The interaction between interpreted space, mood and behavior in retail environments: a conceptual research model.

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Abstract: The current paper proposes a conceptual research model for the discipline of retail design research. Based on an interdisciplinary theoretical framework, the model captures the interaction between interpreted space, a consumer's emotions/mood and actual behavior in retail spaces, but now from a designer's perspective by focusing on the holistic nature. The model can function as a structuring device to organize the relevant research from marketing, psychology and architecture, in relation to retail design. Furthermore, it also constitutes the basis for our research program, which is illustrated with a typical experimental study recently performed at our lab. We argue that studies in retail design need to be undertaken in an actual, 3D architectural space in which actual in-store behavior and emotional responses can be investigated. As such, the conceptual research model can function as a guide in our research of how well-designed store environments can positively influence consumers.

Key words: retail design, research model, consumer behavior, consumer emotions.

1. Introduction

In today's economy, creating a unique environment becomes a necessity for customer binding and differentiation. The design of a retail environment and the resulting atmosphere has become increasingly important, as the actual merchandise of competitive retailers is often perceived as similar and is no longer the distinguishing feature between them. This differentiation trend, together with global economic changes and shopping behavior of consumers shifting towards a more hedonic experience, has led to a different, more sophisticated design approach. Current retail design takes into account the needs of both the retailer and the consumer. Therefore, an understanding of which design elements will work aesthetically, functionally and conceptually, within a given budget and cultural background, and how the resulting environment will perform commercially are necessary objectives. So, since it requires more knowledge than mere interior design, retail design is a multidisciplinary field of study with its own methodology.

The relatively short history in research into the consumer - retail environment link shows that collaboration between different disciplines such as marketing, environmental psychology and architecture might offer accurate

solutions for the changing retail landscape [2]. Indeed, via substantial research, each of these disciplines has developed an understanding of how the environment affects human behavior to seek predictability. However, each also has its own theoretical models and terminology and so far no framework has bridged all three disciplines. The discipline of retail design might offer this bridge by focusing on a holistic understanding of the store environment and its possible influence on consumers. To further explain this holistic view, it is first necessary to take a closer look at this discipline and its research methods.

2. Retail design research: A conceptual research model

To clarify the different approaches of the different research disciplines dealing with the consumer-retail environment link a distinction needs to be made between research on a micro level and research on a molar level, based on the theory of Hull and Harvey [16]. They define micro characteristics as the physical characteristics of the environment that create a particular atmosphere, such as color, music, light and sound. Molar characteristics, on the other hand, are defined as "emergent properties" that result from the sum of the micro characteristics. For example, picture a spacious interior store with white walls and lots of daylight coming in. The furniture is placed on a high reflective white floor, with one red wall in the back. Now picture a stuffy furniture store with low ceilings highlighted with fluorescent lighting, and the furniture placed on a dark blue carpet with also a red wall in the back. Whereas the micro characteristic red in the first store tends to indicate the molar characteristic trendiness and quality, in the second store it might refer to cheap prices.

Most of the research conducted by marketers and/or psychologists in this domain mainly focuses on a micro level by analyzing effects of a single physical characteristic on customer appreciation [18,21,24] or (buying) behavior (see [31] for an overview). So far, not much research has focused on the influence of molar characteristics on consumer behavior because of the inherent difficulty of an analytical analysis of a sum of characteristics that mostly is synergetic and holistic by nature. In addition, they often use 2D images to visualize a retail space. Only minimal research is conducted in real retail spaces. Although results with such an approach do give an indication of the response of consumers to manipulations of isolated factors, from a designer's point of view they remain an impoverished representation of the holistic experience of a complete store with many factors interacting. Indeed, the actual experience created by all environmental characteristics constitutes a crucial element of the holistic view. Finally, research results from a marketing perspective are usually an endpoint rather than a bridge to a next stage where possible methodologies for designing a good retail space could be suggested. The result being an increasing gap between marketers with their research outcomes and designers with their skepticism towards these outcomes. On the other hand, the architectural input, which is more familiar with the holistic view, remains insufficient: too few studies with architectural dimensions as independent variables are conducted in retail environments.

Retail design research has the potential to offer a bridge to all three disciplines by focusing on a holistic understanding of the retail environment. In this view, experimental research in retail design needs to focus on the analysis of the influence of a retail environment, with the environment as a real 3D space designed by a designer. So, molar characteristics should be analyzed, based on knowledge from all three disciplines, for their possible influence on consumers' emotions and behavior, both of which should also be measured. Ultimately, the results should be used to develop guidelines or concepts for designing a good retail space.

In the current paper, we therefore want to propose a conceptual research model (CRM, see Figure 1). The goal of this model is twofold. First, it can function as a structuring device to organize the relevant existing multidisciplinary knowledge. This also helps in clarifying the differences between different approaches. Second, the model emphasizes what we believe is important in current retail design research. As such, it also constitutes the basis for our research program. The model itself consists of a theoretical framework based on psychological and marketing research but now from a designers' perspective. More specifically, it is based on the SOR-paradigm (Stimulus-Organism-Response) as described by Donovan and Rossiter [12], who introduced the retail environment as stimulus in the theoretical model of Mehrabian and Russell [22]. In essence, the model incorporates the interactions between interpreted space, a consumer's mood and emotions, and behavior in retail spaces.
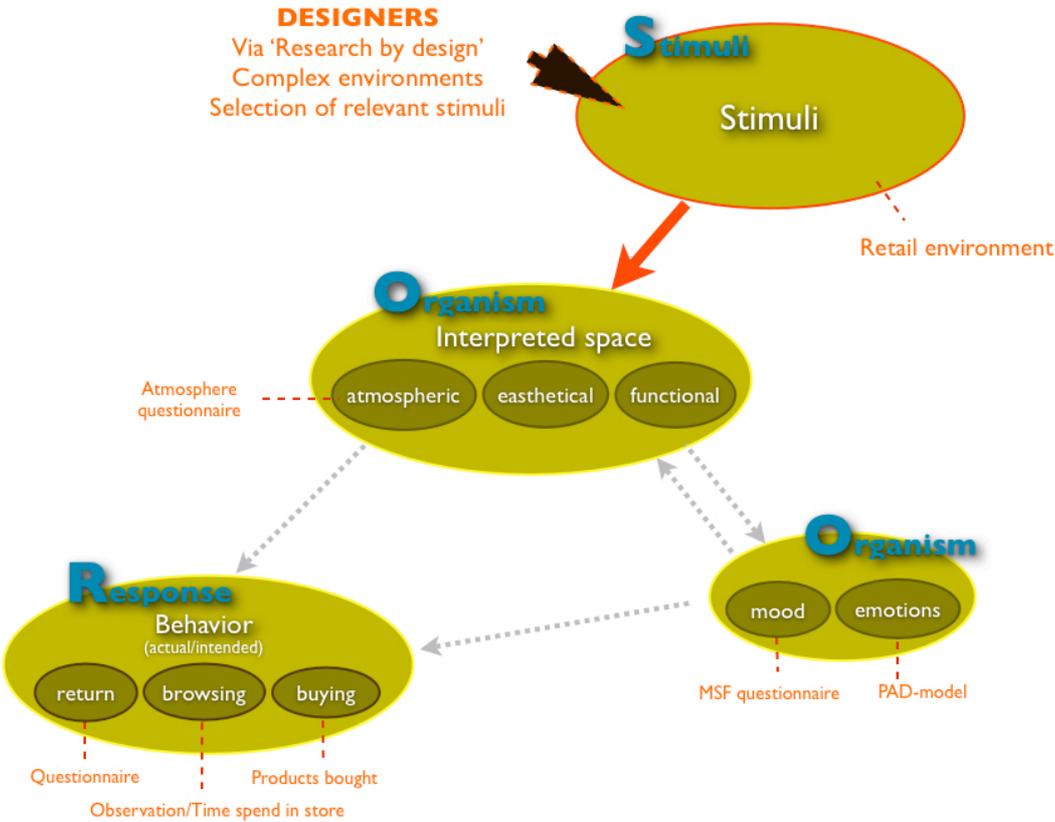

Figure. 1 Conceptual research model

In the next paragraphs, we will explain the concepts as used in our model, as well as provide some examples of how these are actually implemented or measured in our own research. A crucial feature in the latter is a unique facility we have at our disposal, namely the Retail Design Research Lab: a fully modifiable, experimental space that not only allows us to simulate different (shop) environments, but also permits monitoring all overt (consumer) behavior.

2.1 Stimulus

The stimulus in our model embodies the concept of a retail environment that consists of space-related, product-related, and people-related aspects, following the theory of Bitner [5]. As designers of environments we focus on the space-related aspects, which can be designed and manipulated (see Figure 2). The main categories can be

classified in functional, aesthetical, and atmospherical aspects. Whereas functional aspects determine whether a store "works", the aesthetical and the atmospherical aspects determine the environmental experience and attend to our five senses.
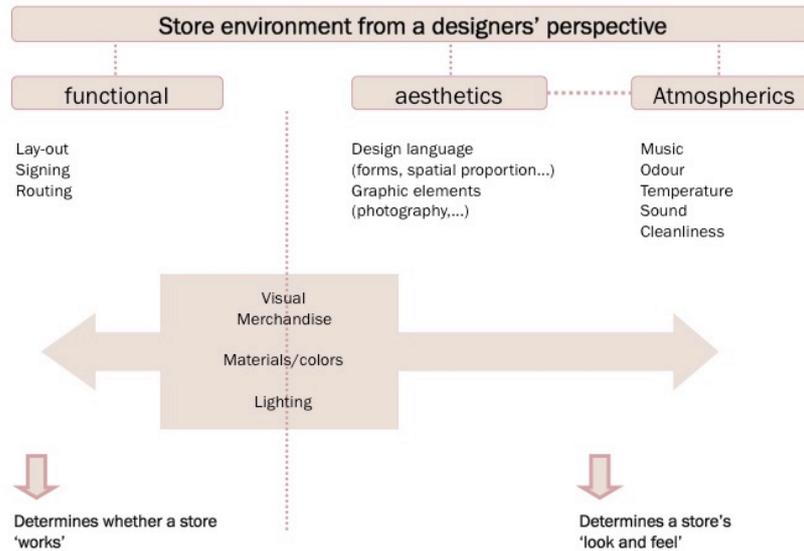

Figure. 2 aspects of the retail environment

Our attention turned towards the atmospherical aspects because their impact on the environment is relatively high and they can be easy manipulated. Kotler ([17], p.48) initially coined the term 'atmospherics' as "the effort to design buying environments to produce specific emotional effects in the buyer that enhance his (/her) purchase probability", but this has later been re(de)fined to 'ambient factors'. These emphasize sound (e.g. music), feel (environment, not product based; e.g. crowding, arousal), smell (overall odor) and sight (environment related; e.g. wall colors). So, atmosphere has the power to turn a 3D designed retail space into a 5D space, creating sensations to our five senses. As mentioned, research done so far was typically carried out on a micro level and focused upon separate characteristics. As such, important contributions were made in the study of, for example, the effects of music [15,23], color [7], odor [29], and crowding [20]. However, there is a clear lack of research on the experience the atmosphere in its totality is able to create. Therefore, in our model designers play the crucial role of selecting or creating the relevant stimuli. Where in the past the complex store environment in research was often narrowed down to a few variables that were independently manipulated and tested, it is now approached from the experience of the environment as a whole. This designers' holistic perspective resulted in a need to conduct the experiments in a real three-dimensional retail setting.

Implementation.

3D simulations of retail environments that allow manipulating environmental cues and testing their possible influences on its visitors are of course not readily available. Therefore, at our campus we have constructed a modular, fully modifiable room to be used in experimental retail design research. This "Retail Design Research Lab" has a 'shopping' lab (currently set-up as a mini-supermarket) with a one-way-mirror and observation cameras, as well as two smaller rooms to conduct interviews. In principle, we can control and monitor every possible detail in the lab environment: lighting settings, smell, temperature, products, people, … In theory, by manipulating certain aspects in the lab, any difference in the responses to the resulting environments can then be

attributed to those specific aspects. This method can be used for most of the aspects coming from architecture. But, dissecting retail architecture into several manageable parts only works in one direction due to its holistic nature. Therefore, results of research on those isolated, manageable matters, should always be set back to its context before they can be translated into supportive guidelines for the design process. Since these results stem from carefully designed experiments in a controlled environment, they generally have a high internal validity. However, to fully support our CRM, the results found in the lab should also be externally validated and generalized via experiments in real situations.

2.2 Organism

The 'organism' in our model refers to "the internal processes and structures intervening between stimuli external to the person and the final actions, reactions, or responses emitted. Notice that the intervening processes and structures consist of perceptual, physiological, feeling and thinking activities" ([3], p. 46). Simplified: the effect of store environmental cues (S) – whether they are aesthetical, atmospherical or functional – on final consumer behavior (R) is mediated by the consumer's internal state (O). As our focus lies on the atmospherical cues, the important aspects here are how consumers perceive and interpret the space and the impact this has on their emotional state.

How a consumer perceives a particular store depends on the previously mentioned aesthetical, atmospherical or functional aspects. It is argued that the atmosphere of a space is considered to be a fairly stable concept because it concerns an affective evaluation of the environment rather than an affective state or feeling itself [34]. In other words, the atmosphere is more strongly linked to the expected than the actual emotional effect of the environment. This, of course, results from the fact that the emotional condition of a person is usually determined by many factors, including many that are independent of the immediate surroundings. However, in many cases, the goal of creating a certain atmosphere in a retail environment is precisely to try to elicit a certain emotional effect on the consumer. Indeed, emotions are important factors in various consumer behaviors (see [9] for a review) and more specific purchase behavior [3].

There is little consistency on what actually constitutes an emotion [26], so we will first outline how we interpret emotions. Firstly, emotions form a background to which cognitive judgments, preferences or attitudes operate [32,35]. Secondly, emotions are generally stronger in intensity than moods [4] and they have a clear object of referent (e.g. the store environment) [13]. Consequently, both emotions and mood are separate concepts in our model and they need to be measured separately to grasp the full spectrum of emotional reactions to the retail environment.

In this context, different research models have shown contradictory results regarding the emotional reaction to retail environments. Some research suggests emotions form the first level of response, independent from behavioral responses (cf. research based on the PAD-model, see below). The emotional effect can be both a change in mood, which lasts longer, or a shift in emotions, which are shorter in period. Alternatively, in the environment response model of Greenland and McGoldrick [14], emotional and behavioral factors are hard to separate and will influence one another. Furthermore, they also argue that the emotional status of the consumer in a retail environment (pre-existing or elicited by the environment) can, in turn, influence how that environment itself is perceived.

In sum, what matters to us are the interpretation of a space, the emotions elicited by the store and the pre-existing mood of a consumer before entering a store. Next, we address how these abstract concepts can actually be measured.

Implementation

To measure the interpretation of space, we adapted an instrument developed by Vogels [34], who proposed a tool to quantify the perceived atmosphere of an environment. It consists of 38 atmospheric descriptors, of which participants are asked to indicate the level of applicability on a seven-point Likert scale. The tool was shown to be a robust and sensitive measure.

Emotions elicited by the store are measured with the use of the Pleasure, Arousal, and Dominance-model (PAD) of Mehrabian and Russell [22] as adapted to the study of store atmospherics by Donovan and Rossiter [11]. Brengman [7] and Machleit & Eroglu [19] both conducted a thorough literature review to compare relevant emotion measuring instruments. Their findings suggest that this model offers the most suitable tools in measuring emotions in retail environments when the focus of interest lies on the architectural and atmospherical features. With this technique, each of the three emotional dimensions is measured via six semantic differential items. Each item consists of a seven-point scale with opposing emotional words at either end (e.g. happy - unhappy). We currently use a Dutch translation, validated by Brengman while investigating the influence of color in retail environments [7].

An important point of discussion in the literature is the most appropriate time to measure mood and emotions. As suggested by several researchers, more research should be undertaken with regard to this moment [12,10,33]. So far, research focused on measuring both emotions and mood only post seeing the retail environment, as was outlined by Mehrabian and Russell. However, given the possible effect of mood on the interpretation of space [14], we opted to measure emotions after the shop experience and mood prior to entering the store. At present, we measure mood via the MSF, a short mood questionnaire that consists of four questions and is widely used in psychological research [25].

2.3 Response

When the reaction of a consumer to a retail environment is behavioral, we speak of a 'response'. We try to develop an understanding of the complete spectrum of shopping behavior and therefore include purchase behavior, browsing behavior and return behavior (willingness to return to the store).

Firstly, from the literature review of Turley and Milliman [31] it is clear that atmospheric effects have been measured on a wide variety of dependent variables. They noted that the link between atmospherics and sales is very strong and robust. Twenty-five out of twenty-eight reviewed studies found that atmospherics have the capability to influence purchasing behavior via the interference of emotions of shoppers in all kinds of retail stores. Moreover, the contribution of emotional variables to consumer behavior is independent of cognitive variables, such as perceptions of quality, price and store selection [8,28].

Secondly, consumers' browsing behavior, that is the way they actually behave inside the store, can be used as an indicator of a their appreciation of the environment. For example, a consumer might spend more time in a store when the appreciation of that store is high [12]. However, this response might also indicate the consumer is experiencing some trouble in finding a specific product. Therefore, behavioral responses need to be interpreted

in the full framework as described in the CRM, and hence the need to also take covert (emotional) responses into account.

Thirdly, a consumers' willingness to return to a store indicates his appreciation of the retail environment as well, since the environment is correlated to the actual approach and avoidance behavior as Donovan and Rossiter stated [11].

Implementation

When reviewing the literature a distinction needs to be made between a prediction of behavior and actual behavior. Experimental research based on emotion scales such as the PAD-emotions, typically attempts to predict so-called 'approach' and 'avoidance' behaviors, as measured by questionnaires. However, our interest primarily lies in the consumers' actual approach and avoidance behavior, with or without the interference of emotions [5,6]. A study of Donovan et al. [12], that focused on actual behavior, concluded that pleasure induced by retail environments, appears to be a strong cause of consumers spending extra time in that environment and spending more money than intended. Additionally, they contented that, depending on the retail environment, arousal induced by the environment would intensify pleasure or displeasure such that time and spending behavior would be increased in pleasant environments and decreased in unpleasant environments. Rook [27] adds that the retail environment can act as an inducer, which sparks an impulse in shoppers, leading to approach behavior, impulse buying and increase in purchasing. Babin and Darden [1] confirm this in a latter study and note retail environments have an affect-inducing capability. This means that good mood-inducing stores will lead to good shopping experiences. But also, a negative mood change in store, elicited by that store, can lead to less time and less money spent on spontaneous purchases [30] and can engage in stronger avoidance behaviors [33].

To analyze actual behavior we opt to observe participants during the shop experience, rather than asking what they would do. By giving the participant in our experiment an assignment, such as buying groceries for a two-person breakfast, they actually experience the retail environment holistically and they behave in a certain way (browsing behavior, buying behavior) that we are able to observe and analyze. Indeed, as the lab is equipped with a one-way screen and multiple cameras, all overt, in-store browsing behavior can be observed and recorded (e.g. route taken, walking speed, time spent…) and buying behavior is measured by registering the consumers' actual purchases (e.g. number of products, type of products, amount spend…). The only exception is, obviously, the willingness to return to the retail environment (return behavior), which we can only measure via self-report, because it involves an experiment, not an actual retail environment.

3. A research program

Our research program, outlined by the conceptual research model, is targeted at uncovering the relations between how consumers interpret a space, their emotions/mood, and actual shopping behavior, all within the context of specifically designed retail environments. We will illustrate our approach with a typical experimental study recently performed at our lab on the effects of lighting.

The basic context in the Retail Design Research Lab was that of a small supermarket. Three versions of this context were constructed which differed only with respect to how the space was illuminated. Importantly, the choice of the lighting settings was not a simple linear manipulation of some isolated factors (e.g., simply

increasing overall lighting level). Instead, three specific lighting settings were carefully designed (overall lighting level, spatial distribution, color temperature…) to simulate lighting settings as in three different supermarkets in Belgium (Delhaize, Carrefour, Aldi). By providing the 90 participants in the study with a specific, realistic shopping scenario people were confronted with, a full "holistic" experience of the space. Importantly, it also allowed gauging the influence of the lighting setting on actual shopping behavior. All participants were filmed during their shopping experience. Prior to the shopping task, people filled in the mood questionnaire and provided socio-economic information. When finished with the shopping task, people completed both a PAD (measuring elicited emotions) as well as the atmosphere questionnaire (measuring how people perceived the store atmosphere). The results indicate that in terms of the PAD-dimensions, we observed a statistically significant effect of the lighting setting only on 'pleasure'. However, contrary to expectations, this higher degree of experienced pleasure did not translate into a significant increase in time spend inside the retail environment (browsing behavior), nor were the total amount spend or number of products bought (buying behavior) significantly affected by the lighting setting.

4. Conclusions

The study conducted in our lab highlights the principles underlying our model and, consequently, our research program. Firstly, the emphasis needs to be put on studies being undertaken in an actual, 3D architectural space. Moreover, we argue that, in the context of retail design, designers should select or create the relevant environments and the focus should be on molar rather than micro characteristics. Secondly, in addition to predicting consumer behavior via questionnaires in which respondents report how they would behave, actual in-store behavior needs to be investigated as much as possible. Thirdly, to fully grasp consumers' holistic experience, both overt (behavior) and covert (emotional) responses need to be measured. As illustrated in the example, even though a behavioral effect was not immediately apparent, a significantly increased pleasure was observed, which could prove to be important for differentiation and customer binding in the long run.

In this paper we have described a conceptual research model for the discipline of retail design research. Having a multidisciplinary foundation, it constitutes a theoretical framework, which allows us not only to integrate knowledge from the different related disciplines, but also to highlight the specific approach of retail design research. This way, it can function as a guide in our research of how well-designed store environments can positively influence consumers.

5. References and Citations

[1] Babin, B.J. and Darden, W.R. (1995) Consumer Self-regulation in a Retail Environment, *Journal of Retailing*, vol. 71, no. 1, pp 47-70.

[2] Barr, V. and Broudy, C.E. (1986) *Designing to Sell*, McGtaw-Hill, New York.

[3] Bagozzi, R.P. (1986) *Principles of Marketing Management*, Science Research Associates, Chicago.

[4] Bagozzi, R.P., Gopinath, M. and Nyer, P. U. (1999) The Role of Emotions in Marketing, *Journal of the Academy of Marketing Science*, vol. 27, no. 2, pp 184-206.

[5] Bitner, M.J. (1990) Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses, *Journal of Marketing*, vol. 54, April, pp 69-82.

[6] Bitner, M.J. (1992) Servicescapes: The Impact of Psychical Surroundings on Customers and Employees, *Journal of Marketing*, vol. 56, no. 2, pp 57-70.

[7] Brengman, M. (2002) *The Impact of Colour in the Store Environment*, Unpublished doctoral dissertation, Vrije Universiteit Brussel, Brussels, Belgium.

[8] Clark, M. and Isen, A. (1982) Toward Understanding the Relationship between Feeling States and Social Behavior, In: A. Hastorf and A. Isen (Eds.), *Cognitive Social Psychology,* Elsevier/north Holland, New York, pp. 31-41.

[9] Cohen, J.B. and Areni, C.S. (1991) Affect of Consumer Behavior, In T.S. Robertson and H.H. Kassarjian (Eds.), *Handbook of Consumer Behavior*, Prentice-Hall, Englewood Cliffs.

[10] Dawson, S., Bloch, P.H. and Ridgway, N.M. (1990) Shopping Motives, Emotional States, and Retail Outcomes, *Journal of Retailing*, vol. 66, pp 408-427.

[11] Donovan, R.J. and Rossiter J.R. (1982) Store Atmosphere: An Environmental Psychology Approach, *Journal of Retailing*, vol. 58, pp 34-57.

[12] Donovan, R.J., Rossister, J.R., Marcoolyn, G. and Nesdale, A. (1994) Store Atmosphere and Purchasing Behavior, *Journal of Retailing*, vol. 70, no. 3, pp 283-294.

[13] Frijda, N.H. (1993) Moods, Emotion Episodes, and Emotions, In: M. Lewis and J. M. Haviland (Eds.), *Handbook of Emotions*, Guilford, New York, pp 381-403.

[14] Greenland, S.J. and McGoldrick P.J. (1994) Atmospherics, Attitudes and Behaviour: Modelling the Impact of Designed Space, *The International Review of Retail, Distribution and Consumer Research*, vol. 4, pp 1-16.

[15] Hui, M.K., Dubé, L. and Chebat, J.C. (1997) The Impact of Music on Consumers' Reactions to Waiting for Services, *Journal of Retailing*, vol. 73, pp 87-104.

[16] Hull, R.B. and Harvey, A. (1989) Explaining the Emotion People Experience in Suburban Parks, *Environment and Behavior*, vol. 21, no. 3, pp 322-345.

[17] Kotler, P. (1973) Atmosphere as a Marketing Tool, *Journal of Retailing*, vol. 49, pp 48-64.

[18] Lam, S.Y. (2001) The Effects of Store Environment on Shopping Behaviors: A Critical Review, *Advances in Consumer Research*, vol. 28, pp 190-197.

[19] Machleit, K. A. and Eroglu, S. A. (2000) Describing and Measuring Emotional Response to Shopping Experience, *Journal of Business Research*, vol. 49, pp 101-111.

[20] Machleit, K.A., Kellaris, J.J and Eroglu, S.A. (1994) Human versus Spatial Dimensions of Crowding Perceptions in Retail Environments: A Note on their Measurement and Effects on Shopper Satisfaction, *Marketing Letters*, vol. 5, pp 183-194.

[21] Massara, F. (2003) Interactionism vs Reactionism: Are Shoppers always Prone to Store Environments? In: Evans, J.R. (Ed.), *Retailing 2003: Strategic planning in uncertain times,* Academy of Marketing Science & American Collegiate Retailing Association, Hempstead-NY, pp. 28-37.

[22] Mehrabian, A. and Russell, J.A. (1974) *An Approach to Environmental Psychology*, MIT Press, MA Cambridge.

[23] Milliman, R.E. (1982) Using Background Music to Affect the Behavior of Supermarket Shoppers, *Journal of Marketing*, vol. 46, pp 86-91.

[24] Ng, C. (2003) Satisfying Shoppers' Psychological Needs: From Public Market to Cyber-mall, *Journal of Environmental Psychology*, vol. 23, pp 439-455.

[25] Peterson, R.A. and Sauber, M. (1983) A Mood Scale for Survey Research, In: *Proceedings of the American Marketing Association Educator's*, American Marketing Association, pp 409-414.

[26] Plutchik, R. (1980) *Emotion: A Psycho-evolutionary Synthesis*, Harper & Row, New York.

[27] Rook, D.W. (1987) The Buying Impulse, *The Journal of Consumer Research*, vol. 2, no. 14, pp 189-199.

[28] Sherman, E., Mathur, A. and Smith, R.B. (1997) Store Environment and Consumer Purchase Behavior: Mediating Role of Consumer Emotions, *Psychology & Marketing*, vol. 14, no. 4, pp 361-378.

[29] Spangenberg, E.R., Crowley, A.E. and Henderson, P.W. (1996) Improving the Store Environment: Do Olfactory Cues affect Evaluations and Behaviors? *Journal of Retailing*, vol. 60, pp 67-80.

[30] Spies, K., Hesse, F. and Loesch, K. (1997) Store Atmosphere, Mood and Purchasing Behavior, *International Journal of Research in Marketing*, vol. 14, pp 1-17.

[31] Turley, L.W. and Milliman R.E. (2000) Atmospheric Effects on Shopping Behavior: A Review of the Experimental Evidence, *Journal of Business Research*, vol. 49, pp 193-211.

[32] Valdez, P. and Mehrabian, J. (1994) Effect of Color on Emotions, *Journal of Experimental Psychology: General*, vol. 123, no. 4, pp 394-409.

[33] Van Kenhove, P. and Desrumaux, P. (1997) The Relationship between Emotional States and Approach or Avoidance Responses in a Retail Environment, *The International Review of Retail, Distribution and Consumer Research*, vol. 7, no. 3, pp 351-368.

[34] Vogels, I. (2008) Atmosphere Metrics: Development of a tool to quantify Experienced Atmosphere, In: J. Westerlink, et al. (Eds.), Probing Experience: From assessment of User Emotions and Behaviour to development of products, Springer, Dordrecht, pp 25-41.

[35] Westbrook, R.A. (1987) Product/Consumption-Based Affective Responses and Postpurchase Processes, *Journal of Marketing Research*, vol. 24, August, pp 258-270.