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**UNDERSTANDING RESTORATIVE SERVICESCAPE EFFECTS ON HEALTH AND
CUSTOMER RESPONSE TOWARD RETAILERS.**

por

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UNDERSTANDING RESTORATIVE SERVICESCAPE EFFECTS ON HEALTH
AND CUSTOMER RESPONSE TOWARD RETAILERS

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ABSTRACT

This research incorporates green elements into retailing areas. In a mall shopping center possessing restorative qualities, similar to natural settings, this empirically work study if shoppers who perceive restorative potential in the mall hold favorable attitudes and exhibit positive behaviors towards the shopping center. Thus, this study links attention restoration theory to biophilic store design, showing the transformative potential of greenery in physical, shopping environments.

By drawing on attention restoration theory, this research links restorative servicescape design to managerial outcomes and suggests a health benefit to consumers who patronize shopping centers. Within the context of three studies, this research shows that consumers activate the restorative potential in the context of a lifestyle center that employs natural elements such as greenery, fountains, and wildlife (e.g., birds, butterflies).

Study1 demonstrates that consumers who perceived restorative potential (i.e., being away, fascination, coherence, scope and compatibility) are more likely than consumers who do not view greenery in the retail context to be more satisfied, loyal and recommend a retail format. Study 2 builds on the first by showing that consumer preference for biophilic design formative elements is robust regardless of whether shoppers patronize a lifestyle center to browse or to purchase a specific item. This study buttresses these findings by revealing that consumer preference for biophilic design remains steadfast regardless of whether shoppers patronize lifestyle centers to purchase a full-priced or discounted item. Study 3, which analyzes a consumer's response to retail greenery from a neuroscientific perspective. The study builds on previous research that

demonstrates not only consumer preferences for greenery in shopping areas but also the stress-reducing while getting more attention and spending less cognitive resources by spending time in green areas. That is, the neuroscientific findings imply that built and commercial settings may be able to add valuable perspectives to human health through therapeutic biophilic designs by promoting outcomes such as decreased stress and boredom and enhanced abilities to focus and relax. However, in terms of mall's restorative potential represents holistic stimuli, so that this visual greenery study does not consider olfactory and tactile stimuli.

Academy History

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I am currently the director of the Marketing Department at the University Externado of Colombia, Management Business School. I held a master's degree in Master of Marketing at Monash University. My research interests are transformative service research and their impact on the well-being. I am also interested in research in retailing, specifically customer experience in servicescape.

Dedication

Of course, to Paola Vivas, my wife, my infinite support life partner.

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Research Topic

Retailers have traditionally considered the place concept to denote just a physical space where exchanges between buyers and sellers transpire. Although this perspective remains valid, many academics whom investigate the experiential paradigm consider that buyers and sellers may exchange not only goods and services, but also, intangible experiences that influence a buyer's life satisfaction (Akaka & Vargo, 2015). That is, retail exchanges are often more than homogenous, quotidian marketplace transactions; indeed, some marketplace exchanges, often result in service establishments and service providers assuming a therapeutic role in some consumers' lives and everyday experiences (Holbrook, 2007; Lemon, & Verhoef, 2016; Pine, & Gilmore, 2011; Schmitt, 1999; Verhoef, Lemon, Parasuraman, Roggeveen, Tsiros, & Schlesinger, 2009). Indeed, a group of service researchers recently put forth a new place conceptualization that encompasses the notion that places may assume more than inert spaces where exchanges transpire. More specifically, "places, commercial or non-profit, physical or virtual, natural or built, represents a repository of resources that are potentially available to consumers and other social units through exchange processes that transpire in consumption settings. These exchange processes and the complexity of the offered resources, influence consumers' and other social units' relationship with or attachment to a locale as well as their well-being" (Rosenbaum, Kelleher, Friman, Kristensson, & Scherer, 2017, p. 289).

Interestingly, the management and marketing literatures are replete with articles that highlight the positive affect of goods and services on promoting human well-being, (Anderson, et al., 2016, Jones, et al., 2016; Mitchell, Weaver, Agle, Bailey & Carlson, 2016; Polonsky, 2011). Neoclassical economists have long argued that the life satisfaction that an individual obtains from consuming goods and services represents a proxy for promoting his or her subjective well-being

or life satisfaction, (Angner, 2010; Dolan, Peasgood, & White, 2008, Sirgy, Grace, Lee, Wei & Huang, 2012; Sirgy et al.,2008). In addition to considering life satisfaction via marketplace consumption, researchers adhering to both the transformative consumer research paradigm and to the transformative service research paradigm urge researchers to engage in investigations that consider how marketplace exchanges, in both the goods and services domains, respectively, may enhance consumer, communal/societal, and even, global well-being (Anderson et al., 2013; Kuppelwieser, & Finsterwalder, 2016). That is, the transformative consumer research paradigm represents a movement that seeks to encourage, support, and publicize research that benefits consumer welfare and quality of life for all beings affected by consumption activities (Association for Consumer Research, 2018). While, the transformative service research paradigm seeks to improve consumer and societal welfare and human well-being through service and service systems (Anderson et al., 2013).

Perhaps it is intuitive that consumption may enhance consumer well-being; after all, many studies suggest that satisfaction is often a wellbeing of consumption (Angner, 2010). Yet, both the transformative consumer and service research paradigms are attempting to expand the traditional investigatory focus on life satisfaction to a more specific concept of well-being. In other words, marketing academics have traditionally focused on exploring the impact of consumption as it relates to consumer satisfaction, or happiness, while the current trends in well-being explorations is to understand how the restorative potential may be enhanced via marketplace consumption, (Joye, Poels, & Willems, 2011; Rosenbaum et al., 2017).

Indeed, in the psychological domain, subjective well-being is a general term that encapsulates six human perspectives; these are self-acceptance, personal growth, purpose in life, positive relations with others, autonomy, and environmental mastery or the capacity to effectively manage one's life on the surrounding environment (Ryff & Keyes,1995).

Environmental psychologists have shown that people may remedy symptoms associated with directed attention fatigue by spending time in natural settings. Wilson (1993) coined the term, Biophilia Hypothesis, to profess the activation of restorative potential. Wilson (1993) posited that humans have an innate connection to nature and that they are biologically encouraged to respond positively to being in contact with nature to enjoy its healing potential.

Along these lines, Rosenbaum Kelleher, Friman, Kristensson, & Scherer, (2017), marketing researchers, have recently shown that people may also remedy cognitive resources associated with healing; namely reducing stress, by spending time not in natural settings, but rather, in consumption settings (e.g., shopping malls, lifestyle shopping centers) that incorporate greenery within the built environment, or commercial servicescapes, although they are places of high cognitive demand. Quite simply, consumers can remedy symptoms associated with mental fatigue by spending time in shopping areas that incorporate greenery and other natural elements into their architectural designs (Joye, et al, 2011).

That is, Rosenbaum , et al, (2017) postulate that consumer psychological restorative potential is influenced by the type of resources that they obtain in the marketplace; with some resources (e.g., money, goods, and services, relational, and social support), and others such as natural servicescape or physical spaces, playing a more critical role, respectively, in enhancing psychological consumer well-being.

The idea that physical stimuli inherent in a consumption setting's physical environment, or servicescape (Bitner, 1992) may evoke approach or avoidance reaction among consumers, or influence their physiological comfort, moods, or cognitive beliefs, is well researched in the retail marketing literature (Machleit & Eroglu, 2000; Wakefield & Baker, 1998; Mari & Poggesi, 2013). Rosenbaum and Massiah (2011) expanded upon this perspective by suggesting that elements in a consumption setting's physical domain may also influence a consumer's well-

being; namely, when a setting incorporates greenery, and other natural elements (e.g., water displays, aquariums, birds). More specifically, servicescape elements exist that not only encourage approach and avoidance responses (Rosenbaum et al., 2017), but also, which may increase managerial outcomes, (Akaka, & Vargo, 2015) by increasing involuntary attention, (Bettman, 1979).

Therefore, any aservicescape that utilizes involuntary attention, so as not require the use of mental resources, which enable a person to focus on taxing stimuli, helps a person recover from directed attention fatigue, and its pathogenic symptoms, including irritability, depression, and violence (Kaplan & Berman, 2010). Indeed, persons experiencing directed attention fatigue will experience challenges associated with self-regulation (e.g., self-control), the ability to successfully execute functional tasks, such as the ability to undertake work-related activities, and the ability to cope high demand resource activities (Kaplan et al, 2010).

In the following section, attention turns to highlight the significant of the research problem in the context of the shopping center as part of the retail system. In line with the burgeoning Transformative Service Research paradigm, this research seeks to thoroughly understand how shopping center establishments and service settings may promote individual well-being via environmental design.

Research Problem

Marketing researchers that attempt to demonstrate how environmental stimuli, which comprise built consumption settings, profoundly influence employees', and consumers' internal responses and behaviors, tend to draw on the theoretical tenets of Bitner's (1992) Servicescape Framework. The Servicescape Framework puts forth that built consumption settings, including commercial, non-profit, and public settings, are comprised of three types of physical stimuli.

Within the Servicescape Framework, these three types of physical stimuli are labeled as ambient conditions: space/function, signs and artifacts. The framework posits that both consumers and employees respond to a consumption setting's physical stimuli in a manner, which stimulates cognitive, emotional, and approach/avoidance behavior.

Although the premise of Bitner's (1992) Servicescape framework is valid, it focuses solely on the influence of physical stimuli on consumers' and employees' emotions, attitudes, and behaviors. Interestingly, since the mid-1990's, environmental psychologists have suggested that some commercial service settings, such as, amusement parks, car races, discotheques, and zoos, may contain stimuli that has restorative qualities which help people remedy negative symptoms that arise due to a person experiencing mental fatigue or burnout, including stress, irritability, and depression (Korpela, Ylén, Tyrväinen, & Silvennoinen, 2008).

Equally, others retails researchers are beginning to empirically show that the presence of natural stimuli, which are referred to as biophilic servicescapes, in shopping settings, positively influences a consumer's desire to approach both commercial (e.g., individual stores and shopping areas, see Bregman, Willems & Jyoe, 2012; Johnstone & Todd, 2012) and non-profit (e.g., museums, senior centres, campus library, monastery, geriatric homes, healing gardens, (Rosenbaum, Sweeney, & Windhorst, 2009; Rosenbaum & Wong, 2015) service settings.

Indeed, the seminal servicescape and retails framework fails to consider perceived restorative potential of qualities of restorative places, such as greenery, shrubbery, and water elements, may also influence a consumer's emotions, attitudes, and behaviors; including customer attitudes relevant responses such as customer satisfaction, propensity to spread positive word-of-mouth, expressed loyalty, planned/actual monetary expenditures and a reported Net Promoter Score (Baker & Wakefield, 2012; El Hedlei , Zouring & Cheabat, 2016; Joye Willems , Bregman & Wolf, 2010; Mari et al., 2013; Spence, Puccinelli, Grewal, & Roggeveen, 2014).

To date, retailing researchers have shown that shoppers enter consumption settings as a response to need recognition and to fulfill consumption goals (Pucchineli, et al., 2009); however, it is possible that shoppers patronize lifestyle centers to experience catharsis, such as relief from symptoms associated with fatigue and mental exhaustion or burnout. If so, then a shopper's pursuit of personal well-being (El Hedlei et al., 2016) may become inextricably linked to their patronage of lifestyle shopping centers.

Indeed, Wilson, (1993), posited that all humans possess an innate human tendency to value spending time in nature because of its restorative qualities; namely, the ability to help humans recover from mental fatigue. Although retailing researchers have suggested that retail greenery in individual stores may promote human restorativeness (Joye et al., 2010), to date, the role of goal orientation in diluting the well-being effects within the context of shopping centers has remained unexplored. Further, a consumer's need for relief from mental exhaustion may be so acute that many may seek out and patronize lifestyle centers regardless of whether a shopping trip is to browse or to consume, or whether they are seeking full-price or sale items. That is, a consumer's desire to be among natural elements during a shopping excursion may service as the primary driver that propels shoppers into open-air, landscaped lifestyle centers. It is worth noting here that retail greenery in both enclosed malls or in lifestyle centers may not be linked to human restoration and simply helps shoppers feel more excited during their shopping excursions. Indeed, extant research shows that mall shoppers often are motivated to seek out excitement during their shopping excursion (Wakefield et al., 1998), and retail greenery may simply promote sensory satisfaction during a shopper's time inside a consumption setting (Pucchineli et al., 2009).

Given these theoretical gaps as to whether retail greenery influences a consumer's well-being or is simply an environmental element linked solely to a shopper's excitement,

neuroscience research may offer valuable insights into understanding the role of retail greenery in a consumer's shopping experience. Neuroscience may provide marketing researchers with rich insights regarding a consumer's brain activity, when in the presence of retail greenery, and link the activity to dependent variables, such as engagement, attention, excitement, and interest, (Kumar; et al, 2017). In fact, Grewal, Roggeveen & Nordfält (2017) recently encouraged retail researchers to probe investigations that explore how retailers may create environmental connections with their customers. Perhaps, these connections occur at a subconscious level, rather than being a vestige of a self-reported response to some physical stimuli in a retail setting's servicescape; thus, these subconscious connections are opportune for exploration via neuroscience tools (Lemon et al., 2016).

Interestingly, beyond influencing customer attitudes, one may surmise whether natural stimuli, which exists within a built environment, or may not promote individual and communal well-being. Thus, if physical stimuli found within in a service establishment is likely to evoke wellbeing in a person (Bettman, 1979), as long within they offer product and services; or it is also possible that natural stimuli present with the same service establishment may act to increase wellbeing (El Hedhli,; Zourrig, & Chebat, 2016; Tauber, 1972).

Overall, the work presented in this dissertation heeds a research void in the servicescape paradigm by exploring a consumer's neural and self-reporting response to the presence of retail greenery (Joye et al., 2010; Rosenbaum, et al., 2017) in lifestyle centers (Akaka and Vargo, 2015; El Hedlei et al., 2016). Further, by brining neuroscience and self-reported research into both servicescape and transformative service research paradigms, the research presented the following question: What is the difference of the presence of retail greenery in a retail setting influence a consumer's (or shopper's) restorative potential emotions and its association to customer response?

Restorative Servicescape Framework.

This work draws upon environmental and evolutionary psychology to suggest that biological impulses, such as the human response to natural elements, may assume a role not only in expanding our understanding of biophilic stimuli but also how evolution, and to some extent, biology, may assume a role in the recovery of the attention (Joye et al, 2010), and consequently association to consumer's response (Spence Puccinelli, Grewal & Roggeveen, 2014).

Restorative Potential.

Kaplan et al, (1989) pointed out that human beings have evolved in a manner that permits them to confront environmental threats; however, doing so requires the expenditure of a person's mental capacity. That is, human evolution suggests that people have an innate connection to nature and that they have an innate ability to not only acquire information from environmental stimuli, but also, to focus intently on environmental stimuli, especially negative stimuli, that may threaten their well-being and even existence. Resultantly, environmental researchers postulate that people maintain an innate connection with nature, such as natural vegetation, slowly moving water, flowers, and so forth, as nature is at the essence of the human narrative, a provider of food and shelter, and thus, many of the problems that plague humankind may be addressed in some linkage to nature (Wilson, 1993).

Environment researchers draw upon Attention Restoration Theory (Kaplan et al, 1989) to conceptualize a place as having restorative potential when a place promotes an optimal consumer's electrical activity of the brain in response to stimulation of qualities of restorative places. That is, human restoration improves a person cognitive processes, which often become exhausted after spending time focusing on unpleasant, but nonetheless, important stimuli (e.g., work-related stimuli). Because environmental demands, such a focusing on a mentally taxing

task, requires that use of mental mechanism that becomes fatigued with use, ART posits that a person may recover from mental fatigue by spending time in settings that do not require their intense attention, that is a restorative environment is one which requires the use of a person's involuntary attention, or lack of focus (e.g., wandering at a beach, see Hartig, Evans, Jamner, Davis, & Gärling, 2003; Kaplan et al, 1989; Kaplan, et al, 2010).

Over 100 years ago, James (1892) identified two types of human attention; which are termed as being involuntary (low-demand of mental resources) and voluntary (high-demand of mental resources). James speculated that involuntary attention enabling a person to enter a locale in a passive state, and that this state requires a person to expend little effort, or mental resources, during his or her time in the locale. In other words, human involuntary attention is automatic, non-intentional, and does not require personal effort or mental resource expenditure (Kaplan et al., 1989).

In contrast, human voluntary attention, which is also referred to as directed attention, enables people to focus on taxing, but often critical situations (e.g., performing a surgery, reviewing a court case, driving a car). For a person to direct attention to a mentally taxing task, he or she must use an internal mechanism, or internal resources, which may become depleted over time. ART posits that the fatigue of this internal mechanism or depletion of internal resources, results in a person to experiencing negative symptoms associated with being mentally fatigued, including irritability, proclivity towards violence, and an inability to focus (Kaplan, et al., 1989).

ART puts forth that some environments, such as natural settings (e.g., beaches, parks, green areas) stimulate emotions (Ulrich, 1971; Kaplan & Berman, 2010) that together promote human restoration; these emotions are conceptualized in the literature as being away, fascination, coherence, scope and compatibility, (Kaplan, et al., 1989). It is worth noting here that a setting,

which has restorative capabilities for one person, may not have these capabilities for another, (Joye et al, 2010). That is, human restoration is a subjective experience that depends on a person's perception and hence, usage of either voluntary or involuntary attention. For example, a professional golfer may find spending time on a golf course to be restorative, while an amateur golfer, who focuses with intense concentration at every swing, would not only fail to experience restoration, but, he or she may be mentally fatigued after playing the game.

In terms of understanding restorative emotions, being away implies that a person feels that he or she is physically and psychologically in a space different from his or her everyday life by entering the locale. That is, a restorative place is not associated with normal, everyday routines and by spending time in the place, a person is temporarily emplaced in another world. Fascination implies that a specific locale contains patterns or stimuli that attract one's attention without requiring the expenditure of mental sources (e.g. involuntary attention). Coherence refers to a person easily understanding how a place is organized and whether he or she can achieve personal goals by spending time in the places. Scope refers to the feeling that a place is large, without restrictions to movements—essentially, the place is a world of its own¹ (Berto, 2005). Lastly, compatibility refers to person-place congruency. One may consider that high compatibility suggests that a person feels a sense of place or belongingness by spending time in a particular place.

Kaplan (1987) suggests that those emotions are predictors of psychological arousal. This means that as a person becomes emotionally aroused in a place, a person's nervous system is

¹ Coherence and scope formerly Extent.

excited, and it activates an individual restorative module (Tang, Sullivan, & Chang, 2015). The literature, both theoretical and empirical, have demonstrated the relative importance and intensity of cognitive and affective processes in the unfolding of a place's restorative potential (Van den Berg, et al., 2003). When a person experiences negative feeling from stressors in a place, such as a threatening environment or information overload, a person's restorative module is activated to regulate its emotion by cognitive process (Tang, et al, 2015).

Kaplans et al, (1987) pointed out that human being has evolved to deal with threaten environment using positive restorative response. Kaplans et al (1987) affirms that the genetic evolution has created a biologically human prepared capacity for acquiring and retaining restorative response to threaten settings. This is an essentially problem solving cognitive module, which are activated by natural-like stimulus such as vegetated setting types (slowly moving water, verdant vegetation, flowers...). Eventually, a person's ability to regulate its emotion due to environmental stressors is taxed and a person experiences symptom associated with directed mental fatigue, or mental exhaustion and burnout.

Therefore, natural environments are often conducive for human healing; however, other settings, such as commercial and non-profit service settings, may also mimic nature in promoting human restoration from mental fatigue (Kaplan et al, 1989). Some settings, such as natural settings, inherently evoke the four emotions, while other settings, may also roused these emotions. In other words, any setting, natural, might activate restorative emotions that contains the formative conditions (Basu, Duvall & Kaplan, 2018).

Clearly, the days in which man had to worry about environmental stressors, such as attacks from animals have long waned, modern environmental stimuli, such as buildings, traffic, and employment, still impact peoples' emotions, attitudes, and behaviors (Bitner, 1992). Further, in terms of marketplace consumption, many consumption settings are demanding and stressing

locales due to threats from crime, terrorism, traffic, parking issues, high prices, as well as boredom from spending time in quotidian and concrete-like shopping settings (e.g., strip malls) that focus solely on consumption instead of creating an exciting shopping experience. Rosenbaum et al. (2017) recently put forth a theoretical perspective that suggests that marketplaces may be able to address the boredom that characterizes monolithic, concrete structures by incorporating retail greenery, which promotes customer attitudes.

Cognitive, Emotional and Customer Responses.

By linking nature to service settings, marketing researchers have shown that atmospheric stimuli influence customer memory processes at different stages; these stages include encoding, storage, and retrieval (Spence et al, 2016). Given that people encode information according to its sensory meaning (e.g., color and shapes) and sense of familiarity or connection meaning, atmospheric stimuli helps consumers consider sensory inputs for mental processing, makes it easier for them to clarify place meaning, and ultimately, helps them to decide whether to approach or to avoid a consumption setting.

In the storage stage, a person's memory is at high capacity, which permits them to encode sensory information in permanent long-term memory, which may be easy to retrieve. A person's ability to retrieve information may depend on demographic factors, such as age; however, sensory codes involves permanent storage of information with an almost unlimited capacity (Puccinelli, 2009). According to the Kaplan et al, (1989), "humans are an information gathering species," from this information they create codes that facilitate the process of adaptation. Kaplan et al, (1989) argue that the adaptation for structural landscape features are human information processes oriented and that these processes depend on the attentional resources.

A consumer's memory attribution becomes central to his or her marketplace behavior. These sensory codes create attributions or causality to products and services or even to a specific

retailer. Therefore, natural congruence can enhance value attribution, thus, recall for self-restauration, which enhance subsequent attitudes to retailers as a brand distributors platform, (Spence et al, 2014). Environmental stimuli can influence a consumer's emotional state, which in turn drive the consumer's approach or avoidance behavior (Baker, Levy, and Grewal 1992). Affect, moods, emotions, and feelings thus clearly influence all stages of the consumer memory as this emotions spend less resources, (Bagozzi, Gopinath, & Nyer1999; Spence et al, 2014).

The assumption that consumer affinity for natural elements in consumption settings, or biophilic store design (Joye, Poe & Williems, 2011a,b), stems from an adaptive remnant of our species shared evolutionary history is plausible and thought provoking. However, by embracing this evolutionary assumption, marketing researchers can study an in-depth theoretical understanding regarding the impact of greenery in terms of six different emotional states; these are attention, interest, engagement, arousal, stress and meditation.

Attention refers to a person's ability to focus selectively on a stimulus that is shifting at its own will. In the marketplace, attention is an important consumer's resource that lies in the degree to which a consumer is engaged or involved in a retailer's offers (Pucchineli et al., 2009). Further, a retailer's strategy depends on creating attention towards its attributes to be retained in a consumer's memory. Building from the premise that preferences can be developed through the sensory level, (Zajonc,1980). Therefore, this work predicts that customers' attention will be elevated in green settings, as the stimuli provide consumers with more stimuli to encode for sensory meanings.

Interest refers to a consumer's emotions that is related to an individual's curiosity. Research on evolutionally psychology states that interest is an adaptive emotion that motivates consumers to obtain novelty information. Contemporary theories on emotion suggest that attention organizes and completes information by distinctive subjective experiences

(Bettman, 1979). The distinctiveness is evoked by novelty appraisal of the experience. This novelty is evoked by the complexity of the environment, vegetation diversity, and crowding density (Kaplan et al, 1989). Therefore, a complex natural setting complexity should provoke an individual's interest as our biological roots, and survival, are linked to natural environment (Sung, Chang, Liu, 2016). Hence, this work predicts that a consumer's ability to sense the restorative potential of consumption settings should stimulate cognitive curiosity.

Engagement represents a consumer's psychological emotional involvement with a good or service that occurs beyond transaction (Brodie, Hollebeek, Jurić, & Ilić, 2011). Consumer engagement can occur at three levels; these are at an outstanding customer experience, an emotional connection, and a shared identity with a good or service. Grewal et al, (2017) state that high levels of consumer engagement occur when consumers not only recognize some emotional connection from outstanding experiences with a service setting, but also, when they share an identity with the place. Consequently, as a place's restorative potential increases, customers may eventually achieve strong-shared identities with the place as well as emotional connections to these natural servicescapes which promote their health and well-being.

Arousal refers to a perception of excitement sensations in an individual's mind and is often the result of an emotional experience (Baggozi et al, 1999). A person's arousal systems are activated by environmental familiarity, (Baggozi, et al., 1999). Accordingly, this work suggests that as a consumer recognizes the restorative potential of a consumer setting, which generates excitement, consumer arousal should also be stimulated. That is, consumers should be aroused by spending time in restorative servicescapes that incorporate retail greenery.

Meditation refers to the action of contemplation for relaxation and inner states of awareness. This emotion has been claimed to enhance metacognitive regulation, (Tan, Dienes, Jansari, & Goh, 2014). Meditation is based on attentional cognitive mental bandwidth:

concentrative based and mindfulness based (Tang et al., 2014), while concentrative based focus on a single stimulus, mindfulness is associated with internal bandwidth. As previously discussed, environmental stimuli, especially natural stimuli, may promote restorative resource. For these reasons, we posit that retail greenery should promote human relaxation, and thus, meditation.

Stress Recovery, as previously discussed, persons experiencing mental fatigue will experience challenges associated with self-regulation (e.g., self-control), and the ability to successfully execute functional tasks, such as the ability to undertake shopping decision. Ulrich (1983, 1991) argues that the human central nervous system need time to recovery from stressful, demanding situations. Stress can be defined as the condition that results when the environment lead the individual to perceive a discrepancy between demand and available cognitive and emotional resources, (Berto,2104). Thus, both Rosenbaum et al. (2017) and Stress Recovery Theory (Ulrich, et al., 1983, 1991) postulate that consumer psychological stress recovery is influenced by the restorative potential of the qualities of consumption settings, as these settings permit consumers to use less cognitive resources by relying upon the use of involuntary attention.

Although researchers have shown that some places in the commercial realm may promote good health and emotional states, we offer other explanations for why a restorative setting should be of managerial interest. From the customer behavior theory, customer attitude is an umbrella concept for a set of customer's response metrics. Customer's metrics include a variety of constructs categorized into intentions measure (Satisfaction, Loyalty, Net Promoter Score, Word Of Mouth,) and behavioral intentions (Expenditure), (Gupta & Zeithaml, 2006).

Satisfaction is a cognitive and emotional response provided by the customer experience. Hence, by patronizing a restorative servicescape, a consumer may obtain a perception of

wholeness, which adds positive emotional value that also complements functional value obtained in the marketplace. That is, consumers acquire good and services as well as emotional and functional responses because of fulfilling their needs (Oliver, 2014). Perhaps, as a result of going to commercial settings that have retail greenery, as a restaurant, café, or department store, these places may produce idyllic restorative emotions which bring consumers back to a perception of wholeness. Therefore, consumers who fulfill their restorative needs, via the consumption of good and services, may find mental catharsis,(Oliver, 2014). This feeling is an end state in consumer satisfaction or “pleasurable level of consumption-related fulfillment,” which helps to lessen symptoms associated with mental fatigue and exhaustion, (Oliver, 2014). Thus, from the satisfaction literature, I predict that consumer satisfaction is positively related to his or her ability to sense the restorative qualities of the environment.

Word-of-mouth refers to is a verbal recommendation by a consumer that emerges because of a market exchange, (Oliver, 2014). A recommendation implies that a consumer shares knowledge of a service, service establishment, or provider that promotes another consumer’s well-being. That is, natural setting allows communal members to connect to one another, especially when they share interests and goal, in a coordinated effort to enhance individual and communal well-being. This leads Oliver (2014) to put forth that non-commercial communication is stronger than commercial communication in terms of creating consumer. This work speculates that consumers may share knowledge of the restorative potential of locales, such as noting on greenery, as doing so, would help others reduce pathogenic symptoms associated with mental fatigue, including irritability, violence, and an inability to plan.

Loyalty, or customer loyalty, refers to a consumer’s intention to buy a good or service or to re-patronize a retail outlet, (Oliver, 2014). Based on empirical data, both consumer’s intention and desire to re-patronize have been found to have strong relationship. A consumer’s intentions are

converted to actions, as the intentions suggest readiness to act and a desire to overcome obstacles, thereby facilitating actions associated with re-purchasing and re-patronizing. This works suggests a that a consumption setting's restorative potential may facilitate loyalty in that people retain an innate urge to affiliate with nature as part of their genetic narrative and biological composition, (Wilson & Kellert, 2013).

Therefore, a person's innate desire to be in natural setting may improve attention that it encourages information's decision processing to customer attitudes consumption when settings incorporate many green elements into their built environment, such as relatively large lifestyle center (Rosembaun et al, 2017). This desire for contact with nature, would encourage customers to recommend and spend money in servicescape that incorporate retail greenery, which would also influence their likelihood to express positive word-of-mouth and to concentrate expenditures in the lifestyle center.

The Net Promoter Score is another metric of customer loyalty, which is derived from a survey response to a respondent's likelihood to recommend an organization (Reichheld, 2006). Respondents who provide a response rate on a scale from 0 – 10, lower than 6 are considered detractors and those who rate an organization 9 or higher are termed promoters. Although many service academic suggest that the Net Promoter Score is overused in business (Keiningham, Cooil, Andreassen, & Aksoy, 2007). Reichheld (2006) argues that this single question provides organizations with profound insights. This work postulates that consumers whom perceive a service organization's restorative potential, should be a net promote of the organization.

Expenditure refers to the total amount of money that a person spends across all consumed goods and services (Fornell, Rust & Dekimpe, 2010). For example, in the context of a shopping mall, one may ask consumers how much money they spent in a store or during a particular shopping trip. As previously discussed, because a restorative environment may be linked to

promoting human well-being, this work posits that consumers will direct more of their monetary expenditures to stores, or to shopping areas, that promote their well-being via greenery.

Finally, to understand consumers behaviors, it should be recognized that consumers shop for various reasons, which may induce different restorative responses, (Puccinelli, 2009). The retail literature affirms that consumption goals influence consumer's memory capacity (Pucchineli et al., 2009). Consumer shop for various purposes including hedonic, which may not involve a specific need for a good and service might use less memory capacity, this suggest that consumers who may engage in browsing, where purchase is not the final goal, may perceive better restorative potential (Pucchineli et al., 2009). Conversely, consumers who may shop for utilitarian reasons, and be motivated to purchase a good or service, regardless of whether an item is on sale or at full price, do not perceived restorative potential. Indeed, memory research points out that utilitarian shopping may not be influenced by external stimuli as they are focus on target task, (Pucchineli et al., 2009).

Equally, utilitarian consumers may pay higher prices, compared to other consumers, as they depend of past prices as a benchmark rather than elements in a contextual setting, or just past prices (Puccinelli, 2009; Spence et al, 2014). In contrast, when hedonic consumers assess a price, they not only tend to base their evaluation on utility, but also, on a store's experience attribution. This suggest that the formative factors on consumer's perception of retail qualities may change customer behavior, (Spende et al., 2014).

To conclude, restorative potential is defined as the extent to which a natural qualities is potentially capable of activate intrinsically customer reflective emotions (being away, fascination, compatibility, scope, and coherence) reducing high demand resources when individuals are processing information from environmental building qualities. Three types of stimulus contributes to restorative potential: (1) formative properties, which depend on color,

shapes, odor... of places and from the retail's servicescape dimensions (2) its human restorative physiological module activated by its reflective manifestation or the relations between individual and the environment².

Methodological Approach

As recommended (Berto, 2014), this dissertation is comprised of three articles, and each article employs a different research methodology. Thus, this dissertation encompasses triangulation in its methodological approach. This triangulation approach is quite novel in marketing as most studies that explore the impact of environmental stimuli on either consumers' or employees' responses/behaviors tend to employ survey methodology.

For example, of 100 randomly selected published servicescape investigations, 70% used survey methodology, 30% used experimental design (Mari et al., 2013) and 0% employed neuroscience. Servicescape experiments tend to draw upon procedures developed by Mehrabian and Russell (1974), in their seminal stimulus-organism-response (S-O-R) paradigm. In this paradigm, stimuli (S) from the environment affect people's internal evaluations (O) that, in turn, influence behavior responses (R).

The first article employs survey methodology; the second study employs experimental design, and the third study employs neuroscience electroencephalography data (EEG). The second study employs a research experiment, which will be performed in a regulated laboratory environment to help eliminate environmental bias. In this experiment, student participants will be randomly selected to view a 1.20-min video that depicted a guided tour of a proposed lifestyle center in a major South American city. Each participant will view a video in a soundproof, climate-controlled room that contains no other stimuli than a computer and basic furniture.

² For clarification of reflective and formative stimuli see Rejoinder Chapter.

Before watching a video, each participant was told that a retail center developer wants opinions on a proposed lifestyle center in the city and that they would answer a questionnaire (anonymously) after watching the video. The green version shows natural greenery throughout the lifestyle mall, birds flying overhead, and a dramatic waterfall in the retail area, while the non-green version showed the same lifestyle mall without any natural landscaping features

The third study employs a neuroscientific approach to analysis. That is, rather than testing deductive hypotheses, this study highlights neural activity that occurs when informants watch the 1.20-min vides that feature green and non-green lifestyle malls. 30 participants are planned to each video, respectively. Of the 30 participants in each group, 15 are planned to be men and 15 women. Having 30 participants per cell should lead to approximately 80% power, which is the minimum suggested power for an ordinary study (Cohen, 1988). Although the video duration is brief, studies suggest that viewer engagement is optimal with a 1- to 2-minute video (Pew Research, 2012). It is worth mentioning here that retailing researchers have found video simulations of shopping and dining experiences to be effective for examining the effects of environmental stimuli on customers' perceptions (Wall & Berry, 2007) and consumption motivations (Van Rompay, Tanja-Dijkstra, Verhoeven, and van Es, 2012).

In terms of statistical analyses, the first study employs two-step cluster analysis; as the restorative stimulus depend on the subjective perception of threaten environment, (Berman, M. G., Jonides, J., & Kaplan, S. 2008). Then, multivariate analysis of variance (MANOVA) and analysis of variance were used to measure the association to customer metrics. Studies 2 and 3 also employs MANOVA follow-up ANOVAs using the Bonferroni technique to minimize the occurrence of Type 1 error.

A total of 400 participants are planned to participate in Study 1. Given that Study 2 is based upon three experimental conditions (e.g., green vs. non-green, green vs. non-green with

shopping intent; green vs. non-green with full price/sale price), I plan to collect 360 observations, which permits for 30 informants per design cell. For the third study, I plan to collect 60 observations from participants who will view concrete and natural servicescapes (see Douglas, 2008). This study employs the Emotiv EPOC+, which is a lightweight, high-resolution, neuro-signal acquisition and processing wireless headset that monitors 14 channels of EEG data to provide real-time measurements on six emotional and sub-conscious dimensions (Khushaba et al., 2013). Thus, informants in Study 3 do not have to explicitly explain their experiences when responding to stimuli as the EEG measures neural brain activity that occurs below the conscious level, (Khushaba et al., 2013).

All three studies was conducted in Colombia. Given Colombia's recent economic growth, its emerging middle class, and contemporary shopping centers (OECD, 2013), I believe that this research will generalize to other locales in industrialized nations. Indeed, one of the common features of a global middle-class is its unique affinity for shopping malls and for the consumption of high-end products (Jaffrelot & Van der Veer, 2008).

Researchers consider restorative potential construct (being away, fascination, coherence, scope and compatibility) as reflective first-order emotions that excite a person's nervous system from formative physical quality of the restorative servicescape, such as the vegetation's symmetry, colors, shapes, and so forth, and which serve to encourage a customer's sensory response (Spence et al, 2014). It is worth noting here that Bitner's (1992) servicescape framework accounts for ambient conditions (e.g., music, temperature, odors); space, function, and layout (e.g., equipment, ease of entry and exit); and signs, symbols, and artifacts (e.g., décor, signage; Bitner, 1992; Rosenbaum & Massiah, 2011), in the first study was not control, however, in the second and third study serve to evoke consumer responses controlling the biophilic and non-biophilic environment. Yet, The Replace Framework specifically draws upon ART to posit

that biophilic elements housed within built service settings elicit restorative potential and attitudinal responses within consumers that, in turn, nurture their psychological well-being (Mari, et al., 2013). Now, we turn to the empirical research studies³.

³ To limitation, see rejoinder, experiment, cognitive task, an neuroscientific tool.

Chapter I

The Restorative Potential of Shopping Malls

Marketing academics tend to consider the concept of place as a tactical, marketing-mix tool that includes corporate activities to make available products to target consumers at specific locales (Kotler, 1973). On the one hand, many places in the commercial realm are inert and homogeneous points of exchange that serve simply to facilitate transactions between buyers and sellers. On the other hand, some places in both the commercial and non-profit realms have the potential to transform and promote human well-being (Anderson et al., 2013; Frumkin, 2003), usually by serving as natural forums for their customers' social relationships, or place-based communities (Fournier & Lee, 2009; Meshram & O'Cass, 2013) that facilitate the exchange of life-enhancing social supportive resources (Rosenbaum, Ramírez & Camino, 2018). Indeed, social psychological literature provides compelling evidence that social network involvement is positively linked to health and well-being across an individual's life span. Thus, healthy places exist in the commercial realm.

To date, marketing researchers (Kang & Ridgway, 1996; Rosenbaum, Ward, Walker, & Ostrom, 2007) have tended to draw on psychological theories of social support (Cohen & Wills, 1985; House, Landis, & Umberson, 1988) to show how some commercial establishments, such as diners, fitness clubs, video arcades, and other so-called "third places" (McGinnis, Gentry and Gao, 2008; Meshram et al., 2013; Rosenbaum et al, 2018), may enhance consumer well-being by providing particular venues that encourage meaningful social interaction between and among customers and employees. Other service researchers (Rosenbaum & Smallwood, 2011; Rosenbaum et al, 2015), adhering to the burgeoning transformative research paradigm (Ostrom,

Parasuraman, Bowen, Patricio, & Voss, 2015), have drawn on attention restoration theory (ART), a seminal theory in natural psychology (Kaplan et al, 1989; Kaplan, 1995) and environmental psychology (Korpela, Hartig, Kaiser, & Fuhrer, 2001), to show that physical stimuli present in some settings can support customers' mental health and overall well-being. In essence, marketing researchers have used ART to suggest that built servicescapes can offer consumers the same health benefits as natural settings, or so-called wilderness servicescapes (Arnould, Price, & Tierney, 1998).

Although researchers know a great deal about the positive impact of natural landscapes on restoring human mental and overall health (Velarde, Fry, & Tveit, 2007), considerably less is known about the restorative impact of commercial landscapes that purposefully incorporate natural elements into their built environments, or servicescapes, with the intention of appealing to consumers. The purpose of this article is to address this void by achieving two objectives.

First, this research builds on recent findings in the services marketing domain by drawing on ART to empirically demonstrate that shopping malls may enhance customers' well-being by incorporating natural green spaces and places for social interactions and relaxation (e.g., comfortable benches, seating, and tables) into the physical design. Although environmental psychologists have speculated about the restorative potential of shopping mall, this article empirically tests this speculation—shopping centres that incorporate green elements into their physical designs may be idyllic settings for promoting shoppers' well-being.

Second, this article breaks new ground in the transformative service research paradigm by linking restorative shopping centres to customer attitudes, including customer satisfaction, intention to recommend the mall to others (positive word of mouth [WOM]), loyalty, Net Promoter Score, and monetary expenditures. In particular, this work demonstrates that mall landscaping, green efforts, and furniture that encourages socialization and relaxation not only

facilitate perceptions of the restorative qualities of the mall but also create a shopper segment that rewards the mall for its cathartic qualities by exhibiting favorable behaviors and holding positive attitudes towards the mall. Thus, in incorporating such designs, mall developers may encourage shoppers to patronize their malls, help shoppers restore their mental health, and, ultimately, realize profitability.

The plan for the article is as follows: First, we review the ART literature to discuss its background and its place in the marketing domain of shopping malls. This discussion leads us to propose research hypotheses that inextricably link ART with customer attitudes and emotional states. Second, to explore the research hypotheses, we undertake survey research with respondents from one of the largest malls in South America, which has recently incorporated restorative qualities into its shopping environment. Third, we conclude the article with theoretical and managerial implications and research limitations. Overall, this research extends the marketing discipline's understanding of why some commercial servicescapes (Bitner, 1992; Rosenbaum et al, 2011) seem to enhance well-being; that is, some shopping centres may be important venues not only for bringing sellers and buyers together but also for promoting shoppers' mental well-being.

Theoretical Background and Hypotheses

Both academic research and popular press are replete with articles that discuss the so-called greening of shopping centres and the incorporation of natural elements, such as water fountains and aquariums, into retail shopping areas, most notably lifestyle centres, which cater to upper-income shoppers (Yan & Eckman, 2009). Furthermore, marketing researchers have recently advanced the concept of biophilic store design (Breneman, et al, 2012; Joye, et al, 2010) to show that consumers are innately drawn to in-store and out-of-store greenery.

More specifically, many mall developers and retailers are actively integrating nature into the design of their retail environments because research confirms that greenery and the addition of natural elements into physical retail servicescapes enhance shoppers' moods, encourage them to spend more time and money (Bregman et al., 2012), and prompt their future patronage intentions (Mower, Kim, & Childs, 2012). For example, both the Dubai Mall, located in the United Arab Emirates, and the Great Lakes Crossing Outlets, located outside Detroit, installed aquariums to stimulate shoppers' senses and to encourage positive shopping behaviors.

To understand why shoppers universally tend to be attracted to biophilic store design, we draw on ART, whose origins come from James (1892), who postulated that people use two types of attention when they respond to environmental stimuli: involuntary and voluntary. James speculated that involuntary attention is reflexive, enables people to be in a passive state, and requires little effort or will to remain in an attentive state. That is, involuntary attention is automatic and thus is not intentional and does not require personal effort (Kaplan, 2001).

By contrast, voluntary attention enables people to focus on unpleasant but nonetheless important stimuli, such as concentrating on work despite being constantly interrupted or caring for a sick loved one; it requires usage of an internal mechanism and corresponding resources that may become depleted over time (Kaplan, 1995). Voluntary attention is believed to be integral to a person's mental health, enabling the person to engage in self-regulation (e.g., self-control) and to successfully execute functioning tasks, such as the ability to undertake work-related activities (Kaplan et al, 2010).

A key concept of ART is that directed attention allows people to be selective in what they focus on in thought and perception and that depletion of this mechanism, which facilitates directed attention, constitutes substantial impairments of their mental competency and self-regulation abilities (Kaplan, 2001). As a result of depleting internal resources that facilitate

voluntary attention, people may experience directed attention fatigue, which causes them to experience feelings associated with ‘mental burnout’, irritability, depression, stress, inability to concentrate, and even aggression. Furthermore, ART views directed attention as a global inhibitory mechanism; resultantly, fatigue from one task, which depletes a person’s ability to focus attention, transfers to other tasks that also require directed attention (Kaplan, 2001).

Although the negative symptoms associated with directed attention fatigue can be extreme, ART posits that people possess an innate means to recover from it and to regain their ability to focus on unpleasant stimuli in the future—namely, by spending time in restorative environments. When people are immersed in restorative environments, they use involuntary attention, thus helping them heal from the fatigue caused by demands requiring voluntary or directed attention (Berman, et al., 2008; Kaplan et al, 1989).

Although natural and environmental psychologists emphasise the restorative potential of natural settings, such as parks, beaches, and green areas (Berto, 2005; Herzog, Chen, & Primeau, 2002), marketing researchers have also shown that any built environment, including commercial and non-profit servicescapes (Rosenbaum et al., 2011; Rosenbaum et al., 2015), has the potential to promote human restoration, as long as it contains environmental characteristics, or servicescape stimuli, that encourage the healing process. Thus, service organizations may assume a key role in promoting human health.

Qualities of restorative places.

According to ART, environments with particular characteristics possess restorative qualities that may help people recover from fatigued or depleted directed attention.

Environmental psychologists have shown that restorative environments should have four characteristics: fascination, a sense of being away, extent, and compatibility (for reviews, see Felsten, 2009; Ivarsson & Hagerhall, 2008; Kaplan, 1995). Fascination refers to environmental

stimuli that have fascinating qualities and do not require mental effort to absorb. A sense of being away refers to people's feelings that they are 'in another place' from their everyday locale, whether actual or imaginary. Extent provides people with the feeling of being in a place large enough that no boundaries are evident. Last, compatibility refers to how well the content of a specific environmental supports the needs and inclinations of the user.

Although these four restorative qualities are sound, environmental researchers have modified the concept of 'extent' to capture environmental qualities of both coherence and scope (Ivarsson et al, 2008; Korpela et al, 1996). Coherence provides people with an understanding of particular environments, so that they understand how environments are organized and how they can use them to achieve personal goals. Scope refers to the feeling that a particular place is large, without restrictions to movements—essentially, the place is a world of its own (Berto, 2005).

To date, most natural and environmental psychologists have employed ART to empirically demonstrate that natural settings are especially effective for promoting attention restoration and, thus, human well-being. For example, research has shown that human exposure to natural settings can benefit children with attention deficit/hyperactivity disorder (Taylor & Kuo, 2011) and women after surgery for breast cancer (Cimprich, 1993); such as possessing restorative potential, they are certainly not the only environments capable of attracting involuntary attention and thus promoting restoration from directed attention fatigue. Service establishments such as amusement parks, malls, car races, discotheques, and zoos can all have restorative potential (Korpela et al., 2008). Environmental psychologists (Kaplan, Bardwell, & Slakter, 1993; Korpela et al, 1996) and, more recently, marketing, health, and gerontology researchers (Rosenbaum, et al, 2009; Rosenbaum et al, 2015) have empirically shown that built servicescapes, in both commercial (e.g., casinos, cafés) and non-profit service (museums, senior centres) settings, can mimic the restorative potential of natural environments by containing

restorative stimuli that promote human well-being. Therefore, consumption may offer some consumers catharsis.

Restorative shopping centres.

This discussion suggests that some places can promote good health by possessing restorative qualities. Specifically, marketing researchers, especially those in the biophilic store design paradigm (Joye et al., 2010), have shown that integrating natural elements into consumption settings can encourage consumers' approach behaviours and improve their moods while they are in these types of settings (Breneman et al., 2012). However, although environmental psychologists have speculated that shopping centres may offer customers restorative qualities (Korpela et al., 2008), to date, they have not empirically demonstrated the extent to which a mall's shoppers perceive its restorative qualities. Yet research has shown that 'hanging out at a mall' can offer shoppers transformative health benefits, such as escapism from loneliness and its pathogenic symptoms of stress and depression; essentially, malls offer people affordable options to relieve boredom. Indeed, some marketing researchers, albeit in the public policy realm, have adamantly encouraged mall developers to enhance their experiential offerings and provide free events, to help especially older shoppers assuage negative symptoms associated with loneliness and thus promote personal and societal well-being.

Other researchers have explored the other end of the age spectrum, showing that adolescents who linger in malls, or so-called mall regulars, find some semblance of escapism from feelings of alienation that characterize their lives. In particular, Chebat, G  linas, & Therrien (2005) discovered that many adolescents who 'hang out' at malls do so to escape alienation from family, school, or their middle-class community.

This discussion indicates that though a shopping centre represents a 'structuration of space to facilitate consumption and thus the realization of retail profits' (Goss, 1993, p. 18), it

may also represent a climate-controlled, aesthetically pleasing ‘hangout’ for older-aged consumers and adolescents. Rather than suggesting that malls per se promote health, we suggest that some consumers may co-create a shopping centre’s restorative qualities and, in doing so, realize health benefits. Furthermore, ART’s theoretical tenets offer an explanation of why consumers favorably respond to biophilic store design and to retailers that incorporate greenery into their retail areas.

By linking ART to contemporary retailing, we put forth an original framework; see Figure 1, which illustrates the proposed hypothesized relationships between a restorative servicescape and managerial outcomes. Indeed, this restorative framework supports the following hypothesis:

H1: Customers will perceive a shopping centre’s restorative potential if it comprises stimuli that allow them to sense (a) fascination, (b) being-away, (c) coherence, (d) scope, and (e) compatibility.

Managerially relevant outcomes associated with restoration.

Although researchers have shown that some places in the commercial realm may promote good health, we offer other explanations for why a restorative setting should be of managerial interest. By drawing on the biophilic store design literature (Joye et al., 2010), research has shown that customers favorably respond to retailers that incorporate greenery into their design by demonstrating positive future behavioral intentions and a desire to approach these landscaped retailers (Brenngman et al., 2012). To expand on these studies and clarify relevant managerial outcomes that shopping centres may realize from incorporating restorative stimuli in their built environments, we put forth the following research hypotheses:

H2: Customers who perceive a shopping centre’s restorative potential will report higher levels of satisfaction with the mall than customers who do not perceive the centre’s restorative potential.

- H3: Customers who perceive a shopping centre's restorative potential will express a higher likelihood to spread positive WOM about the centre than customers who do not perceive the centre's restorative potential.
- H4: Customers who perceive a shopping centre's restorative potential will report higher levels of loyalty to the mall than customers who do not perceive the centre's restorative potential.
- H5: Customers who perceive a shopping centre's restorative potential will report a higher Net Promoter Score than customers who do not perceive the centre's restorative potential.
- H6: Customers who perceive a shopping centre's restorative potential will report higher monetary expenditures per shopping trip than customers who do not perceive the centre's restorative potential.

An underlying assumption in restorative research is that people are attracted to physical stimuli that comprise environments, whether natural, commercial, or non-profit locales. In her servicescape framework, Bitner (1992) emphasizes that organizations control objective physical stimuli that encourage approach behaviors, such as lighting, parking, cleanliness, odors, noise, style of furnishings, and layout. Restoration is only possible when people are immersed in a setting; therefore, their positive responses to a locale's physical stimuli are a prerequisite for the possibility of restoration.

In Figure 1, we propose that some shoppers who approach and spend time in a shopping Centre may perceive the five restorative qualities that promote human well-being. As we previously discussed, for people to undergo restoration in any setting, ART proposes that they must perceive five stimuli that illicit their involuntary attention (i.e. fascination, sense of being away, coherence, scope, and compatibility). As a result of undergoing restoration in a shopping

centre, shoppers will reward the centre by holding favorable attitudes and engaging in positive behaviors towards the mall (e.g. positive WOM, continued patronization).

Methodology

Context.

This study employs survey methodology, using the context of one the largest malls in South America. We selected the mall in Bogota, Colombia, as a sample site because it features an expansive green area inside the shopping centre structure, which may accommodate more than 1.000.000 people per month. The mall considers this vast green area as serving as meeting point for shoppers and neighbors, alike. That is, the mall purposefully designed the green area to be analogous to a “third place,” which refers to a place away from home (first place) or work (second place), that embodies characteristics for people to easily and inexpensively partake in pure sociability via social and public events.

Indeed, the mall is located in a sprawling urban area, thus, the green area may be easily utilized by both shoppers and non-shoppers alike. The green area provides all mall patrons with the opportunity to take a respite from city dwelling or shopping, by enjoying a climate controlled, professionally landscaped urban green space. In addition, the mall encourages customer-to-customer social interactions near the green space, as well as in other areas of the mall, by providing comfortable seating and tables for all mall patrons. Figure 2 illustrates the mall’s exterior, the inside seating, and the green area.

We employed a convenience sampling technique among mall shoppers who voluntarily participated in the study, which resulted in a final sample size of 400 actual mall shoppers. The questionnaire was made available to respondents in both Spanish and English; the Spanish questionnaire was subjected to McGorry’s (2000) double-translation method. The questionnaires

were administered to respondents by the mall's internal marketing research team, who are professionally trained in survey administration. The respondents received a small gift, valued at \$5, for participating in this study; all respondents had to be at least 18 years of age. In addition, the mall's marketing department administered the questionnaires on different days and at different times of the day to achieve a wide sampling variance.

We employed quota sampling to ensure a distribution of ages; thus, 25% of the respondents each fell within the designated age groupings of 18–25 years, 26–35 years, 36–45 years, and 46 and older. In terms of gender, 60% of the respondents were women and 40% were men, which represents a reasonable distribution, given that mall shopping tends to be more popular among women (Chebat, et al, 2005).

Measures.

Restorativeness. Each respondent was asked to rate the restorative potential of the mall using a short version of the Perceived Restorativeness Scale (Korpela et al, 1996). The original PRS contains 29 items and measures perceptions of the five restorative qualities (i.e. fascination, being away, coherence, scope, and compatibility). The PRS short version uses a single item to measure each of the five restorative qualities, and each is rated on a seven-point scale (1 = not at all; 7 = very much; see Berto, 2005; Felsten, 2009; Tang, et al, 2015). The instructions to the short version PRS read as follows:

‘We are interested in understanding your experiences at Mall X. To help us understand your experience, we have provided for the following statements for you to respond to. Please read each statement carefully and then ask yourself, “How much does this statement apply to my experiences at Mall X?” To indicate your answer, circle only one of the numbers on the rating scale beside the statements. For example, if you think the statement does not apply to your experience at the mall, then you would circle a “1” (not at all); if it would apply very much, you would circle a “7” (very much).’ (See Appendix A for instrument).

We calculated Cronbach's alpha (α) to analyse the reliability of the PRS short version. The result was 0.81, which indicates a stable scale (Nunnally, 1978). An analysis of the item-to-total correlation revealed that the removal of any of the items would not increase Cronbach's α . Furthermore, Carmines and Zeller (1979) suggest that Cronbach's α should not be lower than 0.80 for widely used scales.

The statements of the short version PRS follow, with the corresponding ART factor in parentheses:

1. 'This mall is fascinating. It is large enough for me to discover new things and places and to be curious about different things' (fascination).
2. 'The mall is a place that makes me feel like I am far from everyday thoughts and concerns. When I'm at the mall, I'm able to relax and think about things that interest me' (being away).
3. 'This mall is a place where the activities, the stores, and things in the mall are ordered and organised' (coherence).
4. 'The mall feels like a whole world of its own, which is very large, and a place in which I can easily move around' (scope).
5. 'The mall draws my attention without effort and easily interests me' (compatibility).

Managerial outcomes. We measured five managerially relevant outcome variables that we hypothesised to be influenced by a shopper's interest in mall-based activities. These outcomes were shopper satisfaction, intention to recommend the mall to others (WOM), intention to return to the mall (loyalty), Net Promoter Score, and planned shopping expenditures at the mall.

We measured shopper satisfaction with a seven-item Likert scale, adapted from Babin, Lee, Kim, and Griffin (2005), that was anchored on a scale from 1 (strongly disagree) to 7

(strongly agree). Cronbach's alpha for these three items was 0.74, indicating adequate scale reliability (Nunnally, 1978).

Similarly, we adapted a shopper's intention to recommend the mall to others from a three-item Likert scale developed by Babin et al. (2005) and Palmatier, Scheer, & Steenkamp (2007); we measured the scale on the same aforementioned agreement continuum. The Cronbach's alpha for these three items was 0.71, above the minimum threshold of 0.70 for reliability (Nunnally, 1978).

We measured a shopper's loyalty to the mall on a three-item, seven-point Likert scale adapted from Palmatier et al. (2007); again, the respondents evaluated the scale on a continuum from 1 (strongly disagree) to 7 (strongly agree). Cronbach's alpha for the loyalty scale was 0.70, indicating adequate reliability (Nunnally, 1978). All of the items for these three aforementioned scales are shown in Table 1-1.

We obtained the Net Promoter Score from a single item regarding a respondent's likelihood to recommend the mall to a friend (Reichheld, 2003). This item ranged on a continuum from 1 (not at all likely) to 10 (extremely likely).

Finally, the respondents indicated how much money they planned to spend during their current visit at the mall (see Koschate-Fischer, Cramer, & Hoyer, 2014). The respondents also reported how long they planned to spend at the mall during their current visit. Last, the respondents answered demographic questions about their gender, age, monthly income, labour status, and marital status.

Data Results

To assess whether groups of mall customers who perceive the restorative potential of the shopping mall exist, we performed a two-step cluster analysis with SPSS 21. The two-step cluster analysis overcomes many obstacles that characterise traditional cluster analysis procedures, such

as k-means. Most notably, the two-step cluster analysis eliminates uncertainties about the optimal number of clusters in continuous or categorical data set by employing the lowest Bayesian information criterion (BIC) value as a criterion statistic (SPSS, 2015). Table 1-2 illustrates the results of the two-step cluster analysis.

By means of the lowest BIC value, the two-step cluster analysis classified respondents into two exclusive groups according to their self-reported perceptions of the mall's restorative qualities. Of the respondents, 287 (72%) were placed in the first cluster, and 113 (28%) were placed in the second cluster. From the clusters' mean responses to perceptions of the mall's restorative qualities, we labelled the Cluster 1 as 'restorative shopper' and Cluster 2 as 'non-restorative shopper'.

We performed a one-way multivariate analysis of variance (MANOVA) to determine the effect of perceived restoration among shoppers on the five dependent variables (fascination, being away, coherence, scope, and compatibility). We found significant differences between the two restorative clusters on the dependent measures (Wilks's $\Lambda = 0.33$, $F(5, 394) = 160.60$, $p < .001$). The multivariate η^2 based on Wilks's lambda was strong (0.67). Table 1- 2 contains the means and standard deviations of the restorative stimuli for the two groups.

Analyses of variances (ANOVAs) on the dependent measures served as follow-up tests to the MANOVA. Using a Bonferroni-adjusted p -value of .01 (.05/5), each test showed a significant mean difference on each of the five restorative stimuli between Clusters 1 and 2: fascination ($F(1, 398) = 172.52$, $p < .001$, $\eta^2 = 0.30$), being away ($F(1, 398) = 199.85$, $p < .001$, $\eta^2 = 0.33$), coherence ($F(1, 398) = 307.98$, $p < .001$, $\eta^2 = 0.44$), scope ($F(1, 398) = 250.08$, $p < .001$, $\eta^2 = 0.39$), and compatibility ($F(1, 398) = 334.84$, $p < .001$, $\eta^2 = 0.46$). The differences in means for each of the five restorative stimuli between the two clusters were significant, thus providing

support for H1. Some shopping centre shoppers perceived the restorative potential of the mall; thus, this finding inextricably links ART to the retailing and consumer services domains.

Cluster demographics.

We conducted a two-way contingency analysis to evaluate whether the two restorative clusters differed in terms of gender. The results reveal that gender and cluster membership are not significantly related (Pearson χ^2 (1, $N = 400$) = 0.40, *n.s.*). Both clusters contain a 60% female and 40% male composition (see Table 1-1). Overall, gender and mall restoration are not related. A second two-way contingency table analysis evaluated whether respondents' age differed between the two clusters. The results, shown in Table 1-2, reveal no significant differences between the clusters (Pearson χ^2 (4, $N = 400$) = 0.43, *n.s.*).

A third two-way contingency table analysis assessed whether respondents' monthly incomes differed between the two clusters. The results were significant (Pearson χ^2 (3 $N = 400$) = 12.83, $p < .01$). Respondents who perceived the mall's restorative qualities had slightly higher incomes than those who did not perceive these qualities. This finding suggests that higher-income consumers may be taxing their capacities to direct attention to unpleasant stimuli and therefore may be purposefully seeking out locales that evoke their indirect attention.

A fourth two-way contingency table analysis revealed that there is no relationship between cluster type and labour status (Pearson χ^2 (4, $N = 400$) = 5.45, *n.s.*). A fifth two-way contingency table analysis showed that there is also no relationship between shopper type and marital status (Pearson χ^2 (4, $N = 400$) = 0.70, *n.s.*). Table 1-2 presents all the frequency distributions. Overall, income emerges as the only significant demographic variable that differs in frequency distributions between the two restorative clusters.

Comparing attitudes and behaviors between clusters.

We conducted another one-way MANOVA to determine the effect of two restorative clusters on the five managerially relevant outcomes (satisfaction, WOM, loyalty, Net Promoter Score, and monetary expenditures). We found significant differences among the five outcomes on the dependent measures (Wilks's $\Lambda = 0.63$, $F(5, 394) = 40.39$, $p < .001$). The multivariate η^2 based on Wilks's lambda was moderate at 40.39. Table 1-3 contains the means and standard deviations of the dependent variables for the five outcomes.

The ANOVAs on the dependent variables served as follow-up tests to the MANOVA. Using the Bonferroni methods, we tested each ANOVA at the .01 level (.05/5). The results of each t -test were significant for four of the five managerially relevant outcomes. All of the empirical results for the following ANOVAs are shown in Table 1-3.

Satisfaction. We conducted an ANOVA to explore whether satisfaction with the mall differed between the two clusters. The test was significant ($F(1, 398) = 148.82$, $p < .000$, $\eta^2 = 0.27$). The results show that mall shoppers who perceive the restorative qualities of the mall ($M = 6.45$, $SD = 0.47$) are more satisfied with the mall than shoppers who do not perceive these qualities, ($M = 5.73$, $SD = .63$). Thus, H2 is supported.

WOM. Another ANOVA analyzed mean differences in mall shoppers' intentions to recommend the mall to others between the two clusters. Again, the test was significant ($F(1, 398) = 81.54$, $p < .000$, $\eta^2 = 0.17$). Shoppers in the restorative cluster ($M = 6.36$, $SD = 0.50$) were significantly more inclined than shoppers in the non-restorative cluster ($M = 5.83$, $SD = 0.59$) to recommend the mall to others. Thus, H3 is supported; retail greenery may encourage shoppers to discuss the restorative potential of the shopping centre to others.

Loyalty. Another ANOVA evaluated whether self-reported shopper loyalty to the mall differed between the two restorative clusters. The test was significant ($F(1, 398) = 91.10$, $p <$

.000, $\eta^2 = 0.19$). Restorative shoppers ($M = 6.32$, $SD = 0.55$) reported significantly higher loyalty to patronize the mall in the future than non-restorative shoppers ($M = 5.69$, $SD = 0.54$). Thus, H4 is supported, shoppers have favorable future behavioral intentions to patronage retail areas that contain green spaces (Joye et al., 2010).

Net Promoter Score. An ANOVA on shoppers' willingness to recommend the mall to others evaluated mean differences between the two clusters in terms of a self-reported Net Promoter Score. The test was significant ($F(1, 398) = 40.80$, $p < .000$, $\eta^2 = 0.07$); thus, H5 is supported. Restorative shoppers ($M = 9.00$, $SD = 1.03$) report a higher Net Promoter Score than non-restorative shoppers ($M = 8.25$, $SD = 1.35$). Reicheld (2003) suggests that customers with a Net Promoter Scores below 9 are unlikely to recommend an organization to others. Thus, from a net promoter perspective, loyalty does not exist between non-restorative shoppers and the shopping centre. Perhaps the restorative potential of the shopping centre is instrumental in creating an emotional bond between a shopper and the mall that represents more of a place attachment (Debenedetti, Oppewal, & Arsel, 2014) than a mere desire to patronise the mall in the future.

Monetary expenditures. Last, we performed an ANOVA to explore whether planned monetary expenditures (for the current shopping trip) differ between the two clusters. The test was not significant ($F(1, 398) = .51$, *n.s.*). Thus, H6 is not supported. Although restorative shoppers planned to spend approximately \$41 during their current trip at the shopping centre ($M = 40.57$, $SD = 155.00$), compared with \$38 per tip among non-restorative shoppers ($M = 37.69$, $SD = 77.30$), these amounts did not significantly differ from each other. Thus, restoration seems to encourage more of a consumer-sensing element (in terms of satisfaction), a bonding element (in terms of loyalty), and a desire to promote the mall to others than a planned expenditure

element. In other words, restoration does not alter planned consumption; however, it helps encourage patronage behavior and promote a shopper–mall bond.

Discussion

Implications.

Natural and environmental psychologists have a long investigatory history of exploring ART to understand the transformative role of places in promoting a person's health (Berman et al., 2008; Kaplan et al, 1989; Kaplan, 1995). Indeed, ART maintains that human restoration can unfold in locales that possess stimuli that evoke one's discovery opportunities (fascination), feelings of psychological distance from usual routines (being away), order and organization (coherence), ability to move in an expansive area (scope), and personal interest (compatibility). When these restorative stimuli are present in a specific place, ART posits that people can recover their directed attention capacity. That is, restoration enables people to again concentrate on unpleasant but nonetheless important stimuli (Korpela et al., 2001) and to remedy symptoms associated with directed attention fatigue, including irritability, aggression, and an inability to focus properly (Kaplan, 1995). Governmental institutions and societies in general may benefit from understanding how place promotes good health, as urbanization and economic development often thwart a person's ability to easily assuage negative symptoms associated with directed attention fatigue. Along these lines, a plethora of research exists regarding 'sick buildings' (Danna & Griffin, 1999), which do not contain areas in which inhabitants can recover from mental burnout and fatigue.

To date, psychologists have primarily explored the restorative potential of natural settings, such as grassy areas, beaches, parks, and gardens (Berman et al., 2008). Indeed, the evocative relationship that humans have with nature and the ability of natural settings to transform human health and well-being are investigated in the natural literature as biophilia (Grinde & Patil, 2009).

Thus, this work suggests that biophilia also has a place in the creation of health places, even places that exist in the marketplace.

Although the concept of place is firmly entrenched as a marketing-mix variable in marketing (Armstrong & Kotler, 2015), some marketing researchers have questioned whether marketers truly understand how consumers vivify places or how they develop profound bonds, or emotional attachments, to commercial or non-profit (Rosenbaum et al, 2011) service organizations. Indeed, both leisure scientists (Lehto, 2012) and service researchers (Rosenbaum et al, 2011; Rosenbaum et al, 2015) are beginning to draw on the tenets of ART to empirically demonstrate relationships between consumer sensations of place restorativeness and behavioral and health outcomes.

In line with this burgeoning place research, this article breaks new ground in the marketing domain by empirically demonstrating the restorative potential of a shopping centre and by linking shopper restorativeness to managerially relevant outcomes. From a theoretical perspective, this article links several marketing paradigms to ART and thus extends natural and environmental psychological research into consumption.

Mall retailing. Many retail pundits believe that that the future of enclosed malls, as well as traditional bricks-and-mortar retailing, is bleak and that many retail malls and stores will cease operating as a result of the tremendous growth of e-commerce retailing (Cowen & Parlette, 2011). Although many enclosed malls, shopping strips, and retail organizations are facing their demise, others are surviving and even thriving, often as a result of incorporating natural elements (e.g. gardens, aquariums) into the shopping environment.

For example, open-air lifestyle centres, which cater to upper-income shoppers, typically offer natural and architectural design elements that typify aesthetically pleasing shopping environments in urban locales (Yan et al, 2009) both an aquarium and a fountain are integral

components of the Dubai Mall. However, even single bricks-and-mortar stores can promote patronage by incorporating in-store green elements into their built environments (Breneman et al., 2012).

Public health. As we previously discussed, a key research priority in the services marketing domain is an understanding of how service providers can improve well-being through transformative service design (Ostrom et al., 2015); additionally, this work suggests a transformative public health impact. That is, governments may draw on ART to provide public places that cater to people experiencing directed attention fatigue, such as students, criminals, the terminally ill, the working poor, senior citizens, immigrants, and so forth, with restorative qualities. For example, governments could weigh the relatively low expense of incorporating gardens into urban education or detention facilities against the societal benefits of having people who are less irritable and less aggressive due to being mentally refreshed.

Loyalty. Although marketers know a great deal about satisfaction and loyalty (Oliver, 1999), ART elucidates why consumers develop attachments to certain places (Debenedetti et al., 2010). Korpela et al. (2001) conclude that a person's favorite place typically possesses restorative qualities; furthermore, they argue that favorite places can be natural, residential, or even commercial settings. Perhaps some consumers exhibit a profound attachment to certain service establishments (Rosenbaum, et al, 2007) not because of their perceptions of product and service quality but because of the place's ability to transform their mental health through patronage. We encourage researchers in the future to draw on ART in the exploration of consumer loyalty and place attachment, as we speculate that the glue that binds consumers to places is their restorative qualities.

Practical implications and limitations.

In terms of practical implications, we encourage mall developers to empirically explore whether the greening of enclosed malls may offer these decaying retailing relics a new lifeline. Although research shows that lifestyle malls that cater to the affluent can be successful (Yan et al, 2009), the sample site for this study was an enclosed mall in Bogotá, Colombia, that caters to middle-upper-income consumers. However, we propose that the mall is realizing success from its incorporation of grassy areas and comfortable seating into the built environment. Many shoppers take a few moments from their shopping excursions to sit on the real grass and to momentarily enjoy a natural setting in an otherwise urbanised environment (see Figure 2). We argue that traditional retailing may be rejuvenated with the addition of natural elements into the built servicescape.

Regarding research limitations, it is possible that the shopping centre's customers experienced the mall's restorative potential before the incorporation of green elements into the physical design; in addition, we did not have the opportunity to evaluate whether the mall's shoppers perceived the centre's restorative potential without the green space. However, ART suggests that natural areas are integral in prompting mental restoration. Despite these limitations, we believe that this article brings together retailing and natural/environmental psychology and sheds light on how shopping environments containing restorative stimuli can help transform human health and well-being.

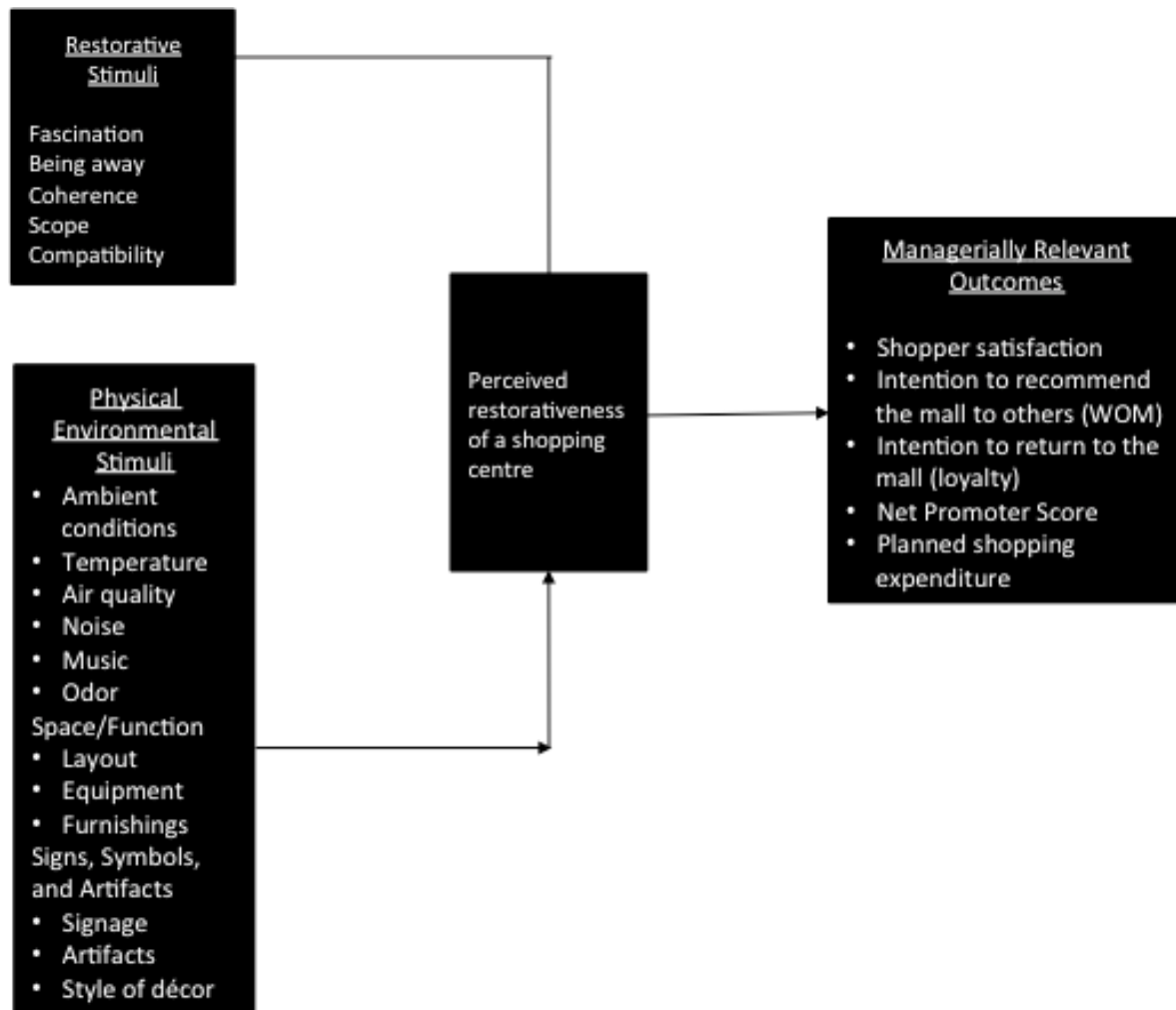


Figure 1 Restorative Shopping Centre and Managerial Outcomes



Figure 2 The Shopping Centre's Green and Social Areas

Table 1-1 Scale Items

Satisfaction (1 = strongly disagree; 7 = strongly agree)

I am satisfied with my decision to shop at the mall.

I feel very satisfied with the mall's service.

I am 100% satisfied with shopping at this mall

$M = 18.74$, $SD = 1.858$, Cronbach's alpha = .74

Source: Babin et al. (2005)

Intention to recommend the mall to others (1 = strongly disagree; 7 = strongly agree)

I will say positive things about this shopping mall to other people.

I will recommend this shopping mall to someone who seeks my advice.

I will encourage friends and relatives to shop at this mall.

$M = 18.61$, $SD = 2.98$, Cronbach's alpha = .71

Source: Babin et al. (2005); Palmatier et al. (2007)

Loyalty (1 = strongly disagree; 7 = strongly agree)

For my next purchase, I will consider this mall as my first choice.

I will buy more in this mall in the next few years than I do right now.

All else being equal, I plan to buy from this mall in the future.

$M = 18.43$, $SD = 3.35$, Cronbach's alpha = .70

Source: Palmatier et al. (2007).

Table 1-2 Cluster Characteristics, Means Difference, and Standards Deviations

| Item | Cluster 1 Restorative Shoppers <i>N</i> = 287 (72%) | Cluster 2 Non-Restorative Shoppers <i>N</i> = 113 (28%) |
|--------------------------------|--|--|
| Fascination | 6.55 (.56) | 5.48 (1.05)*** |
| Being-away | 6.53 (.57) | 5.43 (.96)*** |
| Coherence | 6.52 (.58) | 5.03 (1.11)*** |
| Compatibility | 6.64 (.49) | 5.29 (.98)*** |
| Scope | 6.61 (.55) | 5.42 (.91)*** |
| Gender (<i>n.s.</i>) | | |
| Male | 112 (39%) | 48 (42%) |
| Female | 175 (61%) | 65 (58%) |
| Age (years, <i>n.s.</i>) | | |
| 18–25 | 66 (23%) | 34 (30%) |
| 26–35 | 73 (25%) | 18 (24%) |
| 36–45 | 78 (27%) | 22 (19%) |
| 46–55 | 48 (17%) | 20 (18%) |
| 56 years and older | 22 (8%) | 10 (9%) |
| Monthly Income (**) | | |
| <500,000 pesos | 49 (17%) | 17 (15%) |
| 500,001–1 million pesos | 124 (44%) | 67 (62%) |
| 1,000,001–2 million pesos | 79 (28%) | 14 (13%) |
| 2,000,001+ million pesos | 32 (11%) | 11 (10%) |
| Labour status (<i>n.s.</i>) | | |
| Full-time employment | 148 (52%) | 69 (61%) |
| Part-time employment | 74 (26%) | 20 (18%) |
| Student | 21 (7%) | 12 (10%) |
| Housewife | 41 (14%) | 11 (10%) |
| Retired | 3 (1%) | 1 (1%) |
| Marital status (<i>n.s.</i>) | | |
| Single | 108 (38%) | 44 (39%) |
| Married | 93 (32%) | 29 (26%) |
| Partnership (living together) | 69 (24%) | 31 (27%) |
| Widow(er) | 12 (4%) | 6 (5%) |
| Divorced/separated | 5 (2%) | 3 (3%) |

*** $p < .001$; ** $p < .01$.

Table 1-3 Cluster Characteristics and Managerial Outcomes

| Item | Cluster 1 Restorative Shoppers <i>N</i> = 287 (72%) | Cluster 2 Non-Restorative Shoppers <i>N</i> = 113 (28%) |
|---|--|--|
| Managerially outcomes: | | |
| Shopper satisfaction | 6.45 (.47) | 5.73 (.63)*** |
| Intention to recommend the mall to others (WOM) | 6.36 (.50) | 5.83 (.59)*** |
| Loyalty | 6.32 (.55) | 5.69 (.54)*** |
| Net Promoter Score (1 = not at all likely; 10 = extremely likely) | | |
| Score | 9.00 (1.03) | 8.25 (1.35)*** |
| Planned expenditures (day, USD\$) | 40.57 (155.00) | 37.69 (77.30) ^{n.s.} |

*** $p < .001$; ** $p < .01$. All items measured on a scale (1 = strongly disagree; 7 = strongly agree).

Chapter II

A Dose of Nature and Shopping: The Restorative Potential of Biophilic Lifestyle

Centre Designs

More than a quarter century ago, Goss (1993, p. 23) noted that the harsh, concrete-laden architectural design features of regional shopping malls, with their “automobile-focused landscaping” and lack of natural and rustic elements, yielded passionless landscapes (Relph, 1976). These monolithic consumption landscapes seemingly deny shoppers meaningful experiences, encourage retail boredom (Lotz, Eastlick, Mishra, & Shim, 2010), and inhibit the ability to develop close bonds, or place attachments (Brocato, Baker, & Voorhees, 2015), to mall locales. Indeed, contemporary retailing commentators argue that shopping malls suffer from a customer “discovery deficit” (Verde & Wharton, 2015), with shopper boredom emulating from a lack of newness and unique experiences in the mundane and expansive built environments. Many huge, enclosed shopping centers, with their lack of green spaces, tend to appeal to shoppers’ casual attention (Relph, 1976); the mall itself is of little or no interest to consumers but is merely a context to serve more immediate concerns for fulfilling consumption needs. Indeed, although mall designers likely desire shopping malls to become part of local communities, the enclosed, nearly windowless designs are inadequate substitutes for the seeming loss of community characteristic of post-war American suburbs (Steward & Dickinson, 2008).

Many retailing scholars suggest that retailers (Bregman, Willems, & Joye, 2012; Mower, Kim, & Childs, 2012) and mall developers (Rosenbaum, Otalora, & Ramírez, 2016) can increase shopper interest by engaging in “demalling” (Reynold, Ganesh, & Lockett, 2002), a process of converting enclosed malls into open-air shopping areas and “entertailing” (i.e., the addition of entertainment-oriented services in a retail context). A key architectural design feature in open-air

shopping areas is the integration of natural elements, including greenery and water displays (fountains), animals (e.g., birds, butterflies, squirrels) into shopping contexts that feature trendy retail and entertainment options. Pioneering marketing researchers on this contemporary retail phenomenon coined the term “biophilic store design” to denote a managerial strategy that “incorporates natural forms, elements, and conditions into the built [retail] environment” (Joye, Willems, Brengman, & Wolf, 2010, p. 58). Along these lines, other researchers refer to open-air malls as possessing a “restorative environmental design” (Kellert, 2008, p. 5), which denotes “...[a] biophilic design approach that fosters beneficial contact between people and nature in modern buildings and landscapes.”

Bitner’s (1992) classic servicescape framework accounts for biophilic design. The framework posits that natural elements housed within built environments elicit evocative emotional responses within service employees and consumers that, in turn, nurture positive approach behaviors and social interaction between and among these groups within consumption settings. Bitner’s contention about the suggestive allure of natural elements in consumption is linked to research in natural psychology, most notably Kaplan’s (1987) perspective on the restorative health benefits of natural elements.

According to Kaplan (1987, 1995, 2001), natural elements inherently contain three manifestation that inhibit boredom: complexity (e.g., visual richness), mystery (e.g., encourages exploration of a setting), and coherence (e.g., an immediate understanding; Tang, Sullivan, & Chang, 2015). Although Kaplan (1987) is referring to a person’s boredom in general, Bitner (1992) extends these thoughts to consumer marketplace behavior, thus linking the nuances of consumption with natural settings. Thus, the presence of natural elements in shopping contexts might help inhibit consumer boredom and encourage positive shopper responses, including

spending time and money within these retailing contexts due to restorative elements in a mall's physical environment, or servicescape.

Biophilic store design may offer an explanation for the increasingly popularity of lifestyle centers, despite the decline of traditional malls, including regional and super-regional centers (Nielsen, 2014; Reynolds et al., 2002). A lifestyle center refers to an open-air retail setting comprised of at least 50,000 square feet of retail space that caters to an affluent clientele. The retail space embodies the entertailing retail concept, with lifestyle centers offering diverse amenities such as dining, recreation, and entertainment, all in a setting of landscaped gardens, water elements, and gathering places (Nielsen, 2014; Joye et al., 2010; Yan & Eckman, 2009). Many lifestyle centers also feature mixed-use space, such as hotels, residential suites, and offices, albeit in the context of trendy retailing options.

Prior studies tend to explore the impact of greenery in actual stores, window displays, shopping districts, and enclosed malls on shopper emotions, attitudes (Breneman et al., 2012), and well-being (Rosenbaum et al., 2016). Yet the influence of biophilia design, in the context of an open-air lifestyle center, on consumer responses or health remains relatively unexplored, despite the increasingly global popularity of this retail format (Nielsen, 2014; Yan & Eckman, 2009). Indeed, a detailed understanding of biophilia design within in consumption settings, in general, remains meager (Kellert, 2008).

Thus, the goals of this article are threefold. First, the article explores a new area in retail research—namely, the restorative potential of biophilia design in the context of a lifestyle mall. The findings imply that consumers who spend time in lifestyle centers may experience some relief from mental fatigue by doing so. Second, by drawing from Kaplan's (1995, 2001) influential attention restoration theory (ART), this research bridges biophilia design and the transformative service research paradigm (Rosenbaum et al., 2016) to show that lifestyle centers

may transform consumer and even societal well-being. Specifically, the paradigm demonstrates how services can improve individual and societal well-being (Anderson et al., 2013). Third, the article explores the steadfastness of biophilia design by exploring the restorative potential of natural elements when lifestyle center shoppers face three buying goals situations: everyday shopping, browsing versus purposeful shopping (Reynold, Jones, Musgrove, & Gillison, 2012), and paying full versus discounted prices (Alford & Biswas, 2002).

The plan for the article is as follows: first, we review the biophilia literature in conjunction with ART (Kaplan, 1995; Rosenbaum et al., 2016) and the servicescape framework (Bitner, 1992; Brengman et al., 2012) to develop hypotheses for empirical testing within an experimental design. Second, we examine the impact of biophilic store design when shoppers are in two conditions: browsing versus purposeful shopping and paying full or discounted prices. We explore these two conditions through an experimental design. We conclude the article with theoretical and managerial implications and research limitations

Literature Review

Biophilic designs in retail settings.

Biophilic store design is a relatively new concept and research paradigm in the services marketing and retailing disciplines. As previously mentioned, Joye et al. (2010) conceptualize the term “biophilic store design” to denote the integration of greenery or natural elements into retail environments and the consequential benefits of doing so. Despite the widespread use of “in-store foliage” (Brengman et al., 2012, p. 808) in retail stores, window displays (Mower et al., 2012), enclosed malls (Rosenbaum et al., 2016), and lifestyle centers (Yan & Eckman, 2009), surprisingly few empirical studies evaluate consumer responses to biophilic store design within commercial retail settings.

Biophilia refers to “the innately emotional affiliation of human beings to other living [natural] organisms” (Wilson, 1993, p. 31). The biophilia hypothesis posits that though people reside in urban settings and have lived experiences that are far removed from natural processes and elements, they retain an innate urge to affiliate with nature as part of their genetic narrative and biological composition (Kellert 2008; Wilson & Kellert, 2013).

Given that human exposure to natural stimuli tends to elicit beneficial psychological and physiological responses, including reduced blood pressure, heart rate, muscular tension, and levels of stress hormones, as well as improvements in mental focus and creative problem-solving abilities (Browning, 2016), the inborn drive for people to seek out and spend time in natural settings appears to be intuitive or simply “pure evolutionary logic” (Wilson, 1993, p. 32). Yet intuitive logic may partly be explainable by research that links forestry to well-being (Li, 2010). That is, research shows that exposure to trees and forestry improves the human immune system because people breathe in phytoncides, or airborne chemicals that plants and trees exude as protection from insects and disease. Indeed, studies reveal that people who walk in natural settings (e.g. grasslands, woodlands, and parks) report less depression, tension, confusion, and fatigue compared to people who opt to walk in indoor shopping centers (Ichoku, 2015).

Phytoncides possess anti-bacterial and anti-fungal qualities that help plants fight disease. In addition, when people breathe in phytoncides, the number and activity of their white blood cells increase, which neutralizes tumors and virus-infected cells in human bodies (Li, 2010; New York State Department of Environmental Conservation, 2016). For example, research shows that when communities experienced tree loss from the emerald ash borer, human mortality due to cardiovascular disease and lower respiratory disease increased, suggesting a link between trees and human health (U.S. Department of Agriculture Forest Service, 2014). Phytoncides may even play a role in explaining the health benefits that patients, staff, and visitors report receiving from

spending time in so-called healing gardens, which are natural settings housed in the contexts of built, health-oriented environments such as hospitals, senior facilities, cancer facilities, and memory care units (Cooper, 2016).

Biophilic designs and ART.

Marketing researchers are beginning to explore the impact of natural elements within commercial built environments, or servicescapes (Rosenbaum & Massiah, 2011), on consumption behaviors and health-related outcomes. For example, consumers may be innately driven to patronize consumption settings that feature natural elements, such as aquariums in shopping malls (Windhager, Atzwanger, Brookstein, & Schaefer (2011), wilderness excursions in recreational parks (Arnould, Price, & Tierney, 1998), grassy areas within an enclosed, urban mall (Rosenbaum et al., 2016), or even combinations of trees and ersatz natural elements, (Reisberg & Han, 2009), to achieve well-being.

Marketing research efforts on exploring the healing or restorative potential of commercial environments primarily draw from ART (Berto, 2005; Joye et al., 2010; Kaplan, 1995, 2001), which also supports the primary axiom of the biophilia hypothesis. ART posits that a person's ability to direct attention in thought and perception to challenging or unpleasant, but nonetheless important, environmental stimuli is a biological mechanism that becomes fatigued with use; in turn, this fatigue leads the person to experience negative symptoms, such as attention deficit hyperactivity disorder, an inability to focus, depression, stress, neuroticism, and violence (Kaplan, 1995; Newman & Brucks, 2016; Rosenbaum & Massiah, 2011).

ART prescribes that people may be able to recover from mental fatigue and assuage its symptoms by spending time in environments that possess four properties: being away, extent, fascination, and compatibility (Felsten, 2009; Kaplan, 1995; Rosenbaum & Massiah, 2011). Being away involves distancing oneself from usual activities (e.g., work, school, caring for a

loved one) that often lead to mental fatigue and burnout. Being away can be physical, such as taking a walk in a park, shopping in a mall, or spending time at a vacation destination (Kaplan, 1995), or even entail a change in mental content from that which led to fatigue to something quite different (Felsten, 2009). Extent refers to an environment that has sufficiently rich content and coherent structure to be perceived as a “whole other world” (Kaplan, 1995, p. 173). Fascination refers to a setting’s ability to hold a person’s attention effortlessly; the person wants to be in the setting because its décor or people, for example, easily capture his or her attention (Kaplan, 1995). A fascinating servicescape is an engaging servicescape in which people can escape from the noise and banter of others or can join others when they opt to do so. Finally, compatibility suggests that a person can carry out his or her planned activities smoothly and without struggle (Kaplan, 1995). Thus, a person’s goals must be consistent with demands made by the setting, and the environment must provide the information needed by the person to achieve those goals. A person–place congruency facilitates feelings of compatibility (Morrin & Chebat, 2005), so that a person easily feels comfort in a specific locale and acts naturally in a manner that corresponds to what is appropriate in the setting (Kaplan, 1995).

Natural environments, such as parks, beaches, and national forests, represent archetypical restorative settings because they typically contain the four environmental properties that promote human healing and relief from mental fatigue (Stack & Shultis, 2013). Within the marketing discipline, biophilia design researchers (Joye et al., 2010) and service researchers (Rosenbaum & Wong, 2015) provide empirical evidence that built environments, both commercial and non-profit settings, that integrate natural elements into their contexts may help transform human health by promoting restoration and, thus, relief from mental fatigue. For example, Rosenbaum and Smallwood (2013) report that cancer patients experience lower levels of cancer-related fatigue after spending time in cancer resource centers that contain restorative properties. Joye et al.

(2010) conclude that consumers show preferences for shopping on tree-lined streets and that in-store greenery promotes stress relief (see also Brengman et al., 2012).

Study 1 Responses to Greenery versus No Greenery

Previous biophilia research does not specifically explore the use of natural elements, such as greenery, birds, and fountains, in the context of lifestyle centers. However, the lifestyle mall format, one that features restaurants, entertainment, and design ambiance and amenities (e.g., landscaped gardens, natural sounds, fountains), is growing in popularity not only in the United States but also globally (Hardwick, 2015; Yan & Eckman, 2009). Lifestyle centers, which tend to facilitate browsing and exploration by integrating greenery into consumption settings, can result in a mall becoming a “playspace” for consumers (Maclaran & Brown, 2005, p. 315), one that denotes the ludic, and somewhat hedonic, character of a retail environment. These retail playspaces, in turn, may encourage feelings associated with being away, extent, fascination, and compatibility, thus promoting restoration.

This discussion suggests that in the context of a lifestyle shopping center, the integration of natural elements can provide shoppers with some relief from fatigue and thus promote a desire to approach and spend time in the center. Although retailing researchers investigate the restorative potential of grassy areas in enclosed malls (Rosenbaum et al., 2016), exploration of biophilia designs in the context of lifestyle centers is missing. We address this research void by putting forth the following research hypothesis:

H1. Some consumers are more likely to sense the restorative potential of a lifestyle (retail) center that features natural elements (greenery and fountains), by reporting higher perceptions of (a) being away, (b) extent, (c) fascination, and (d) compatibility, than consumers shopping in the same lifestyle center without natural elements.

Participants,

Sixty-eight participants ($M_{age} = 23.91$, $SD_{age} = 5.85$, age range: 17–41 years) took part in this study. Participants were recruited from the subject pool of a large private university located in a cosmopolitan South American city. The participants received partial course credit for their efforts in the study. The sample was 56% male ($n = 38$) and 44% female ($n = 30$). It is worth noting here that given a medium to large effect size, 30 participants per cell should lead to about 80% power; the minimum suggested power for an ordinary study (Cohen, 1988).

Scenarios and procedure.

Each participant was randomly selected to view a 1.20-minute video that depicted a guided tour of a proposed lifestyle center in a major South American city. Each participant viewed a video in a soundproof, climate controlled room, which contained no other stimuli other than a computer and basic furniture. One of the authors explained to the participants that a retail center developer wanted opinions on a proposed lifestyle center in the city and that they would answer a questionnaire (anonymously) after watching the video. The green version showed natural greenery throughout the lifestyle mall, birds flying overhead, as well as a dramatic waterfall in the retail area, while the non-green version showed the same lifestyle mall without any natural landscaping features, (Figure 3, to see pictures from the two videos).

Measures.

Participants rated the perceived restorativeness of each lifestyle center using one item for each of ART's four sub-dimensions on a 7-point Likert-type scale (1 = "not at all," 7 = "very much"). This method mirrors that in environmental psychological research by Felsten (2009) and Berto (2005). The item for being away was "Some setting allows you to feel like you are far away from everyday thoughts and concerns. How much does this lifestyle center allow you to get away from it all, relax, and think about what interests you?" The item for extent was "Some

settings, large or small, can feel like a whole world of their own, where you can get completely involved in the setting and not think about anything else. How much does this lifestyle center feel like a world of its own?” The item for fascination was “How much does this lifestyle center draw your attention without effort and easily engage your interest?” Last, the item for compatibility was “How much does this lifestyle make you feel comfortable and at ease?” (See Appendix b for instruments).

One of the authors engaged in the collaborative and iterative questionnaire translation approach (Douglas & Craig, 2007) by translating the English questionnaire into Spanish and then holding three sets of focus groups, with 12 university faculty, graduate business students, and undergraduate students, respectively, to ensure that the questions were plausible and understandable in Spanish. The instrument was then pretested in an experiment with 12 participants from an undergraduate student pool, and after debriefing among the authors, the questions were employed in the Spanish-version questionnaire.

Results.

We conducted a one-way multivariate analysis of variance (MANOVA) to evaluate the relationship between the two types of retail greenery (green and not green) on the four dependent restorative variables. We found significant differences between the two types of greenery on the dependent measures (Wilks’s $\Lambda = .76$, $F(4, 63) = 5.08$, $p < .01$). The multivariate η^2 based on Wilks’s lambda was quite strong at .24. Table 2-1 contains the means and standard deviations of the dependent measures for the two retail greenery groups.

Analyses of variance (ANOVAs) on the dependent variables served as follow-up tests to the MANOVA. Using the Bonferroni method, we tested each ANOVA at the .0125 level to reduce the chances of obtaining false-positive results (type I errors; Green and Salkind, 2014).

The ANOVA results for being away ($F(1, 66) = 31.18, p < .001, \eta^2 = .22$), fascination ($F(1, 66) = 19.06, p < .01, \eta^2 = .15$), and compatibility ($F(1, 66) = 20.13, p < .01, \eta^2 = .16$) were significant. The ANOVA result for extent ($F(1, 66) = 7.78, p < .05, \eta^2 = .07$) was not significant because it exceeded the .0125 cutoff point. Overall, the findings reveal that consumers who view green lifestyle centers are more likely than consumers who did not view greenery in the retail context to perceive three of the four environmental properties that embody a restorative setting. Thus, the data results support H1. Therefore, green lifestyle centers emerge as restorative, retailing servicescapes that promote human health and well-being (Joye et al., 2010; Kellert, 2008).

Discussion.

The findings corroborate and extend the biophilia design paradigm by showing that consumers perceive the restorative qualities of lifestyle centers that feature natural elements. Furthermore, by linking a biophilic lifestyle design to ART, this study provides a novel perspective on the popularity of lifestyle centers—that is, spending time in lifestyle centers (e.g., dining, shopping, browsing) may transform well-being. This study firmly emplaces a biophilic lifestyle center design into the transformative service research paradigm (Anderson et al., 2013) and public health discipline (Frumkin, 2003) by empirically demonstrating the restorative potential of natural elements in retail contexts to a person's mental well-being (Joye et al., 2010). Given that lifestyle centers tend to encourage people to browse (Nielsen, 2014), are browsers more likely than purposeful shoppers to perceive the restorative potential of lifestyle centers? How resilient are consumers' attitudes toward a biophilic lifestyle center design when they are focused on purchasing an item rather than browsing? Prior biophilia research focuses exclusively on the presence of greenery, or lack thereof, in a setting rather than exploring situations that may alter its influence on shopper responses. We address this void by exploring whether consumers'

desire to purposefully shop or browse influences their attitudes toward a biophilic lifestyle center design.

Study 2 Responses to Greenery/No Greenery Given Purposeful Shopping or Browsing

Tauber (1972) goes beyond the idea of utilitarian consumption to fulfill basic needs and suggests the idea of shopping for diversion. According to Tauber, shopping offers people diversion from the quotidian routines of daily life and opportunities to partake in recreation and free family entertainment (browsing). Browsing refers to an in-store examination of a retailer's merchandise for informational, recreational, or pleasurable (hedonic) purposes without the intent to buy (Nsairi, 2012; Reynolds et al., 2012). With their ample parking, artistic landscaping, fountains, benches, and various high-end and trendy shops, lifestyle centers tend to encourage browsing (Nooney, 2003). Given the restorative benefits associated with nature in general (Kaplan, 2001), well-landscaped lifestyle centers may be popular because shoppers may feel mentally rejuvenated after browsing in them.

Nsairi's (2012) research on browsers reports a putative spiritual effect, during and immediately after a browsing trip in a cosmetics store. This spiritual effect helped the browsers clear their minds of pressing issues, understand things and themselves better, and focus again on important issues. Although Nsairi (2012) does not empirically explore the perceived restorativeness of the cosmetics store, the store, with its array of products, sights, smells, and sounds, likely facilitates restoration because the retail environment contains properties that cause shoppers to sense feelings associated with being away, extent, fascination, and compatibility.

Along these lines, a notable question is whether responses to a biophilic lifestyle center design differ between shoppers who plan to browse and those who go to the center specifically to make a purchase. Although extant research suggests that consumers who browse should be more favorable to a center that features natural elements than one that does not, researchers know

surprisingly little about whether lifestyle shoppers respond to greenery when they are engaged in purposeful shopping endeavors. Shoppers who intend to make a purchase may not notice the center's greenery and therefore may be less likely than browsers to perceive its restorative potential. This discussion leads to the following hypothesis:

H2. Consumers engaged in browsing are more likely to sense the restorative potential of a lifestyle center that features natural elements (greenery and fountains) versus one that does not, by reporting higher perceptions of (a) being away, (b) extent, (c) fascination, and (d) compatibility, than consumers engaged in purposeful shopping.

Participants.

One hundred twenty participants ($M_{\text{age}} = 18.76$, $SD_{\text{age}} = 2.24$, age range: 18–26 years) took part in this study. Participants were recruited from the subject pool of a large private university located in a cosmopolitan South American city. The participants received partial course credit for their efforts in the study. The sample was 55% male ($n = 65$) and 45% female ($n = 55$).

Study 2, which is based on a 2×2 experimental design, tests reported restorative and likelihood to approach means against two levels of lifestyle greenery (green vs. not green) and two levels of shopping intent (browsing vs. purposeful shopping). Thirty informants appeared in each experimental condition, respectively ($N = 120$).

Similar to the scenarios employed in Study 1, participants were randomly selected to view a 1.20-minute video that depicted a guided tour of a proposed lifestyle center in a major South American city. Each participant viewed the video in a soundproof, stimulus-free laboratory. The green version showed natural elements in the retail area, and the non-green version featured the same retail area without natural elements. One group of participants was asked before viewing the video to imagine that they were going to the center just to browse, while the second group

was asked to imagine that they were going to the center to purchase a specific item. Study 2 employed the same measures as in Study 1. That is, participants rated the restorativeness of each lifestyle center using one item for each of ART's four variables following procedures employed in environmental psychology (Berto, 2005)

Results.

We conducted a MANOVA to determine the effects of the two lifestyle greenery conditions and a consumer's shopping purpose on the four environmental conditions, or dependent variables, that promote mental restoration (being away, extent, fascination, and compatibility). We found significant differences among the greenery conditions on the dependent measures (Wilks's $\Lambda = .82$, $F(4, 113) = 6.39$, $p < .001$). The multivariate η^2 based on Wilks's lambda was strong at .18. We conducted ANOVAs on the dependent variables as follow-up tests to the MANOVA. Using the Bonferroni technique, we tested each ANOVA at the .0125 level. The ANOVA results for being away ($F(1, 116) = 17.80$, $p < .001$, $\eta^2 = .22$), extent ($F(1, 116) = 8.72$, $p < .01$, $\eta^2 = .07$), fascination ($F(1, 116) = 19.54$, $p < .001$, $\eta^2 = .14$), and compatibility ($F(1, 116) = 18.48$, $p < .001$, $\eta^2 = .14$) were all significant.

However, we found no significant differences between shopping purpose and the four dependent variables (Wilks's $\Lambda = .95$, $F(4, 113) = 1.50$, *ns*). The interaction between greenery conditions and shopping purpose was not significant. Table 2-2 presents the means and standard deviations of the four restorative variables, given greenery and shopping purpose.

Thus, the results show partial support for H2. More specifically, shoppers are more likely to sense the restorative potential of a lifestyle mall that employs biophilic design elements, including greenery, birds, and fountains, than lifestyle malls that lack natural elements. Further, this finding is robust regardless of whether shoppers patronize the lifestyle center to browse or to purchase a specific item. Note that Guidry and Montero (2005) report that more than 70% of

shoppers visited a lifestyle center to patronize a particular store than to browse. This finding suggests that lifestyle centers offer both browsers and non-browsers transformative opportunities to recover from mental fatigue and thus may also promote societal well-being.

Study 3 Responses to Greenery/No Greenery Given Paying Full or Discount Prices

In addition to browsing, we examine the effect of a biophilic store design on consumers' price consciousness, which is "exclusively concerned with consumers' focus on paying a low price" (Alford & Biswas, 2002, p. 781). Most lifestyle centers cater to higher-income consumers, as these centers primarily attract trendy retailers and upscale restaurants (Nielsen, 2014). Perhaps lifestyle shoppers who are asked to buy sale proneness fail to perceive the restorative potential of a landscaped lifestyle center because of their intent to purchase a discounted item rather than enjoying the gardens and plaza that often adorn contemporary lifestyle centers. This discussion leads to the following hypothesis:

H3. Consumers who intend (are asked) to pay full price for an item are more likely to sense the restorative potential of a lifestyle center that features natural elements (greenery and fountains) versus one that does not, by reporting higher perceptions of (a) being away, (b) extent, (c) fascination, and (d) compatibility, than consumers who are price conscious.

Participants.

One hundred twenty participants ($M_{\text{age}} = 23.39$, $SD_{\text{age}} = 27.83$, age range: 19–53 years) took part in this study. Participants were recruited from the subject pool of a large private university located in a cosmopolitan South American city. The participants received partial course credit for their efforts in the study. The sample was 44% male ($n = 53$) and 53% female ($n = 67$).

Study 2, which is based on a 2×2 experimental design, tests reported restorative and likelihood to approach means against two levels of lifestyle greenery (green vs. not green) and two levels of shopping intent (browsing vs. purposeful shopping). Thirty informants appeared in each experimental condition, respectively ($N = 120$).

Similar to the scenarios employed in Study 1, participants were randomly selected to view a 1.20-minute video that depicted a guided tour of a proposed lifestyle center in a major South American city. Each participant viewed the video in a soundproof, stimulus-free laboratory. The green version showed natural element in the retail area, and the non-green version featured the same retail area without natural elements. One group of participants was asked before viewing the video to imagine that they were going to the center to pay full price for an item at one of the center's retail stores, while the second group was asked to imagine that they were going to the mall to purchase a discounted item. In terms of perceived restoration, Study 3 employed the same measures as in both Studies 1 and 2.

Results.

We conducted a MANOVA to determine the effects of the two biophilic lifestyle conditions and consumers' payment options for an intended purchase (full-price and discounted price) on the four environmental conditions, or dependent variables, that promote mental restoration (being away, extent, fascination, and compatibility). We found significant differences in the greenery conditions on the dependent payment measures (Wilks's $\Lambda = .82$, $F(4, 113) = 3.79$, $p < .01$). The multivariate η^2 based on Wilks's lambda was medium at .12.

We conducted ANOVAs on the dependent variables as follow-up tests to the MANOVA. Using the Bonferroni technique, we tested each ANOVA at the .0125 level. The ANOVA results for being away ($F(1, 116) = 6.40$, $p = .01$, $\eta^2 = .05$), for extent ($F(1, 116) = 19.20$, $p < .01$, $\eta^2 =$

.07), fascination ($F(1, 116) = 13.16, p < .001, \eta^2 = .10$), and compatibility ($F(1, 116) = 18.48, p < .01, \eta^2 = .10$) were all significant.

We found no significant differences between payment measures and the four dependent variables (Wilks's $\Lambda = .95, F(4, 113) = .99, ns$). The interaction between greenery conditions and shopping purpose was not significant. Table 2-3 presents the means and standard deviations of the four restorative variables, given greenery and shopping purpose.

Overall, the results show partial support for H3. Similar to the findings in Study 2, lifestyle center shoppers are more likely to sense the restorative potential of a center that employs biophilic elements, including trees, green spaces, and water fountains, than shoppers who patronize a lifestyle mall that lacks greenery. However, this finding is steadfast regardless of whether lifestyle shoppers are patronizing a lifestyle center to purchase an item for full-price or one that is discounted; that is, both browsers and non-browsers alike perceive the restorative potential of lifestyle centers.

Conclusion

To date, marketing researchers have shown that favorable consumer responses are associated with design planners integrating natural elements, or biophilia design (Kellert, 2008), into commercial (Bregman et al., 2012; Joye et al., 2010; Mower et al., 2012) and non-profit (Rosenbaum & Smallwood, 2012) service contexts. This research extends the marketing discipline's understanding of biophilic design elements in contemporary retailing by exploring the restorative potential in the context of lifestyle centers, suggesting that lifestyle centers may play a transformative role in both individual and perhaps, even communal and societal well-being (Anderson et al., 2013).

Within the context of three different experiments, the research presented in this article shows that consumers perceive the restorative potential of biophilia design in the context of a

lifestyle center that employs natural elements; namely, greenery, fountains (water), and some wildlife (e.g., birds, butterflies). The first study reveals that consumers who view green lifestyle centers are more likely than consumers who did not view greenery in the retail context to perceive three of the four environmental properties that embody a restorative setting (i.e., being away, fascination, and compatibility). The second study builds upon the first by showing that consumer preference for biophilic design elements is robust regardless of whether shoppers patronize a lifestyle center to browse or to purchase a specific item. Finally, the third study buttresses these findings by revealing that consumer preference for biophilic design remains steadfast regardless of whether shoppers patronize lifestyle centers to purchase a full-priced item or a discounted item.

On the one hand, retail pundits may speculate that these findings simply suggest that shoppers prefer shopping in green versus non-green consumption contexts. Yet, on the other hand, the results presented here offer a theoretical understanding as to why shoppers display preferences for biophilic design elements in retail contexts. That is, by incorporating biophilic elements into lifestyle center design, shoppers can sense the restorative potential of these centers. Resultantly, consumers who patronize, or spend time within restorative lifestyle centers may experience catharsis from negative symptoms associated with mental fatigue. Perhaps the current popularity of lifestyle centers (Nielsen, 2014) stems not only from the centers' mix of trendy retailers and upscale restaurants but also from the manicured gardens, fountains, walkways, and greenery that characterize these centers (Yan & Eckman, 2009), which may promote human well-being.

Theoretical Implications

The notion that spending time in lifestyle centers that feature manicured greenery, plantings, fountains, and walkways may be cathartic to a person's well-being is also supported by

biophilia research that encourages people to spend time in forests to improve their immune system. That is, natural researchers are discovering that the effect of exposure to phytoncides, which emulate from trees and plants, helps people reduce feelings of anxiety, depression, and anger. Thus, greenery in built consumption settings or in non-profit settings, such as hospitals and senior centers, may provide people with a natural aromatherapy to positively affect their well-being. We encourage researchers to further explore the transformative potential regarding biophilia design in enclosed malls, and into other service settings, including health care, education, rehabilitation, and correctional service contexts.

Managerial Implications

Although health researchers espouse the benefits associated with mall walking (Belza et al., 2015), lifestyle centers are built so that retail developers realize monetary profits from their investments. In other words, despite the transformative potential of lifestyle centers on consumer mental health, the natural design elements are selected to encourage consumption and spending. Indeed, given that lifestyle centers are designed to attract high-income consumers, we seriously doubt that center developers will be incentivized to invite people to simply experience a center's restorative potential. Thus, we encourage transformative service researchers to explore how non-profit settings, especially those patronized by the bottom-of-the-pyramid consumers, can incorporate biophilic design elements into their contexts. Specifically, research could investigate the extent to which biophilia design in services such as penitentiaries, urban youth services, drug rehabilitation, and veteran mental health rehabilitation can promote restoration and thus enhance individual, communal, and even global well-being

Research Limitations

In terms of research limitations, biophilia design in retail settings remains in its infancy stage; both landscape architects and marketing researchers remain focused on exploring the broad

impact of the presence of natural elements, or lack thereof, within retail settings, such as business district “streetscapes” (Wolf, 2005) or revitalized “Main Street” programs (Wolf, 2004).

Similarly, we focused exclusively on exploring consumer responses to green or non-green consumption contexts. Thus, we still lack an understanding of the specific types of natural elements that evoke positive consumer responses. That is, certain types of trees and plants, water displays, or the presence of small animal life (e.g., birds, butterflies) may encourage more favorable consumer responses than others. Thus, we encourage landscape architects and service design researchers to address this theoretical chasm.

From a methodological perspective, we conducted the three empirical studies using students at a large private university in an urban, cosmopolitan South American city. However, the findings regarding biophilic store design were consistent in all three studies and buttress extant literature on positive consumer responses to biophilia design (Joye et al., 2010). In addition, our manipulations of shopping purpose and payment options, within the context of a sound-proof, stimulus-free laboratory, may not have been strong enough to generate a significant response. We encourage future retailing researchers to explore the impact of biophilia design among actual lifestyle shoppers to investigate situations in which greenery may not influence their approach decisions.

Despite these limitations, this work contributes to the biophilic store design paradigm (Joye et al., 2010), to the transformative service research paradigm, and to restorative servicescape research, by highlighting the restorative potential of biophilic lifestyle center design. Thus, biophilic design supports the existence of “healthy places” within built, public environments (Frumkin, 2003). Indeed, the popularity of lifestyle centers may stem more from their impact on featuring natural elements that impact human mental well-being than from their mix of trendy retailers, entertainment options, and upscale eateries.

Table 2-1 Means and Standard Deviations of Dependent Variables for Lifestyle Center

| | Natural elements | | No natural elements | |
|--|------------------|-----------|---------------------|-----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Perceived restorative scale (1 = “not at all”; 7 = “very much”) | | | | |
| Being away | 5.41** | 1.23 | 4.06 | 1.37 |
| Extent | 4.59* | 1.16 | 3.91 | 1.31 |
| Fascination | 5.59** | 1.23 | 4.53 | 1.33 |
| Compatibility | 5.62** | 1.02 | 4.53 | 1.48 |

** $p < .01$; * $p < .05$.

Table 2-2 Means and Standard Deviations for Browsing versus Purposeful Shopping

| Dependent measures | Natural elements | | No natural elements | |
|--|------------------|---------------------|---------------------|---------------------|
| | <i>M (SD)</i> | | <i>M (SD)</i> | |
| Perceived restorative scale (1 = “not at all”; 7 = “very much”) | Browse | Purposeful Shopping | Browse | Purposeful Shopping |
| Being away | 5.77 (.94) | 5.13 (1.31) | 4.70 (1.12) | 4.40 (1.23) |
| Extent | 5.03 (1.30) | 4.63 (1.54) | 4.00 (1.34) | 4.20 (1.24) |
| Fascination | 6.03 (1.03) | 5.37 (1.43) | 4.47 (1.83) | 4.47 (1.70) |
| Compatibility | 5.93 (.91) | 5.40 (1.33) | 4.70 (1.29) | 4.63 (1.50) |

Table 2-3 Means and Standards Deviations for Full Price versus Discounted Price

| Dependent measures | Natural elements | | No natural elements | |
|--|------------------|------------------|---------------------|------------------|
| | <i>M(SD)</i> | | <i>M(SD)</i> | |
| Perceived restorative scale (1 = “not at all”; 7 = “very much”) | Full price | Discounted price | Full price | Discounted price |
| Being away | 4.90 (1.06) | 5.70 (1.31) | 4.73 (1.23) | 4.73 (1.08) |
| Extent | 4.50 (1.68) | 4.87 (1.41) | 3.67 (1.63) | 4.10 (1.45) |
| Fascination | 5.53 (1.36) | 5.27 (1.23) | 4.33 (1.77) | 4.43 (1.72) |
| Compatibility | 5.23 (1.14) | 5.50 (1.26) | 4.30 (1.49) | 4.67 (1.52) |



Figure 3 Green versus Non-Green Areas Within a Lifestyle Centre used in Experimental Analysis

Chapter III

A Neuroscientific Perspective of Consumer Responses to Retail Greenery

Bitner's (1992) servicescape framework posits that physical or manufactured stimuli housed within a consumption setting's built environment induce emotional responses in customers and employees. Bitner also posits that these responses influence customers' and employees' approach or avoidance behaviors and their proclivity to engage in social interaction. Although the servicescape framework remains resolute in the services domain, Bitner indicates that consumption settings contain not only physical stimuli but also natural and social stimuli that evoke attitudinal and behavioral responses in employees and customers alike, with the presence of natural stimuli having a unique ability to enhance their pleasure. As such, built environments such as retail districts or shopping malls may have the potential to encourage positive consumer and employee approach behaviors and social interaction by employing green elements via service design (Kaplan, 1995; Van Oel & Van den Berkhof, 2013).

To date, researchers have buttressed Bitner's (1992) postulations by demonstrating empirical support for consumers' favorable attitudes (i.e., pleasure and liking) toward a retail store's external landscape (Mower, Kim, & Childs, 2012); the presence of greenery in stores (Bregman, Willems, & Joye, 2012), health care, beauty, and educational settings (Tifferet & Vilnai-Yavetz, 2017); and the presence of manicured green areas in an enclosed mall (Rosenbaum, Otolara, & Ramírez, 2016). Regarding the influence of greenery on behaviors, research has shown that shoppers are more likely to patronize and spend money in shopping areas that contain greenery and that retail employees' productivity and satisfaction increase when they work in retail areas encompassing green elements (Terrapin, 2012; Wolf, 2005).

Indeed, shopper affinity with green spaces in retail areas may partly explain why lifestyle centers that integrate natural elements such as trees, natural vegetation, and water displays into shopping, dining, and entertainment venues are thriving, despite the decline in the number of enclosed malls in the United States (Verde Group & Wharton School, 2015; Yan & Eckman, 2009). Lifestyle centers are open-air centers that often adopt a ‘Main Street’-style feel, with distinctive storefronts, detached buildings, ample parking, a town-square area with fountains, lush landscaping and benches, and clusters of restaurants, upscale shops, and entertainment (Nooney, 2003). Although enclosed malls may also contain green elements, their physical structures inhibit consumers from shopping in more natural habitats.

Most researchers have drawn on the biophilia hypothesis (Wilson & Kellert, 2013) or phytophilia, a subcomponent of biophilia (Tifferet & Vilnai-Yavetz, 2017), to offer theoretical insights into why shoppers are attracted to retail business districts and stores that feature greenery. Biophilia refers to ‘the innately emotional affiliation of human beings to other living [natural] organisms’ (Wilson, 1993, p. 31). The biophilia hypothesis posits that people retain an innate urge to affiliate with nature as part of their genetic narrative and biological composition, even though urbanization and industrialization often separate people from natural settings (Wilson & Kellert, 2013). Phytophilia denotes a universal human attraction to greenery (Tifferet & Vilnai-Yavetz, 2017), and the biophilia hypothesis posits that people’s innate desire to be in natural settings is so profound that it motivates them to have daily contact with nature to attain greater health, productivity (Beatley, 2009), and temporary relief from stress (Brenngman et al., 2012) and mental fatigue (Rosenbaum et al., 2016). Indeed, health research reveals the potential of green spaces and nature of helping patients improve their quality of life, especially after experiencing negative life events (McCaffrey & Liehr, 2016).

The argument that consumer affinity with natural elements in consumption settings, or biophilic store design (Joye & Van den Berg, 2011), stems from an adaptive remnant of humans' shared evolutionary history is plausible and thought-provoking. However, researchers lack an in-depth theoretical understanding of the impact of greenery in settings such as business districts, shopping areas, hospitals, senior centers, and schools (Joye & Van den Berg, 2011). In addition, although researchers may attempt to gain a theoretical understanding of consumer preferences for greenery, the reason for this phenomenon may be quite unsophisticated—greenery may be nothing more than a marketplace nicety, albeit an innovative nicety that can help promote relief from stress and mental fatigue. Indeed, health research suggests that human well-being can be evaluated by exploring various conditions, including a person's self-reported levels of stress, pain, anxiety, and mood (Rosenbaum & Van de Velde, 2016).

The goal of this article is to extend knowledge on shopper preferences for greenery in consumption settings, such as open-air lifestyle centers (Yan & Eckman, 2009), beyond evolution by employing neuroscience. This methodology, along with the use of a mobile electroencephalogram (EEG), allows researchers to assess how the presence of greenery and other natural elements (e.g., sunlight, birds, water) physiologically affect consumers' brains (Agarwal & Dutta, 2015; Khushaba et al., 2013). The results of this study have cross-disciplinary implications for retailing, architecture, and environmental psychology because they help shift the focus of explaining consumer affinity with greenery from an evolutionary perspective to a bodily perspective. That is, this research measures consumers' brain activation data, evaluating six different emotional states that consumers experience when they perceive greenery and other natural elements in a lifestyle center: excitement, interest, stress (frustration), engagement (boredom), attention (focus), and meditation (relaxation). Overall, we show how marketers can design a retail area with greenery and, in doing so, encourage particular consumer responses.

Background and Research Question

Both academic (Brenngman et al., 2012; Joye & Van den Berg, 2011; Rosenbaum et al., 2016; Tifferet & Vilnai-Yavetz, 2017) and practitioner (Terrapin, 2012) studies confirm that shoppers respond positively to the presence of natural elements in retail stores, malls, and business districts. Consumers likely perceive retail stores or shopping areas in general that contain biophilic design elements more favorably than those without these elements. This likelihood may explain the popularity and continued expansion of open-air lifestyle centers in the United States and abroad (Nielsen, 2014; Yan & Eckman, 2009).

In addition to shopper preferences for biophilic store design, environmental, public health, and service researchers have drawn on attention restoration theory (ART; Kaplan, 1995) to show that natural settings, such as parks or green spaces (Hartig, Mitchell, de Vries, & Frumkin, 2014), and built consumption settings that incorporate biophilic design elements, such as malls (Rosenbaum et al., 2016), casinos (Rosenbaum & Wong, 2015), and hospitals (Velarde, Fry, & Tveit, 2007), offer patrons stress-reducing or restorative experiences. In particular, ART proposes that people experience health benefits by spending time in natural settings, whether vast in size or small. ART's theoretical origins reside in the biophilia hypothesis, which offers an evolutionary perspective on the health benefits associated with human exposure to natural environments. For example, many ART studies reveal that the mere presence of greenery can also help people reduce negative feelings associated with stress (Brenngman et al., 2012).

Although research studies on consumer preferences and health benefits of biophilic store design are valid and cross-disciplinary in their findings, they have a shortcoming—namely, the most common outcome measures for these biophilic studies are scored on different self-reported emotions (Bowler, Buyung-Ali, Knight, & Pullin, 2010) or well-being outcomes (Rosenbaum & Wong, 2015) that draw on ART and, thus, on evolutionary theory for theoretical justification

(Joye & Van den Berg, 2011). We suggest that researchers turn to neuroscience to pursue a more rigorous and objective evaluation of the influence of the presence of biophilic design in retail domains. As Agarwal and Dutta (2015, p. 458) state, ‘neural measures are better predictors of population-level data than self-report measures’, and therefore they are ideal in experimental studies to acquire a more detailed understanding of a phenomenon through investigations of brain processes. The phenomenon we attempt to investigate in-depth is consumer response to biophilic design in rapidly expanding lifestyle centers.

To obtain neural measures from consumers, we employed the Emotiv EPOC+ headset, which has been validated for consumer research in both laboratory and outdoor settings (Taylor & Schmidt, 2012, see www.emotiv.com for extensive review of independent studies). The Emotiv EPOC+ is a lightweight, high-resolution, neuro-signal acquisition and processing wireless headset that monitors 14 channels of EEG data to provide real-time measurements on six emotional and sub-conscious dimensions (Khushaba et al., 2013) accessible to researchers in the form of raw data using Emotiv’s Research Edition software. The first dimension, excitement/arousal, evaluates a person’s feeling of eager enthusiasm and interest. The second, interest/valence, measures a person’s attention and, thus, desire to learn more about a phenomenon or to be involved in something. The third dimension, stress/frustration, evaluates a person’s state of mental tension and worry. The fourth dimension, engagement, evaluates a person’s emotional involvement or commitment. The fifth dimension, attention/focus, captures a center of activity, attraction, or attention. The sixth dimension, meditation/relaxation, helps stop someone from being nervous or worried (Kavousanos & Papadourakis, 2016).

Given the lack of neuroscience data in previous studies on consumer responses and biophilic design in retail settings, we put forth the following research question that can be empirically evaluated through the Emotiv EPOC+ device and software. That is, How do

consumers' brain responses differ in terms of excitement (e.g., arousal), interest (e.g., valence), stress (e.g., frustration), engagement/boredom, attention (e.g., focus) and meditation (e.g., relaxation) as they view retail greenery in a retail setting in different shopping purpose? By answering this question, we aim to break new ground in the service domain by showing that the interrelationship between greenery in retail and transformative outcomes (Anderson et al., 2013) has the potential to impact consumers' well-being through decreased stress and enhanced relaxation.

Method and Analysis

Our sample consisted of 60 randomly selected participants who were shopping or browsing in an enclosed mall located in a major metropolitan city. Each participant was over the age of 18 years. Similar to research methods employed by Rosenbaum et al. (2018), a mall-based research team, which included one of the study's authors, asked shoppers whether they would view one of two 1.20-minute videos; thus, 30 participants viewed each video, respectively. Of the 30 participants in each group, 15 were men and 15 were women. Having 30 participants per cell should lead to approximately 80% power, which is the minimum suggested power for an ordinary study (Cohen, 1988). Although the video duration is brief, studies suggest that viewer engagement is optimal with a 1- to 2-minute video (Fishman, 2016; Pew Research, 2012). It is worth mentioning here that retailing researchers have found video simulations of shopping and dining experiences to be effective for examining the effects of environmental stimuli on customers' perceptions (Baker, Grewal, & Parasurman, 1994; Wall & Berry, 2007) and consumption motivations (Van Rompay, Tanja-Dijkstra, Verhoeven, & Van Es (2012).

The average age of participants in the first group was 35 years, and 38 years in the second group. Each participant showed proof of age and then viewed a video in the mall's research room, which contained no stimuli other than a computer and basic furniture. One member of the

research team explained that a retail center developer wanted opinions on a proposed lifestyle center in the city and that the participants were to wear the Emotiv EPOC+ EEG headset while watching the video. Each participant received a gift card worth \$25 for taking part in the study. Figure 4 shows still images from three different time points in the video.

Video description.

One video depicted a customer journey through an open-air lifestyle center that featured shopping, dining, and entertainment options and biophilic design elements, including natural greenery, birds flying overhead, and a waterfall. The second video was identical to the first, except that the biophilic design elements were absent. Given the focus of our study on consumer responses to biophilic design elements, the videos did not include customers, employees, or social stimuli, which can also influence consumer behaviors in service settings (Tombs & McColl-Kennedy, 2003); however, it is out of scope of this study to explore these factors in more detail.

We used the Emotiv EEG data to tabulate real-time neural responses to the videos at seven points in time: 1 second into the video and again at 20, 30, 40, 55, 70, and 80 seconds. We based the time points on major changes in the consumer journey within the lifestyle center—for example, moving from the first to the second floor. We obtained data outputs from the Emotiv EPOC+ headset using the Emotiv software, which uses detection algorithms to create parameters for the six emotional or sub-conscious outcomes (see www.emotiv.com/myemotiv/ for review). The Emotiv data parameters for each of these outcomes range from 0 (low/no brain activation) to 1 (extreme/intense brain activation). We calculated an average based on the seven measurements for each participant. Table 3-1 reports the sample output, which we obtained from the 30 participants who viewed the biophilic lifestyle center. This output measures participants' brain activity as it relates to their level of engagement in the video at the seven points in time.

Data Analysis.

We conducted a one-way multivariate analysis of variance (MANOVA) to evaluate the relationship between the two types of biophilic design (green and no green) and the six dependent outcomes generated by the Emotiv data. We found significant differences between the two types of design on the averages of the dependent measures (Wilks's $\Lambda = 0.29$, $F(6, 53) = 21.49$, $p < .001$). The multivariate eta-squared based on Wilks's lambda was strong at 0.71. Table 3-2 contains the means and standard deviations of the dependent average measures for the two groups.

We conducted analyses of variance (ANOVAs) on each dependent variable as follow-up tests to the MANOVA. Using the Bonferroni technique, we tested each ANOVA at the 0.008 level ($0.05/6$). The ANOVA results for excitement/arousal ($F(1, 60) = 35.23$, $p = .001$, $\eta^2 = 0.38$), interest/valence ($F(1, 60) = 31.00$, $p < .001$, $\eta^2 = 0.35$), stress/frustration ($F(1, 60) = 20.24$, $p < .001$, $\eta^2 = 0.26$), engagement ($F(1, 60) = 15.41$, $p < .001$, $\eta^2 = 0.21$), attention/focus ($F(1, 60) = 10.96$, $p = .002$, $\eta^2 = 0.16$), and meditation/relaxation ($F(1, 60) = 8.47$, $p = .005$, $\eta^2 = 0.13$) were all significant.

Results.

The neural responses yield objective data to answer the posited research question. In terms of excitement, the data reveal that participants who viewed the biophilic video were more enthused and interested ($M = 0.58$) during their journey through the lifestyle center than participants who viewed the same journey without any green elements ($M = 0.42$). Note that 0.42 is a baseline measurement of a consumer's response to a lifestyle center's servicescape, with the difference (0.16) representing a type of neural 'enhancement' of interest in the center's servicescape offered by biophilic design.

In terms of interest, the data reveal that participants who viewed the biophilic design ($M = 0.59$) were more involved in the center's settings and wanted to learn more about the center than participants who viewed only the structure ($M = 0.50$). This finding suggests that biophilic design can induce shoppers to spend more time in a lifestyle center and to explore the center's shopping, dining, and entertainment offerings.

The neural data regarding stress/frustration buttress extant retail studies that draw on ART to show that the presence of biophilic store design elements leads to reduced feelings of stress (Breneman et al., 2012; Purani & Kumar, 2018; Rosenbaum et al., 2016; Soderlund & Newman, 2015). That is, participants who viewed the biophilic lifestyle center reported lower stress levels ($M = 0.39$) than participants who viewed the non-biophilic center ($M = 0.49$). Although some researchers may question whether the health benefits associated with greenery in natural or built settings is attributable to the biophilia hypothesis, and to its origins in human evolution (Frumkin, 2001; Joye & Van den Berg, 2011; Nisbet, Zelenski, & Murphy, 2011), the neural data confirm transformative mental health benefits associated with spending time in settings that possess vegetation and other forms of natural elements (e.g., birds, water).

In terms of engagement, the data show that participants who viewed biophilic design elements were more emotionally involved in the center ($M = 0.68$) than participants who viewed the non-green center ($M = 0.59$). This finding confirms studies that suggest that shoppers are becoming bored in their excursions to many enclosed malls (Verde Group & Wharton School, 2015), while lifestyle centers continue to proliferate.

Participants who journeyed through the biophilic lifestyle center also reported a significantly higher level of attentiveness/focus ($M = 0.39$) during their virtual tour than participants who viewed the non-biophilic center ($M = 0.31$). Overall, biophilic design seems to enhance shopper

involvement, commitment, attentiveness, and focus, thus encouraging shoppers to patronize lifestyle centers that incorporate biophilia design.

Meditation/relaxation is the final outcome assessed by the Emotiv EPOC+ EEG. Similar to medical studies that reveal the ability of green spaces to impact human well-being, or so-called ecotherapy (Burls, 2007), the neural data reveal that participants who viewed the biophilic lifestyle center recorded a higher mental state of relaxation ($M = 0.40$) than participants who viewed the non-biophilic center ($M = 0.34$). Thus, it seems that the presence of biophilia in consumption settings can help promote feelings of relaxation.

In sum, these neuroscientific findings imply that built and commercial settings may be able to add valuable perspectives to human health through therapeutic biophilic design (Marcus & Sachs, 2013) by promoting outcomes such as decreased stress and boredom and enhanced abilities to focus and relax. We encourage retail and public health researchers to expand on these findings by exploring the transformative potential of biophilic design elements in service settings in more detail in future research (Anderson et al., 2013).

Future Research

To date, a wealth of research has shown that people experience restorative health benefits by interacting with natural elements in natural settings (Bowler et al., 2010; Cox et al., 2017; Frumkin et al., 2017; Hartig et al., 2014; Marcus & Sachs, 2013) and built consumption settings (Joye & Van den Berg, 2011; Kaplan, 1995; Rosenbaum et al., 2016; Rosenbaum & Wong, 2015; Tifferet & Vilnai-Yavetz, 2017). Although that research is valid, empirical studies on the restorative potential of built environments tend to rely on self-reported measures. The current study buttresses extant research on the relationship between nature and human mental health (Cox et al., 2017) by employing neuroscience to test consumers' brain activity when exposed to a lifestyle center with and without biophilic design elements. Overall, this work supports the

conclusion that biophilia design in a lifestyle center stimulates consumers' neural activity associated with excitement, interest, decreased stress, engagement, attention, and relaxation. Further, these findings help explain why lifestyle centers seem to be thriving, even as enclosed shopping malls continue to disappear from the retail landscape (Crosby, 2016).

As with any research endeavor, the results are subject to limitations. First, the study is based on a relatively small sample of 60 participants using the Emotiv EPOC+ headset in an experimental condition that focused solely on a lifestyle center's biophilic design. The limitations of the Emotiv headset also prevented us from correlating brain wave activity with a consumer's galvanic skin response. This seems a valuable direction for future research.

Second, in practice, consumer approach and avoidance responses to physical settings are influenced by an array of environmental stimuli, including ambient conditions (e.g., music, temperature, odors); space, function, and layout (e.g., equipment, ease of entry and exit); and signs, symbols, and artifacts (e.g., décor, signage; Bitner, 1992; Rosenbaum & Massiah, 2011). As noted previously, shoppers are also influenced by employees and other customers (Tombs & McColl-Kennedy, 2003), as well as those with whom they are shopping (Chebat, Haj-Salem, & Oliveira, 2014). In a similar vein, shopper approach/avoidance decisions can be influenced by overt and subtle signs of discriminatory practices (Schreer, Smith, & Thomas, 2009) and/or by customers exhibiting rudeness by claiming territorial rights in retail settings in which customers co-opt spaces with other customers (Griffiths & Gilly, 2012).

Third, neuroscience has been criticized for its methodological shortcomings in terms of presenting correlational evidence without causal evidence (Agarwal & Dutta, 2015). Indeed, the neuroscience paradigm in marketing is still in its infancy but is being fueled by the development of low-cost EEG devices. Still, neuroscience enables researchers to extend their investigations beyond collecting explicit behavioral measures when explaining phenomena for which

consumers are unable to articulate the reasons for their behavior or for which the behaviors transpire at a subconscious level (Camerer & Yoon, 2015). As such, neuroscience offers researchers pioneering opportunities to re-evaluate theories and frameworks from a previously untapped perspective.

Despite these limitations, this research offers retail and service researchers novel insights into how consumers' brain activity responds to biophilia design elements in retail settings. Regardless of whether biophilia is a relic of human evolution, neuroscience provides researchers with objective data on the extent to which the presence of greenery influences human brain activity. Perhaps mall developers, urban planners, and public health researchers can draw on this research to promote the measurement of human brain activity in other types of commercial settings.

Indeed, we hope that our findings encourage researchers to re-evaluate the servicescape paradigm and to explore the transformative potential of environmental stimuli on consumers, patients, patrons, and citizens via biophilia in service setting. However, researchers must remain cognizant that consumer attitudes and behaviors are also influenced by personal (e.g., shopper mood), social factors (e.g., behavior of accompanying others, other shoppers' behaviors), price, assortment, branding, self-service technologies (Verhoef et al., 2009) in addition to biophilic design elements. Additionally, shoppers' responses to biophilia are limited to their responses at a physically based, point-of-sale, while shoppers' experiences are spread over a period of time (including search, purchase, consumption, and after-sale phases of a shopping experience; Petermans, Janssens, & Van Cleempoel, 2013). Although this research focuses solely on the impact of biophilia on shoppers' neural activity, plentiful avenues of opportunities exist for retailing researchers to engage in field studies with wearable EEG devices as well as to obtain neural responses from informants viewing more complex visual shopping simulations.

Last, we stress that the issue of human participants' informed consent should receive greater attention in neuroscience studies (vs. traditional marketing research studies), as the equipment may provoke informants' concern about the confidentiality of the obtained data (Shamoo, 2010). Despite these research limitations, and ethical concerns, we believe that this paper contributes to the expanding biophilia paradigm in retailing and offers retailers a means to which they confront challenges posed by Internet retailing and the closures of enclosed malls.



Figure 4 Green versus non-green areas within a Lifestyle Centre Used in EEG Analysis

Table 3-1 Sample Data For Engagement Among Participants Viewing A Green Lifestyle Center.

| | Emotive data for engagement | | | | | | | Average |
|---------|-----------------------------|------------|------------|------------|------------|------------|------------|---------|
| | 1 second | 20 seconds | 30 seconds | 40 seconds | 55 seconds | 70 seconds | 80 seconds | |
| 1 | 0.6573 | 0.7887 | 0.8737 | 0.7964 | 0.8428 | 0.7110 | 0.7650 | 0.7764 |
| 2 | 0.5522 | 0.4678 | 0.6247 | 0.5638 | 0.4231 | 0.5375 | 0.5742 | 0.5348 |
| 3 | 0.6811 | 0.9518 | 0.905 | 0.8679 | 0.7422 | 0.782 | 0.8222 | 0.8217 |
| 4 | 0.5472 | 0.7846 | 0.6135 | 0.5491 | 0.5126 | 0.4736 | 0.5924 | 0.5819 |
| 5 | 0.8252 | 0.7945 | 0.8362 | 0.7811 | 0.7694 | 0.7172 | 0.6525 | 0.7680 |
| 6 | 0.5526 | 0.6165 | 0.6600 | 0.7148 | 0.6208 | 0.6341 | 0.6251 | 0.6320 |
| 7 | 0.8954 | 1.0000 | 0.8236 | 0.7821 | 0.8548 | 0.8846 | 0.7426 | 0.8547 |
| 8 | 0.5692 | 0.7476 | 0.7619 | 0.6724 | 0.652 | 0.5982 | 0.6471 | 0.6641 |
| 9 | 0.5522 | 0.9038 | 0.9315 | 0.8309 | 0.7297 | 0.8391 | 0.8609 | 0.8069 |
| 10 | 0.5735 | 0.5832 | 0.7081 | 0.5727 | 0.5416 | 0.5139 | 0.6047 | 0.5854 |
| 11 | 0.7672 | 0.8136 | 0.8436 | 0.7281 | 0.8906 | 0.8471 | 0.8234 | 0.8162 |
| 12 | 0.5827 | 0.6038 | 0.7194 | 0.5807 | 0.5326 | 0.5144 | 0.6186 | 0.5932 |
| 13 | 0.8136 | 0.8734 | 0.8462 | 0.7356 | 0.8341 | 0.8915 | 0.8536 | 0.8354 |
| 14 | 0.8662 | 0.8145 | 0.8042 | 0.7911 | 0.7594 | 0.7230 | 0.6825 | 0.7773 |
| 15 | 0.7878 | 0.8351 | 0.8763 | 0.7543 | 0.9126 | 0.8236 | 0.8234 | 0.8304 |
| 16 | 0.6026 | 0.7529 | 0.7379 | 0.7462 | 0.6455 | 0.5958 | 0.6106 | 0.6702 |
| 17 | 0.5634 | 0.6975 | 0.6542 | 0.744 | 0.7465 | 0.6866 | 0.7233 | 0.6879 |
| 18 | 0.6341 | 0.5754 | 0.6208 | 0.572 | 0.7419 | 0.6765 | 0.6079 | 0.6327 |
| 19 | 0.5783 | 0.6638 | 0.6228 | 0.7396 | 0.7656 | 0.6941 | 0.7453 | 0.6871 |
| 20 | 0.5767 | 0.7234 | 0.7001 | 0.6466 | 0.6908 | 0.7769 | 0.6773 | 0.6845 |
| 21 | 0.7657 | 0.8078 | 0.7352 | 0.5973 | 0.7179 | 0.643 | 0.6413 | 0.7012 |
| 22 | 0.6845 | 0.7531 | 0.7359 | 0.8265 | 0.6216 | 0.5806 | 0.6728 | 0.6964 |
| 23 | 0.5150 | 0.4167 | 0.4666 | 0.4403 | 0.5424 | 0.3701 | 0.5059 | 0.4653 |
| 24 | 0.6248 | 0.6895 | 0.5364 | 0.4851 | 0.6299 | 0.5975 | 0.5749 | 0.5912 |
| 25 | 0.6547 | 0.6821 | 0.6734 | 0.6917 | 0.5788 | 0.7017 | 0.6264 | 0.6584 |
| 26 | 0.7633 | 0.7586 | 0.6942 | 0.6859 | 0.7150 | 0.7098 | 0.7040 | 0.7187 |
| 27 | 0.5635 | 0.5947 | 0.6981 | 0.5907 | 0.5611 | 0.5233 | 0.5947 | 0.5894 |
| 28 | 0.5893 | 0.6563 | 0.6427 | 0.5998 | 0.6104 | 0.569 | 0.6015 | 0.6099 |
| 29 | 0.5243 | 0.5778 | 0.6549 | 0.4948 | 0.5800 | 0.5343 | 0.5822 | 0.5640 |
| 30 | 0.5914 | 0.5840 | 0.7015 | 0.6688 | 0.5650 | 0.5975 | 0.6057 | 0.6163 |
| Average | 0.6485 | 0.717083 | 0.7234 | 0.6750 | 0.67769 | 0.65825 | 0.6720 | 0.6817 |

Table 3-2 Means and Standard Deviations for Dimensions Measure By The Emotiv EPOC+EEG System

| Emotional/sub-conscious dimension | Biophilic lifestyle design | Non-biophilic lifestyle design |
|-----------------------------------|----------------------------|--------------------------------|
| Excitement/arousal | .58 (.07) *** | .42 (.09) |
| Interest/valence | .59 (.07) *** | .50 (.06) |
| Stress/frustration | .37 (.04) *** | .49 (.14) |
| Engagement | .68 (.10) *** | .59 (.07) |
| Attention/focus | .39 (.12) ** | .31 (.05) |
| Meditation/relaxation | .40 (.07) ** | .34 (.09) |

*** $p < .001$, ** $p < .01$.

Chapter IV

Overall Theoretical Contribution

In the following section, attention turns to discussing the contributions of each of three proposed studies to the restorative servicescape framework.

Giving the importance of the restorative potential to customer's cognitive and affective responses, the contribution of these studies to consumer well-being is profound, as common retail experiences may be catharsis to some consumers. Indeed, in the marketing literature, customer experience has been defined as interactions which are strictly subjective and which influence at different levels; that is, cognitive, emotional and physical levels (Schmitt, 1999). Lemon et al. (2016) emphasize that customer interactions take place throughout many touchpoints, and that a customer's experience is formed along these touchpoints, before and after the actual purchase stage. According to Lusch, Vargo, & O'Brien (2007), retailers provide consumers with "physical capital," (p. 12) or tangible resources, which are necessary to create platforms for which consumers build meaningful experiences, and it is from these experiences from which retailers generate competitive advantages in the minds' of its customers.

By probing consumers' restorative potential responses to retail greenery, we contribute to servicescape framework in marketing. This studies draws upon the Attention Restoration Theory and Replace Theory to explore the effects of restorative potential (i.e., fascination, being away, coherence, scope, and compatibility) that are stimulated within a servicescape shopping mall and its association to customer's attitudes and behaviors towards the mall in terms of satisfaction, loyalty, word-of-mouth, and monetary expenditures in the mall.

This customer attitudes results demonstrates that while retail setting can be product and services overloaded, natural setting may help in different decision process. Given that people

encode servicescape experience according to its restorative potential or sense of familiarity; atmospheric stimuli helps consumers attitudes, which makes it easier for them to clarify place meaning, and ultimately, helps them to decide whether to approach or to avoid a consumption setting.

Therefore, this study demonstrates that by restorative potential, which are found in commercial settings, consumers activate positive emotional states, which influence their purchase experience. Feasibly, when shoppers can experience natural stimuli, within a commercially built environment, they are able to use voluntary attention, and hence, improve their customer attitudes. However, although the customer loyalty and NPS data results points out that a mall's restorative potential induces a consumer's desire to re-patronize the setting but not necessarily induce to spend money; indeed, restorative experience may fulfill consumption health-related needs, but not good and service's needs.

Unfortunately, the research presented here shows that shoppers who sense a setting's restorative potential do not necessarily plan to spend more money in the setting compared to other shoppers; perhaps, buying decision process is moderated by brand experience rather than servicescape experience (Brakus, Schmitt & Zarantonello, 2009). However, because the results show that shoppers are more satisfied in restorative settings and more like to be loyal, to talk and to recommend restorative settings as compared to other settings, these is evidence that over time, restorative shopping settings will be more patronize than non-restorative settings. That is, shoppers may attempt to optimize their shopping experiences by approaching and spending time in restorative settings as compared to other settings.

Indeed, this study shows that customers who sense a lifestyle's restorative potential are not necessarily drawn by non-price oriented or hedonic behavior, but also to price oriented shoppers, all of them simply seem to enjoy spending time in settings that make them feel better.

The perceived value in restorative shopping site is that time spent in the center seems to be an equal benefit to utilitarian and hedonic priced oriented behavior.

This study shows that consumers who spend time in restorative lifestyle centers exhibit more emotional states in these centers compared to non-restorative shopping centers. Emotional state such as engagement and motivation are linked with cognition in that they guide memory and decision-making processes (Norman, 1981).

From this study, we can point out that engagement changes between biophilic servicescape and non-biophilic servicescape. This suggests that even there is a raise of cognitive overload by higher engagement, there is less stress. Interestingly, this high level of engagement, also increase the level of excitement, which is associate to positive feeling. This association suggests that high-level engagement increase the level of emotional self-control or the raise of information processing in term of attention and interest.

Indeed, there is extensive empirical research that demonstrates a strong relation between sensory codes and a shopper's choice evaluation in retail settings (Puccinelli, 2009). However, this research becomes central to understand how to create attributions to specific retailer by the restorative potential variables. Therefore, natural congruence enhances value attribution, thus, recall for restorative potential, which enhance subsequent attitudes to retailers as a brand distributors platform.

This dissertation extends our knowledge regarding shopper preferences for greenery in consumption settings; namely, open-air lifestyle centers (Yan & Eckman 2009), and from the methodological perspective. Neuroscience permits researchers to study how a consumer's brain is physiologically affected by the presence of greenery, and other natural elements, such as sunlight, birds, and water (Agarwal & Dutta 2015; Khushaba et al., 2013) in a consumption

setting. The results of this study break new ground in the retailing architecture and servicescape domains, because it helps to integrate self-reporting measure and neural perspective.

Although this study serves to inextricably link Attention Restoration Theory with the retailing and consumer services domains, this investigation also may contribute to other marketplace theories. It is worth noting here that the Service Dominant Logic (SDL) paradigm (Vargo & Lusch, 2016) conceptualizes a place as offering consumers value. This research shows the extent to which consumers value the nature of intangible, but, nonetheless, meaningful experiences at physical places due to the presence of retail greenery. Indeed, the authors (Vargo & Lusch, 2016) emphasize the value inherent in a consumption setting's servicescape; they state, "understanding context is essential for understanding the perception and determination of value, since value is a contextually contingent concept" (p 18). The findings reported in this study support SDL research by buttressing the idea that context is a meaningful aspect in terms of how consumers perceive place-based value. Further, by exposing a consumption setting's restorative potential, both academics and practitioners may understand the capability of a built environment to offer a restorative, if not cathartic, experience to shoppers and to the surrounding community.

Managerial Contributions

This dissertation explored open-air lifestyle centers and enclosed malls. Quite simply, consumers are exposed to the outside environment in lifestyle centers and to climate-controlled conditions with an enclosed mall (see Levy et al., 1998 for an extensive discussion). Although the enclosed mall format is vanishing from the retail landscape, the open air, lifestyle center, is increasingly popular among mall developers, and with attracting consumers, at a global level (Chebat, Michon, Haj-Salem, & Oliveira, 2014). Thus, research in restorative experiences contributes to the design of shopping servicescape, which is essential for building global

shopping centers, because they require strategies that apply to different markets and cultures for the unified construction of meanings and images (Deloitte, 2015).

Further, one may speculate whether the global popularity of lifestyle centers stems from restoration being a universal consumer's shopping goal. That is, the retail literature affirms that consumption goals influence how consumers perceive retail environments (Pucchineli et al., 2009), as well as their decisions during the need recognition, information search evaluation, purchase and post-purchase stages of consumption (Pucchineli et al., 2009). If consumers feel better after spending time in consumption settings that incorporate retail greenery, retail architects should respond to this potential value by actively incorporating green elements in built environments.

Moreover, as this study is made in a developing country, it might be worth highlighting that developing countries generate 23% of the profits of the major distribution chains, (Deloitte, 2015). The emergence of these new retail opportunities, based on the dramatic increases in the number of shopping centers, is altering the format of the retailing industry in emerging markets. Because of recent economic prosperity, newly created middle-class populations are moving beyond the traditional street market consumption in many developing nations. Within three economies, Perú, Ecuador, and Colombia, new retail outlets, such as convenience stores, fast food chains, appliance stores, lifestyle malls, and fashion outlets, are rapidly emerging. Similar to retailing in industrialized nations, retailing in emerging economies is witnessing a growing number of shopping centers, multistoried malls, and huge greenery complexes that offer middle-class consumers opportunities to engage in both hedonic and utilitarian consumption experiences within a single site, (Allard, Babin, & Chebat, 2009). Thus, the research presented here generalizes to not only industrialized nations but also to developing nations (Burgess & Steenkamp, 2006; Shultz et al., 2012).

Societal Contribution.

From a broader societal perspective, it is important to consider that shopping centers not only provide the necessary infrastructure to satisfy demands for goods and service, but also, centers fuel socio-economic benefits, (Sirgy et al., 2012).

For example, shopping centers employ 8.9% of the European working age population (18.7 million; International Council of Shopping Centers, 2015) and about 25% of the U.S. working population. Therefore, finding new ways to design retail shopping centers that may revitalize the industry, despite the rapid rise of e-commerce and Amazon, concerns the interest of society. Indeed, Evans and Schmalensee (2016) indicate that the decrease in mall traffic in malls has been rapid (Ailawadi et al., 2017) and that in 2015, nearly 15% of the malls in the U.S. had vacancy rates of 10% to 40%. In the words of Alexander Otto, Chairman of the European Association of Shopping Centers, "In the current ethics of society, it is important to evaluate the true impact of our actions, both individually and in the business world, our decision making should not only be economically sustainable, but will also consider the environmental and social effects of our behavior that is as important as measuring our long-term financial performance," (International Council of Shopping Centers, 2015, p. 4).

Future Research

In terms of future research, a mall's restorative potential represents holistic stimuli, so that visual greenery also represents olfactory and tactile stimuli. All three studies in this dissertation are attempting to evaluate a shoppers' response to retail greenery, or to a setting's visual atmospheric, when; in fact, retail greenery presents many holistic stimuli, including olfactory and tactile stimuli. Thus, human restoration in shopping venues may stem from consumers sensing a multisensory atmosphere as opposed to the presence of merely retail greenery.

Perception is fundamentally multisensory, and insights from restorative potential is critical to understanding and explaining customer's experience. In terms of mall's restorative potential represents holistic stimuli, so that visual greenery also requires olfactory and tactile stimuli. All three stimulus are attempting to evaluate a shoppers' response to retail greenery, and restorative potential, when; in fact, retail greenery presents many holistic stimuli, including olfactory and tactile stimuli. Thus, restoration potential in shopping venues may stem from consumers sensing a multisensory atmosphere as opposed to the presence of merely visual retail greenery.

Within cognitive neuroscience, and multisensory perspective, we can study how visual stimulus dominate over the other sensory stimulus. Spence et al., (2014) argue "Such research might also help to shed more light on the notion of congruency and how congruent inputs give rise to super additive or sub additive multisensory interactions". So what is the optimal stimulation that also shapes customer experience that achieve behavioral response? Is it idiosyncratic? Therefore, multicultural approach is advisable.

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Perception is fundamentally multisensory, and insights from restorative potential is critical to understanding and explaining customer's experience (Spence et al, 2014). In terms of a mall's restorative potential, it actually represents holistic stimuli, so that visual greenery also requires olfactory and tactile stimuli. All three stimuli should be consider to evaluate a shoppers'

response to retail greenery, and restorative potential, when; in fact, retail greenery presents many holistic stimuli, including olfactory and tactile stimuli. Thus, restoration potential in shopping venues may stem from consumers sensing a multisensory atmosphere as opposed to the presence of merely visual retail greenery.

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Notably, Bitner (1992) argued that though her definition of a servicescape focuses solely on a consumption setting’s physical realm, such settings comprise not only of physical elements but also social interaction (e.g. employees and customers). In other words, from the servicescape framework, we propose the following question How do customers present together in consumption settings affect the restorative experience?

Limitation

Because the studies were conducted with respondents who resided in South America, generalization of an experimental design results to other settings may be questionable. In addition, it is possible that not all of the respondents had experience shopping in lifestyle centers, and thus, the manipulations of shopping purpose and price goals options, within the context of a soundproof, stimulus-free laboratory, may not be strong enough to generate significant responses. Moreover, these studies assess brain activity to retail greenery vs. non-retail greenery. Yet, consumers often shop with friends and family and thus, they may overlook at lack of retail greenery in a consumption setting when they are in the presence of others. That is, the

importance of retail greenery may fall by the wayside when consumers are shopping for social purposes. Despite these limitations, this research breaks new ground in marketing by highlighting the restorative potential of retail greenery.

The second and third study was simulation-based study that would be necessary to establish the ecological effect of different levels of spatial dependence on the behavior. Also should be considered the artificial environment variability of the results (Real versus Renders). Especially, when evoked potentials measures of the qualities of places in brain decrease in response to time duration as shown in the third study.

Rejoinder

This chapter has the purpose to approach critically and clarify the theoretical consideration and the methodological decision of the articles presented in this dissertation.

Nature of the Construct.

Suddaby (2010) argues that a good definition should describe its denotative, connotative, context and essential properties. Thus, from denotative perspective, 'restorative servicescape' is defined as the *qualities of a place that has the potential to promote attention restoration* (Kaplan et al, 1985; Rosenbaum et al, 2017). Restorative servicescape denotes a quality of place's characteristics and its potential to promote recovery. Therefore, restorative servicescapes are those that contain formative and reflective conditions, and which have profound influence on an individual's emotions.

As to the connotative meaning, in the environmental psychology, most researchers explore human restoration in the context of natural environment, where individuals often have opportunities to promote mental recovery of attentional resources and therefore reduce symptoms associated with direct attention fatigue (i.e., mental fatigue, exhaustion, and burnout). In the case of restorative places, Kaplan (1989) suggests that a place, setting, locale, or milieu may help restore human mental health if it evokes four emotions; these are being away, fascination, coherence, scope and compatibility.

Environmental psychologists have shown that qualities of restorative places should evoke affects responses in people that encourage them to heal from symptoms associated with mental fatigue. Ulrich (1983, p. 85) clarifies that, "Affect is central to conscious experience and behavior in any environment, whether natural or built, crowded or unpopulated. Because virtually no meaningful thoughts, actions, or environmental encounters occur without affect."

Hence, in terms of restorative places, as defined, they are composed of formative or observable characteristics of places that promote unobservable human affects such as being away, fascination, coherence, scope, and compatibility that have the restorative potential (Berto, 2005; Kaplan et al, 1989). These emotions come from perception that formative qualities can *make sense of environmental information*: ‘This mall is fascinating. It is large enough for me to discover new things and place and to be curious about different things’ (fascination); the mall draws my attention without effort and easily interests me’ (compatibility). The other emotion relate to the qualities of places, as they are *inclination to acquire new environmental information*: The mall is a place that makes me feel like I am far from everyday thoughts and concerns. When I’m at the mall, I’m able to relax and think about things that interest me’ (being away) and the other address whether the information is predicted; ‘This mall is a place where the activities, the stores, and things in the mall are ordered and organized’ (coherence) and ‘The mall feels like a whole world of its own, which is very large, and a place in which I can easily move around’ (scope).

It is worth noting here that Bitner’s (1992) servicescape framework accounts for formative conditions (e.g., music, temperature, odors); space, function, and layout (e.g., equipment, ease of entry and exit); and signs, symbols, and artifacts (e.g., décor, signage; Bitner, 1992; Rosenbaum et, 2011) all serve to evoke consumer responses. Yet, the Replace Framework specifically draws upon ART to posit that natural elements housed within built service settings elicit restorative potential and attitudinal responses within consumers that, in turn, nurture their psychological well-being (Mari, et al, 2013). From this point of view, Attention Restoration Theory (ART) suggests forth that some places evoke four environment emotions: being away, fascination, extent, and compatibility, which work together in a place so that, together, the conditions reflect a restorative potential (Kaplan et al, 1989; Ulrich, 1983).

Extent indicator.

Extent was modified for scopes to capture the feeling of being in a place large enough that no boundaries are evident. In addition, coherence refers to how well the content of a specific environmental supports the needs and inclinations of the user, (Ivarsson & Hagerhall, 2008; Korpela & Hartig, 1996). In other words, research in restorative environment must be of sufficient scope to engage the mind. It must provide enough to see, to experience, and think about so that virtual environment might not take up a substantial portion of the available room in one's head. Nonetheless, dropping an indicator should not alter the conceptual domain of the reflective construct (Jarvis, et al, 2003).

However, due to the experiments' design using virtual environment, (study 2 and 3) we use four variables original scale instead of the five variable scale, without scope and coherence measure; on the contrary, we used Extent (Purcell et al, 2001). As virtual environments are widely used means to investigate, since it allows studying difficult problems in real conditions, as we could not change the infrastructure of a shopping center, however, the virtual environment postulates some limitation as the imperfection in the "virtual environment" and a Gessell Laboratory might change the perception of the extent emotion. Therefore, using virtual environments assumes controlled conditions that are not real, so it would decrease the coherence and scope sense.

Natural's perception.

In the framework propose, it is not clear if restorative potential is a customer's perception or attribute of the servicescape. In other words, is it a phenomenon associated with place or people?

Restorative response is demarcated as preference or like-dislike affect in association with pleasurable emotions and neurophysiological activity elicited by human sense of the encounter, (Ulrich, 1983). Therefore, restorative potential is related with perceptual view of natural habitats so that it is limited to the human senses. We study only sight sense as it is a person's most significant sense, (Ulrich, 1983). At the point when perception of natural habitat happens, that arrives at cognitive memory process (encoding, storage, and retrieval), (Spence et al, 2016). Therefore, the primary degree of the response is a quickly generalized emotions response, motivating approach-avoidance impulses or behavior (Mehrabian, & Russell, 1974; Ulrich, 1983).

Reflective Measure.

In the literature, restorative potential and a place's restorative qualities are treated as the same construct. Although this nomenclature may certainly create confusion, it should be clarified that a place has restorative potential because it has restorative formative qualities. In any case, a place's restorative potential refer to the same four environment emotions that foster human restoration and the restorative qualities as the formative natural characteristics.

In order to be considered a reflective concept, indicators should have theoretical conditions. That is, indicators should have the same or similar content, construct direction of causality to indicators and the indicators should be interchangeable. Additional, indicators are required to have the same antecedents and consequence (Jarvis, MacKenzie, & Podsakoff, 2003).

Restorative indicators have some common themes: spatial cognitive sense, where the spatial layout reduced the information; therefore, the scene are easier to process. All indicators imply the same information. Fascination implies a place has a sense of mystery from the perspective of the observer and that information can be acquired if a person explores the setting

more deeply. Additionally, sense of familiarity, this reflection is created with frequent connection to places that encompasses not only acquaintance but also past experience, (Tang, et al, 2015). Communally, it portrays a person's profound valuation for and connection with natural habitats and speaks to a conceivable inspiration to resound with the common habitat and to look for constructive perceptual manifestation in any settings.

Edwards (2011, pg 379) affirms that the causal relationship “characteristic of reflective measurement models is that the construct underlies the measures, and changes in the construct are expected to cause changes in the measures”. In ART studies, participants rate what they perceive depending on the place’s formative dimensionalities. From the marketing perspective, Rosenbaum et al. (2017) recently put forth a Replace Framework that considers that consumer responses are correlated to a place’s restorative servicescape. Base on this theoretical consideration, the direction of causality is from construct to items. Therefore, we took the restorative potential as reflective measure. Untimely, some formerly studies has used four indicator (Pasini et al, 2014), instead of five indicator, as we did it, at the study 2 and 3, compare to study 1, so this change has no affect restorative potential measure.

Methodological Approach.

Construct validity.

However, question of construct clarity and validity are distinct, although, the construct clarity is scientifically important issues for the empirical measure and methodological approaches and analytical process, (Suddaby 2010). Additionally, we clarify the reason why we used binary analysis to discriminate between who does not perceive restorative potential.

We used the Perceived Restrictiveness Scale (PRS-Short version). Korpela et al, (1996) developed the PRS to measure how much restorative qualities can be perceived from the

environment. PRS is a perceptual evaluation of five environmental emotions, this scale is place dependent and results may differ based upon the servicescape. The scale was developed to make it more suitable to be used in research contexts where respondent time is limited, (Pasini, et al., 2014). Additionally, the PRS-Short version cannot be used to measure restorative potential as a second order construct as it only uses one variable for each 5 restorative potential emotions. Ulrich (1971) indicates that aesthetic reflective preference or pleasurable feelings, have a semantic pleasantness evaluations taking a strong affective character, typically load on the same dimension (Ulrich, 1971), therefore, this research took the construct as a reflective first-order construct, (Jarvis et al, 2003).

However, to establish the psychometric properties errors of the items and overall scale in a more robust way, should be use to avoid mono-method bias, when the emotion are taken as a first order factors. The reflective variables can be measured separately as a second order construct when using the original 26-item version of Hartig et al.'s (1997) and Pasini et al.'s (2009) instruments. Moreover, more research is needed to define an instrument completely independent from stimulus attributes, this kind of independence is fundamental for a self-rating scale to be a good measurement instrument, (Pasini, Berto, Brondino, Hall & Ortner, 2014).

Binary analysis .

Different reactions to the natural environment can be perceived by individuals, hence, the preference of a place's restorative qualities depends on whether the environment offers factors that contribute to a person's emotional needs. On the one hand, it is argued that human evolution suggests that people have an innate connection to nature and that they have an innate ability to not only acquire information from environmental stimuli, but also, to focus intently on environmental stimuli, especially negative stimuli, that may threaten their well-being and even existence, (Kaplan et al, 1989). On the other hand, not every natural setting will promote human

well-being. For example, if greenery is found in a very small space, then, it is doubtful that a person will view this as fascinating. Beyond this simple dichotomous behavior of either positive or negative responses to the natural habitat, there is the plausibility the regular habitat may impart both positive and negative responses, even simultaneously, (Hinds, & Sparks, 2011).

Research has shown that certain individuals perceive lesser restorative qualities in natural settings than others (Hartig, et al, 2014). For these types of people, the uninspiring perceptual experiences that they have had in nature may diminish their preference for natural environments (Purcell, Peron, & Berto, 2001) and consequently, decrease their willingness to visit this type of setting. Besides, research findings also indicate that at least some people tend to underestimate nature's hedonic benefit and choose to avoid nearby nature (Nisbet, Zelenski & Murphy, 2011).

Therefore, some tentative studies speculate that people have differential restoration needs, (Hartig, Mitchell, Vries, Frumkin , 2014). These differential needs may depend on a person's need to reduce stress or to restore cognitive resources. To assess whether groups of mall customers who perceive the restorative potential of the shopping mall exist, we performed a two-step cluster analysis with SPSS 21. The two-step cluster analysis overcomes many obstacles that characterize traditional cluster analysis procedures, such as k-means. We highlighted that the two-step cluster analysis eliminates uncertainties about the optimal number of clusters in continuous or categorical data set by employing the lowest Bayesian information criterion (BIC) value as a criterion statistic (SPSS, 2015).

Despite credible evidence demonstrating the health-promoting qualities of natural environments, many people do not seem to perceive enough restorative and preference-related qualities while in contact with nature. Likewise, the results of first study suggest that certain individuals may not be able to have interesting perceptual experiences while in contact with restorative servicescapes. To find a starting point to enrich perceptual experiences of natural

environments, we controlled the formative antecedent of positive perceptual experiences in the second study and the third study.

It is also convenience to clarify some limitation of the experiment approach use in the second and third study.

Experiment Design.

This study uses the methodological paradigm of SOR, "Stimuli, Organism, Response" (Mehrabian, et al,1974). This design is normally used in environmental psychology studies.

Likewise, experiment methodological strategy one could use to demonstrate that green versus no no-green formative dimensionalities rule out the possibility activation of restorative potential.

Thus, the purpose in the second and third paper is to review the formative component of biophilic design (with nature and without it).

There are two important concerns to consider in the study of emotions through the immersion in virtual environments. First, the study increases attentional effectiveness in study variables by simulating a continuous and non-discrete variable (Bornstein,& Craver-Lemley, 2016). Second, regarding the duration of the stimulus or "priming" affective measure points out that exposure to stimuli allows to cross the thresholds of restorative or evoked potential in milliseconds; that is, between 30 seconds and 60 seconds is enough to generate the expected effect (Bornstein,et al, 2016). However, it would be plausibly to have participants take long immersions into natural environments, that is a research opportunity, which requires mobile neuromarketing equipment.

Cognitive Task.

Research suggests that by developing imagination methods, managers and clients can be approached to the form of their thinking that reproduces representations of their thoughts and

behaviors (Bornstein et al., 2016). The purposes in the second and third study was to retrieve the goal customer journey stored abstractly in retrospective memory. According to Puccinelli et al, (2009) purposes had to be simulated to change the level of attention to compare the difference effects as goal directed behavior might involve different amount of attentional resource. Nevertheless, retrospective memory generates deliberate cognitive processing and action generation, it might not portray and optimal behavior (Bornstein et al., 2016).

Neuroscientific Tool.

The Perceived Restorative Scale, self-report measurement assumes that people's subjective appraisal of their environments provides a reasonable potential of their psychological restoration experiences in natural versus non-natural settings. However, the complex psycho-physiological pathways of potential response measurement via one single measure is insufficient. Therefore, neuro-physiological techniques are more appropriate measure of cognitive and emotional response as the term restorative potential reflects the notion that an action motivated externally by emotions, expressed a neurophysiological arousal need not be carried out and can be suppressed or denied (Ulrich, 1983). Thus, Electroencephalogram (EEG), might be more appropriate measurement of evoked potential (Berto, 2014).

The neuroscience methodology provides support for restorative potential as a function of attentional effort and memory (Basu, et al, 2018). Studies on working memory capacity support the notion of mental bandwidth and its role in reflection. In addition, research indicates that working memory capacity is limited; implying that by restorative potential bandwidth natural can be restored. According to Basu, et al, (2018), settings that place fewer demands on working memory capacity permit restored the memory capacity, where attention can move from checking the outside condition to inside reflection. This study suggests that having restorative experience make available bandwidth, affording more opportunities for other cognitive and emotion such as

engagement, attention, excitement, and interest. Base on this empirical research, we are able to ensure that potential recovery of direct attention need not operate in mutually exclusive other internal emotions during restorative experience.

As to neuroscientific tool approach to measure restorative potential, a statistical problem in measuring repeated stimuli, therefore, research is needed to measure the existence of differences between curves obtained under different levels of conditions and momentous. In any case, some extensions of the classical (univariate or multivariate) analysis of variance (ANOVA) should be used. Such as, spatially correlated functional data might use these approaches are part of a relatively new field of research called spatially correlated functional, called FANOVA, (Aristizabal, Giraldo, & Mateu, 2019).

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APPENDIX

4. Sus ingresos mensuales están entre:

- < 500 mil pesos
- 500 mil y 1 millón de pesos
- Entre 1 y 2 millones de pesos
- Entre 2 y 3 millones de pesos
- Entre 3 y 4 millones de pesos
- Más de 4 millones de pesos

5. Su edad en años está entre:

- Entre 18 y 25
- Entre 25 y 35
- Entre 35 y 45
- Entre 45 y 55
- Mayor de 55 años

Appendix B
Instrument second article.

ESTUDIO SOBRE EXPERIENCIAS EN CENTROS COMERCIALES

CENTROS COMERCIALES - MISIÓN _____

Buenos días/tardes/noches. En la Universidad Externado de Colombia estamos adelantando un estudio sobre experiencias y su opinión será valiosa para los propósitos de la investigación. Su participación es voluntaria. Sus datos de identificación, así como las respuestas suministradas, serán de carácter confidencial. Los datos se utilizarán únicamente para fines estadísticos. Le agradeceremos nos dedique 10 minutos para responder este cuestionario. Si NO está de acuerdo en participar, por favor devuelva el cuestionario. Para cualquier inquietud, puede comunicarse con el profesor Germán Contreras al teléfono 341 99 00 Ext. 1276.

Suponga que usted está en el centro comercial que vio en el video y su propósito es comprar algo sin descuento.

Por favor, indique qué tan de acuerdo está con las siguientes afirmaciones sobre su experiencia en el centro comercial. Marque con una X el número que mejor identifique su grado de acuerdo o desacuerdo con cada afirmación.

1. Algunos centros comerciales permiten que usted se sienta muy lejos de preocupaciones y pensamientos cotidianos. ¿Este centro comercial le permite relajarse, pensar acerca de lo que le interesa y evadir las preocupaciones y pensamientos cotidianos?

| Completamente en desacuerdo | Principalmente en desacuerdo | De alguna manera en desacuerdo | Ni en desacuerdo ni de acuerdo | De alguna manera de acuerdo | Principalmente de acuerdo | Completamente de acuerdo |
|-----------------------------|------------------------------|--------------------------------|--------------------------------|-----------------------------|---------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

2. En algunos centros comerciales usted puede sentirse como en su propio espacio, donde las personas pueden involucrarse totalmente en el entorno y no pensar en nada más. En este centro comercial, ¿qué tanto se siente como en su propio espacio?

| Completamente en desacuerdo | Principalmente en desacuerdo | De alguna manera en desacuerdo | Ni en desacuerdo ni de acuerdo | De alguna manera de acuerdo | Principalmente de acuerdo | Completamente de acuerdo |
|-----------------------------|------------------------------|--------------------------------|--------------------------------|-----------------------------|---------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

3. ¿Este centro comercial llama su atención, genera interés y conexiones fácilmente?

| Completamente en desacuerdo | Principalmente en desacuerdo | De alguna manera en desacuerdo | Ni en desacuerdo ni de acuerdo | De alguna manera de acuerdo | Principalmente de acuerdo | Completamente de acuerdo |
|-----------------------------|------------------------------|--------------------------------|--------------------------------|-----------------------------|---------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

5. ¿Qué tanto este centro comercial lo hace sentir cómodo y a gusto?

| Completamente en desacuerdo | Principalmente en desacuerdo | De alguna manera en desacuerdo | Ni en desacuerdo ni de acuerdo | De alguna manera de acuerdo | Principalmente de acuerdo | Completamente de acuerdo |
|-----------------------------|------------------------------|--------------------------------|--------------------------------|-----------------------------|---------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

6. En general, ¿qué tanto este centro comercial es excelente para tomar un descanso y reponer su interés de estudiar para un examen o trabajar eficazmente en un proyecto exigente?

| Completamente en desacuerdo | Principalmente en desacuerdo | De alguna manera en desacuerdo | Ni en desacuerdo ni de acuerdo | De alguna manera de acuerdo | Principalmente de acuerdo | Completamente de acuerdo |
|-----------------------------|------------------------------|--------------------------------|--------------------------------|-----------------------------|---------------------------|--------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Edad: _____ **Género** Masculino 1 _____ Femenino 2 _____