Visual imaging ability as a mediator of advertising response”, *Advances in consumer research*, Vol. 5, No. 1, pp. 621-629.

Sacau, A., Laarni, J. and Hartmann, T. (2008). “Influence of individual factors on presence”, *Computers in Human Behavior*, Vol. 24, No. 5, pp. 2255-2273.

Sanchez-Vives, M.V. and Slater, M. (2005). “From presence to consciousness through virtual reality”, *Nature Reviews Neuroscience*, Vol. 6, No. 4, pp. 332-339.

Sas, C. and O'Hare, G.M.P. (2003). “Presence equation: an investigation into cognitive factors underlying presence”, *Presence: Teleoperators and Virtual Environments*, Vol. 12, No. 5, pp. 523-537.

Saunders, C., Rutkowski, A.F., von Genuchten, M., Vogel, D. and Orrego, J.M. (2011). “Virtual space and place: theory and test”, *MIS Quarterly*, Vol. 35, No. 4, pp. 1079-1098.

Schau, H.J. and Gilly, M.C. (2003). “We are what we post? Self-presentation in personal web space”, *Journal of Consumer Research*, Vol. 30, No. 3, pp. 385-404.

Schlosser, A.E. (2003). “Experiencing products in the virtual world: the role of goal and imagery in influencing attitudes versus purchase intentions”, *Journal of Consumer Research*, Vol. 30, No. 2, pp. 184-198.

Schlosser, A.E. (2006). “Learning through virtual product experience: the role of imagery on true versus false memories”, *Journal of Consumer Research*, Vol. 33, No. 3, pp. 377-383.

Schneider, E.F., Lang, A., Shin, M. and Bradley, S.D. (2004). "Death with a story: how story impacts emotional, motivational, and physiological responses to first-person shooter video games", *Human Communication Research*, Vol. 30, No. 3, pp. 361-375.

Schroeder, R. (2006). "Being there together and the future of connected presence", *Presence: Teleoperators & Virtual Environments*, Vol. 15, No. 4, pp. 438-454.

Schubert, T. and Crusius, J. (2002). "Five theses on the book problem: presence in books, film and VR", *Proceedings of the 5th Annual International Workshop on Presence*. Porto, Portugal.

Schubert, T. W. (2009). "A new conception of spatial presence: once again, with feeling", *Communication Theory*, Vol. 19, No. 2, pp. 161-187.

Schubert, T., Friedmann, F. and Regenbrecht, H. (2001). "The experience of presence: factor analytic insights", *Presence: Teleoperators & Virtual Environments*, Vol. 10, No. 3, pp. 266-281.

Schultze, U. and Orlikowski, W.J. (2010). "Virtual worlds: a performative perspective on globally distributed, immersive work", *Information Systems Research*, Vol. 21, No. 4, pp. 810-821.

Shen, K.N. and Khalifa, M. (2008). "Exploring multidimensional conceptualization of social presence in the context of online communities", *International Journal of Human-Computer Interaction*, Vol. 24, No. 7, pp. 722-748.

Sheridan, T.B. (1992). "Musings on telepresence and virtual presence", *Presence: Teleoperators & Virtual Environments*, Vol. 1, No. 1, pp. 120-126.

Simon, F. (2010). "The experiential aspects of online search information for new customers to a website", *Canadian Journal of Administrative Sciences*, Vol. 27, No. 4, pp. 292-305.

Sjölie, D. (2012). "Presence and general principles of brain function", *Interacting with Computers*, Vol. 24, No. 4, pp. 193-202.

Skalski, P., Tamborini, R., Shelton, A., Buncher, M. and Lindmark, P. (2011). "Mapping the road to fun: natural video game controllers, presence, and game enjoyment", *New Media & Society*, Vol. 13, No. 2, pp. 224-242.

Slater, M. (2002). "Presence and the sixth sense", *Presence: Teleoperators & Virtual Environments*, Vol. 11, No. 4, pp. 435-439.

Slater, M. and Usoh, M. (1993). "Representations systems, perceptual position, and presence in immersive virtual environments", *Presence: Teleoperators & Virtual Environments*, Vol. 2, No. 3, pp. 221-233.

Song, K. and Fiore, A.M. (2007). "Telepresence and fantasy in online apparel shopping experience", *Journal of Fashion Marketing and Management*, Vol. 11, No. 4, pp. 553-570.

Stell, R. and Paden N. (1999). "Vicarious exploration and catalog shopping: a preliminary investigation", *Journal of Consumer Marketing*, Vol. 16, No. 4, pp. 332-346.

Steuer, J. (1992) "Defining virtual reality: dimensions determining telepresence", *Journal of Communication*, Vol. 42, No. 4, pp. 73-93.

Tamborini, R. and Skalski, P. (2009). "The role of presence in the experience of electronic games", in P. Vorderer and J. Bryant (Eds.), *Playing video games: motives, responses, and consequences*, pp. 263-281. Mahwah, NJ: Lawrence Erlbaum Associates.

Thomas, N.J. (1999). “Are theories of imagery theories of imagination? An active perception approach to conscious mental content”, *Cognitive Science*, Vol. 23, No. 2, pp. 207-245.

Thornson, C.A. Goldiez, B.F. and Le, H. (2009). “Predicting presence: constructing the tendency toward presence Inventory”, *International Journal of Human-Computer Studies*, Vol. 67, No. 1, pp. 62-78.

Unnava, R. and Burnkrant, R.E. (1991). “An imagery-processing view of the role of pictures in print advertisements”, *Journal of Marketing Research*, Vol. 28, No. 2, pp. 226-231.

Walters, G., Sparks, B. and Herington, C. (2007). “The effectiveness of print advertising stimuli in evoking elaborate consumption visions for potential”, *Journal of Travel Research*, Vol. 46, No. 1, pp. 24-34.

Wang, J. and Calder, B. J. (2006). “Media transportation and advertising”, *Journal of Consumer Research*, Vol. 33, No. 2, pp. 151-162.

Waterworth, E.L. and Waterworth, J.A. (2001). “Focus, locus, and sensus: the three dimensions of virtual experience”, *Cyberpsychology & Behavior*, Vol. 4, No. 2, pp. 203-213.

Waterworth, J.A. and Waterworth, E.L. (2003). “The meaning of presence”, *Presence-Connect*. Retrieved from http://www8.informatik.umu.se/~jwworth/PRESENCE-meaning.htm.

Weibel, D., Wissmath, B. and Mast, F.W. (2011). “Influence of mental imagery on spatial presence and enjoyment assessed in different types of media”, *Cyberpsychology, Behavior, and Social Networking*, Vol. 14, No. 10, pp. 607-612.

Weisberg, J., Te'eni, D., Arman, L. (2011). “Past purchase and intention to purchase in e-commerce: the mediation of social presence and trust”, *Internet Research*, Vol. 21, No. 1, pp. 82-96.

Wirth, W., Hartmann, T., Böcking, S., Vorderer, P., Klimmt, C., Schramm, H., Saari, T., Laarni, J., Ravaja, N., Gouveia, F.R., Biocca, F., Sacau, A., Jäncke, L., Baumgartner, T. and Jäncke, P. (2007). “A process model of the formation of spatial presence experiences”, *Media Psychology*, Vol. 9, No. 3, pp. 493-525.

Witmer, B.G. and Singer, M.J. (1998). “Measuring presence in virtual environments: a presence questionnaire”, *Presence*, Vol. 7, No. 3, pp. 225-240.

Wohlfeil, M. and Whelan, S. (2012). “‘*Saved!*’ by Jena Malone: an introspective study of a consumer's fan relationship with a film actress”, *Journal of Business Research*, Vol. 65, No. 4, pp. 511-519.

Wu, Y. (2007). “Toward a new framework for presence evaluation: a representational design perspective”, *Communications of the IIMA*, Vol. 7, No. 2, pp. 41-50.

Jung, Y. (2011). “Understanding the role of sense of presence and perceived autonomy in users’ continued use of social virtual worlds”, *Journal of Computer-Mediated Communication*, Vol. 16, No. 4, pp. 492-510.

Zaman, M., Anandarajan, M. and Dai, Q. (2010). “Experiencing flow with instant messaging and its facilitating role on creative behaviours”, *Computers in Human Behavior*, Vol. 26, No. 5, pp. 1009-1018.