I SHOP, THEREFORE I AM

The Interaction of Retail Density, Color and Motive:

Effects on Shopper Responses

Annemiek van Es

Universiteit Twente

Afstudeercommissie:

Rompay, dr. T.J.L. van

Verhoeven, drs. J.W.M.

The Interaction of Retail Density, Color and Motive:

Effects on Shopper Responses

A number of atmospheric cues have been found to significantly affect shoppers' emotions and behavior. Research concerning the effect of multiple atmospheric cues, however, is limited. This study examines the interactive effect of color, spatial density and motivational orientation and their impact on shopper responses. The hypotheses were tested, in a scenario study, using a 2 (high-density vs. low-density) x 2 (blue vs. red) x 2 (run vs. fun shopping) factorial design. Videos of an actual store were manipulated for this experiment. Results show that a red retail environment is more arousing than a blue retail environment, in line with findings from previous research. Motive interacted with both color and density indicating that a consumers' shopping intentions influences how a consumer is influenced by his/her environment. The high density, red store was preferred by the recreational shoppers while the task oriented shoppers favored the low density, blue retail environment. The practical value of this study lies in the notion that retailers should not only take the effect of atmospherics into account, but also the motive of a shopper.

Introduction

Toys "R" Us spent $35 million to make their store in Times Square New York "the ultimate toy store that is the personification of every kid's dream" (Prior, 2001). Nike town and the Coca-Cola company have created fantasy worlds in their stores "designed to stimulate our senses and empty our wallets" (Solomon, 2003). Because the impact of store environment on consumer behavior is recognized as being significant, retailers spend considerable resources to store design and merchandise presentation activities.

The study of retail environments has become prominent during the last few decades, with researchers beginning to study the influence of the store environment on consumers' behavior and emotion. Previous research has confirmed that environmental cues such as color, lighting, music, density, scent and temperature do influence the responses of a consumer (Spangenberg, Grohmann & Prott, 2005; Eroglu, Machleit & Chebat, 2005; Sherman, Mathur & Smith, 1997; Gilboa & Rafaeli, 2003; Babin & Attaway, 2000; Milliman, 1982; Bellizzi, Crowley & Hasty, 1983; Donovan & Rossiter, 1982; Bateson & Hui, 1987; Eroglu & Machleit, 1990; Crowley, 1993). Fierce competition from the internet and saturated markets in retailing make it more important for

retailers to gain a competitive advantage over rivals in order to attract and keep customers. The store atmosphere plays a large role in achieving this.

Although substantial research has focused on the effects of individual store atmospheric cues on consumer responses, none have considered color, density and motive simultaneously; three very realistic and feasible variables that can be valuable to a retailer. The objective of this study is to examine the simultaneous effect of color, density and motive on shopper responses. Specifically, it is proposed that the interactive effect of retail density, color and motive will have a significant influence on consumer responses, such as the pleasure, arousal and dominance they experience, their approach tendency and their perception of the store personality.

Theoretical background

People are influenced by their surroundings all the time. Whether it is odors, sounds or colors, people are affected by them. The scientific study of the effects of the environment on human behavior is known as environmental psychology. Because this is such an extensive subject, much research has been done regarding this phenomenon. Valuable insight is created that can be used in all sorts of settings; supermarkets, stores, hospitals, prisons, restaurants, schools and many more (Craik, 1973; Mehrabian & Russell, 1974; Stokols, 1978).

The basis for many experiments involving the influence of environmental stimuli lies with Mehrabian and Russell (1974) and their M-R model. They proposed that three basic emotional states (PAD) mediate approach-avoidance behaviors in any environment: pleasure, arousal and dominance. The pleasure dimension refers to the degree to which an individual feels happy, pleased or content. High arousal-low arousal differentiates between feelings of boredom or drowsiness and stimulated or excited. Dominance relates to the extent to which a person feels in control, important or influential. It is based on the degree to which a person feels unrestricted or free to act in a variety of ways.

In previous studies, based on the M-R model, the pleasantness and arousal dimensions have shown to aptly describe the affective space evoked by environments, while the dominance dimension was not found to have a significant effect (Russell & Pratt, 1980; Ward & Russell, 1981). Due to a lack of empirical evidence, many researchers have therefore altered the M-R model by leaving out the dominance dimension (Baker, Grewal & Levy, 1992; Donovan & Rossiter, 1994). However, others have shown that dominance (or perceived control) does have an effect on the emotions and behavior of individuals (Hui & Bateson, 1991; Ward & Barnes, 2001; Gilboa & Rafaeli, 2003) making it an interesting variable to consider in this study.

Donovan and Rossiters' (1982) findings revealed that pleasure and arousal determine shopping enjoyment, the tendency to spend more money than intended and an increased likelihood of returning to the store. It is difficult for a store to determine just how activating their store must be. Human beings function optimally with moderate levels of stimulation (arousal). A lack of stimulation leads to boredom, while over- stimulation causes distraction and overload (Evans & McCoy, 1998).

Some studies have shown that high arousal does not consistently lead to negative emotions (Sherman, Mathur & Smith, 1997; Donovan & Rossiter, 1982). Reckoning with motivational orientation in this study might resolve the sometimes inconsistent results obtained in earlier arousal studies: Millimans' (1982) results indicated that arousal decreases purchase intentions and spending in supermarkets while Sherman, Mathur & Smith (1997) found that in fashion stores, arousal increases purchase intentions and spending. These findings may be explained by the fact that consumers have different motives when going into a store. A consumer visiting a grocery store is likely to have a different focus (task-oriented motivational orientation) than a consumer visiting a fashion store (recreational motivational orientation) (Ng, 2003). Previous findings on this subject will be discussed further on in this article.

In this study consumer response is not only determined by the experience of pleasure, arousal, dominance and approach tendency but also by the store personality.
The notion of store personality was first introduced by Pierre Martineau in 1958. He defined it as "the way in which the store is defined in the shopper's mind, partly by its functional qualities and partly by an aura of psychological attributes" (Martineau, 1958). "Personality factors" such as layout and architecture, symbols and colors, advertising and sales personnel are used by shoppers to deduce the store personality (D' Astous & Lévesque, 2003). Since color (blue/ red) and layout (high- density/ low-density) of the store are manipulated in this study it may be assumed that the store personality will be influenced. The knowledge of store personality can be useful for the elaboration and implementation of marketing actions.

Retail density and perceived crowding
Perceived crowding is a state of psychological stress that occurs when a person's demand for space exceeds the supply (Stokols, 1972). When the number of objects, people or both in a limited space (density) restricts an individual from his/her activities and goal achievement, the individual will perceive the environment as being crowded. Crowding perceptions are subjective, that is, shoppers in the same store may perceive different levels of crowding depending on individual characteristics and situational constraints (Machleit & Eroglu, 2000).

Milgram (1970) posits that under high density conditions an individual is likely to experience information overload when the rate and amount of environmental stimuli exceeds his/her capacity to cope with them. Feelings of being confined, out of control and constrained are the result of this information overload. Thus, crowding is stressful and therefore arousing (Langer & Saegert, 1977).

Perceived crowding in a retail environment has received considerable research interest (Eroglu & Machleit, 1990; Harrell, Hutt & Anderson, 1980; Hui & Bateson, 1991; Machleit, et al., 1994; Machleit, Eroglu & Mantel, 2000). Research to date has shown that the level of crowding perceived by a shopper can affect patronage decisions as well as satisfaction with the overall shopping experience (Eroglu & Machleit, 1990).

Why is crowding a problem in retailing? Crowding causes discomfort because it gives a shopper the sense that he/she has no control over their environment (Hui & Bateson, 1991). Ward and Barnes (2001) studied the influence of dominance on consumer response in a retail environment. Customers that had a higher sense of control reported feeling more pleasant, aroused and involved. Control is a human desire that consumers seek to satisfy in their exchange relationships. "Perceived loss of control is usually a precursor to negative affect or even depression" (Ward & Barnes, 2001). When elderly patients in a nursing home were given control over their environment (making eating schedules and deciding upon receiving visitors) they were happier and more active (Langer & Rodin, 1976). A follow-up study revealed that they lived longer as well (Rodin & Langer, 1977).

In a store it is important that a shopper feels at ease because this influences spending levels, amount of time spent in the store and willingness to visit again (Donovan & Rossiter, 1982). A study by Roding, Solomon & Metcalf (1978) has shown that when density reduces an individuals' ability to perform a desired action, perceived crowding occurs.

In sum, people strive to feel in control (Burger, 1987). When a store they visit makes them feel as if they have no control (by being dense), they feel discomfort (arousal) and crowding (Ward & Barnes, 2001). A result may be that shoppers decide to remove themselves from the uncomfortable situation (the store) never to return again, hence prompting the following hypothesis:

1a. A high density retail environment, as opposed to a low density retail environment, has a negative effect on consumer responses.

Typically, crowding has been operationalized solely in terms of the number of people or objects in a space without any consideration of other stimuli (e.g. scents and sounds) which are known to affect perceived crowding. In the present study consumer response is examined as a consequence of retail density.

Color

Over the years many studies have been conducted concerning the physiological and psychological effects of color. Few studies have been reported with regard to marketing implications. In general, warm colors (i.e.red and yellow) have produced the opposite physiological and psychological effects to cool colors (blue and green). For example, Jacobs & Hustmyer (1974) found that red or warm colors cause increased blood pressure, respiratory rate and eye blink frequency. Cool colors were found to do the opposite. Clynes (1977) proposed the reason for this reaction is that the response to red is not conditioned, that is it inherently exciting to the human brain.

Emotionally warm colors have been linked to elated mood states (Schaie & Heiss, 1964); visual and outward orientation (Jaensch, 1930); higher levels of anxiety (Jacobs & Suess, 1975); arousal (Cahoon, 1969); and greater distraction levels (Gerard, 1958). Again, cool colors cause the exact opposite. Not only are warm colors more arousing than cool colors, they are also known to be less preferred than cool colors. Wexner (1954) dealt with the associations between colors and feelings and concluded that the color red was associated with "exciting" and "stimulating" both implying pleasure and high arousal. Blue was associated with "secure/comfortable" and "tender/soothing" implying pleasure and low arousal. Overall, warm colors, especially red, have been found to be physically and emotionally arousing, exciting, and distracting. Cool colors, especially blue, are evaluated as being relaxing, peaceful, calm and pleasant.

Research concerning the effect of color on dominance is limited. The few studies that have considered color and dominance, however, have resulted in no significant differences between blue and red in the effect on dominance (Bellizzi & Hite, 1992; Valdez & Mehrabian, 1994). The experiments that have been conducted in retail environments have focused mainly on the differences between colors in their effect on shoppers (Grossman & Wisenblit, 1999; Crowley, 1993; Yildirim, Akalin-Baskaya & Hidayetoglu, 2007; Bellizzi, Crowley & Hasty, 1983; Brengman & Geuens, 2004). None have considered other atmospheric or situational variables that might influence shoppers at the same time and thus influencing their preference for a certain color.

Color can be used in retail for many reasons; it can attract attention, assist evaluation, highlight certain store features and it can be used to improve mood and to increase arousal or excitement. Bellizzi et al. (1983) examined the effect of color in retail store design. The results indicated that although subjects were physically drawn to warm-colored (red and yellow) environments, they found red retail environments to be unpleasant, negative, tense and less attractive than cool color (blue and green) retail environments.

An explanation as to why people prefer cool colors in retail is given by Bellizzi et al. (1983) They suggest that a red environment may over stimulate buyers both physiologically and psychologically and thereby may impair purchasing deliberations and buying decisions. Just as sounds and scents can attract shoppers to a store, the extreme use of these stimuli can cause irritation and discomfort.

For this survey colors on the opposite side of the color spectrum (red and blue) were chosen because of the extreme differences found in previous research. Empirical evidence suggests that blue should produce more positive outcomes than red, thus prompting the following hypothesis:

2a. A red retail environment, as opposed to a blue retail environment, has a negative effect on consumer responses.

Motivational orientation

"Motives refer to an internal force or predisposition that directs behavior toward fulfillment of needs or objectives" (Eroglu & Harrell, 1986). The first researcher to recognize shopping motives was Stone (1954). Using in-depth interviews amongst 124 female department store shoppers, he was able to differentiate 4 different shopper types based on the varying orientations toward the activity of shopping: the economic consumer, the personalizing consumer, the ethical consumer and the apathetic consumer. Economic shoppers are typified by their meticulous approach to shopping by paying close attention to quality and price differences among products. A personalizing consumer, on the other hand, is in search of personal relationships with retail personnel. An ethical shopper is willing to sacrifice lower prices and more choice by behaving consistently with moralistic beliefs and, finally, the apathetic consumer who goes shopping out of necessity.

Many more different shopping motives were identified in the years that followed. Two fundamental motives seem to underlie the different shopping motives: *task oriented motivational orientation* and *recreational motivational orientation*. Various names have been given to these

two groups: economic vs. recreational shoppers (Bellenger & Korgaonkar, 1980), economic vs. social shoppers, utilitarian shopping value vs. hedonic shopping value (Babin, Darden & Griffin, 1994) run vs. fun shopping (Gorter, Nijkamp & Klamer, 2003) and more.

A run shopper has a task-oriented motivational orientation and goes to a store to obtain a product, service or information that is needed with little to no satisfaction derived from the shopping activity itself. Satisfaction is derived from the outcome of the shopping activity (obtaining the needed product, service or information). A run shopper spends less time per shopping trip, is less likely to continue shopping after a purchase and places less importance on the non functional aspects of a store (e.g. the atmosphere) (Korgaonkar, 1981). Their focus is on completing their task with minimum expense of energy. High arousal environments (loud noises, bright lights and colors) are found to be unpleasant to a run shopper because they require high energy. High density cues in the environment are perceived as preventing effective goal achievement (Eroglu & Harrell, 1986).

Fun shoppers have a recreational motivational orientation and derive satisfaction from the shopping activity itself. They desire rich experiences from shopping and therefore find high arousal environments to be pleasant (Kaltcheva & Weitz, 2006). Research has shown that fun shoppers like to spend more time shopping, continue to shop after making a purchase, place a higher importance on store atmosphere and have little interest in acquiring a product or service (Eroglu & Machleit, 1990). They are active information seekers. A fun shopper shops to acquire information on merchandise quality, fashion trends, prices and the like. Stimuli such as loud music, crowded racks or abundant displays that would lead to feelings of retail crowding in a run shopper could function as positive stimulants for fun shoppers. These stimulants are used to deduce information about a store. If a fun shopper finds a store desirable during recreational shopping, this information may be recalled when specific merchandise is needed. As a result, store image formed during leisurely shopping can have an impact on later store-choice decisions (Bellenger & Korgaonkar, 1980).

Because of the different shopping goals that a run and fun shopper have, they respond differently to atmospheric cues. Eroglu and Machleit (1990) conducted a laboratory experiment with 112 subjects where retail density and shopping motives were manipulated using color slides. Results showed that under high retail density conditions, task-oriented shoppers experienced more retail crowding than non-task oriented shoppers.

Walters, Apter & Svebak (1982) tested to see if people preferred a different color when having different behavioral goals. They used two different arousal-preference systems namely, *telic* and *paratelic* to describe the state of mind a person is in. *Telic* state refers to a state of mind

in which one is focused on achieving a goal which gives preference to low arousal. In the *paratelic* state of mind one is focused on the behavior itself and the enjoyment the behavior causes. In this case, high arousal is preferred. Results strongly support the notion that when a person is in a *telic* state (task-oriented, run shopper) they prefer a low arousal environment and therefore the color blue. The *paratelic* state (recreational oriented, fun shopper), on the other hand, is associated with high arousal and a preference for the color red.

Reviewing the literature mentioned above, the following hypotheses are constructed:

1b. The negative effect of a high density retail environment on consumer responses is more pronounced for run shoppers than for fun shoppers.

2b. The negative effect of a red retail environment on consumer responses is more pronounced for run shoppers than for fun shoppers.

Method

In this study the hypotheses were tested using a 2 (high-density vs. low-density) x 2 (blue vs. red) x 2 (run vs. fun shopping) factorial design (see table 1). To create a situation as realistic as possible, short videos were shot in an actual clothing store after closing hours.

Table 1

The eight conditions defined

	Run		Fun	
Density	Blue	Red	Blue	Red
High	A • Blue walls • Little room to move	C • Red walls • Little room to move	E • Blue walls • Little room to move	G • Red walls • Little room to move
Low	B • Blue walls • Room to move	D • Red walls • Room to move	F • Blue walls • Room to move	H • Red walls • Room to move

Participants

126 shoppers took part in this experiment of which 80 (63.5%) were female and 46 (36.5%) were male. Ages ranged from 16 to 71 years (*M*= 38.2, *SD*= 15.5). Shoppers were approached going

into/going out of the store that was used for the research videos. Respondents were also randomly approached on the street.

Procedure

Subjects were approached individually and asked to participate in an experiment concerning store design and their preference for a certain store setting. Subjects were asked if they had 10 minutes to fill out a questionnaire. When asked about the use of the results the following answer was repeatedly given: "we would like to know more about preferences of shoppers for certain store designs. We would like to use the results to make a change in the store". Subjects were randomly assigned to a condition.

The videos were shown on 2 laptops that were placed in a quiet corner in the entrance hall of the store. Subjects were asked to be seated behind the laptop and asked to follow the instructions on the screen.

Before viewing the research video, subjects were informed (in writing) that the video lasted only 10 seconds and that paying close attention was desirable. They were also given one of two scenarios:

You are shopping for a day with a friend. You happen to pass a secondhand clothing store and decide to take a look. You enter the store as in the video. (Recreational treatment)

You have a party tonight and have nothing to wear. It's 14.45 and the store closes in 15 minutes. You enter the store as in the video to see if there is anything to your liking. (Task-oriented treatment)

There were four different videos that were used in this experiment. Each video coincided with a different condition (see table 1). The walls of the store were given a different color with the use of fabric and the spatial density was influenced by moving clothing racks around. Clothing racks were either placed alongside the walls or were also in the center of the store thus blocking an open pathway to the back of the store. In all four videos a man and a woman were shown shopping. The video lasted 10 seconds and was shot in a fluid motion as if entering the store and scanning it. Apart from the independent variables, the videos were of the same length (10 seconds), were all shot from the same angle and showed exactly the same scene. Furthermore, all videos had the same background 'store' noise (see appendix A for stills).

After viewing the research video they were asked to give their impression of the store by rating 25 questions on a 7-point scale ranging from 1 'completely disagree' to 7 'completely agree'. The questionnaire consisted of the following constructs derived from Mehrabian and Russells' (1994) PAD measure.

Pleasure

Pleasure was measured using 5 items: 'I feel pleasant in this store', 'I feel happy in this store', 'I feel comfortable in this store', 'I feel cheerful in this store' and 'I enjoy shopping in this store'. The scale reliability coefficient for this construct was .95.

Arousal

Arousal was measured with 7 items: 'I feel relaxed in this store', I feel alert in this store', I feel stimulated in this store', I feel active in this store', I am bored in this store', 'I feel drowsy in this store' and 'I find this store boring'. The Cronbach alpha for this construct was .82.

Dominance

To measure dominance, 4 items were assembled: 'I feel that I have the situation under control in this store', 'I feel free to do as I please in this store', 'I can find what I am looking for in this store' and 'I can accomplish what I came to do in this store'. The dominance scale's alpha was .79.

Approach tendency

Evaluations of the store included approach tendency which was measured using 3 items: 'I would have a tendency to buy something here' (approach), 'I would like to return to this store' (approach) and 'I want to leave this store as soon as possible' (avoidance). The scale's reliability was .77.

Store personality

Store personality was measured with 14 items belonging to the D' Astous & Lévesque (2003) Store Personality Scale. This scale comprises of five dimensions: sophistication, solidity, genuineness, enthusiasm and unpleasantness. To limit the size of the questionnaire, a selection was made resulting in 14 most suitable personality terms. *Sophistication* was measured using 3 terms: chic, elegant and stylish. *Solidity* consisted of 2 terms namely thriving and well-organized. *Enthusiasm* consisted of 5 terms: dynamic, enthusiastic, friendly, lively and welcoming. 3 terms were used to measure *unpleasantness*: annoying, irritating and outmoded. Lastly, *genuineness*

was measured with one single term specifically trustworthy. The overall reliability of the scale was.70.

Subjects were then asked how often they visited the store in the video, their gender and their age. The entire procedure took about 10 minutes. Finally subjects were thanked and dismissed.

Results

Manipulation check

Density had a significant main effect on perceived crowding $F(1,120)=11.3$, $p<.00$. In the high-density retail environment shoppers experienced significantly more crowding than in the low-density retail environment. This finding is consistent with previous literature in which crowding increases as retail density increases (Eroglu & Machleit, 1990; Hui & Bateson, 1991).

The ANOVA analysis assessed the predicted effects of Color, Density and Motive on pleasure, arousal, dominance, approach tendency and store personality.

Pleasure

The results suggest no significant main effects of Color, Density and Motive on pleasure (all $F<1$, *ns*). However, a marginally significant Color x Motive interaction is observed ($F(1,118)=3.4$, $p=.07$). This interaction is shown in figure 1. A marginally significant effect was found solely for the fun shoppers ($F(1,122)= 3.2$, $p=.08$). Fun shoppers experienced significantly more pleasure in the red retail environment than in the blue retail environment. The results suggest that run shoppers experienced more pleasure in the blue retail environment. No other significant interaction effects on pleasure were identified.

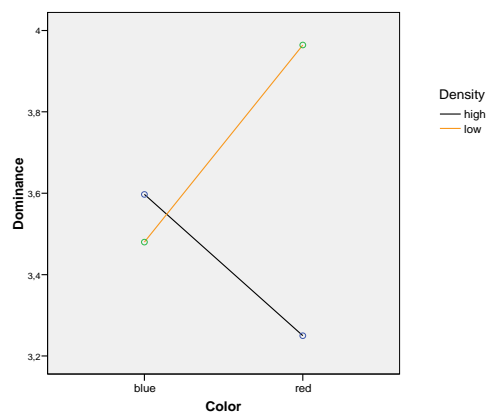*Figure 1.* The interaction effect of Color x Motive on pleasure.
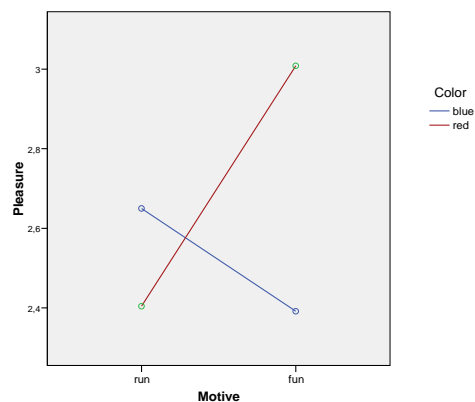
Arousal

A significant Color main effect on arousal was found ($F(1,118)=7.8$, $p<.01$). The red store was found to be more arousing than the blue store. The effects of Density ($F(1,118)=1.4$, $p=.25$) and Motive ($F<1$, *ns*) were insignificant. Furthermore, all interaction effects (all $F<1$, *ns)* were non significant.

Dominance

Although no evidence was found to suggest that Color ($F<1$, *ns*), Density ($F(1,118)=1.8$, $p=.19$) and Motive ($F<1$, *ns*) had a significant effect on dominance, a marginally significant interaction effect for Color x Density ($F(1,118)=3.2$, $p=.08$) emerged. This interaction is shown in figure 2. Pairwise comparison revealed that the interaction was only significant in the red condition ($F(1,122)=5.2$, $p=.02$). The shoppers in the red store reported feeling more in control when Density was low as opposed to high. All other interaction effects were non significant ($F<1$, *ns*).

Figure 2. The interaction effect of Color x Density on dominance.

Approach

No significant main effects were observed of Color ($F<1$, *ns*), Density ($F<1$, *ns*) and Motive ($F<1$, *ns*) on approach tendency. The results do suggest a significant interaction effect of Color x Motive ($F(1,118)=7.2$, $p<.01$). This interaction is displayed in figure 3. The effect was significant for fun shoppers only. The fun shoppers showed significantly more approach tendency in the red store ($F(1,122)=5.9$, $p=.02$). Additionally, a significant interaction effect emerged for Density x Motive ($F(1,118)=4.4$, $p=.04$). Pairwise comparison disclosed a marginally significant effect for the run condition ($F(1,118)=3.3$, $p=.07$). Run shoppers showed more approach tendency towards a low density store as opposed to a high density store (see figure 4).

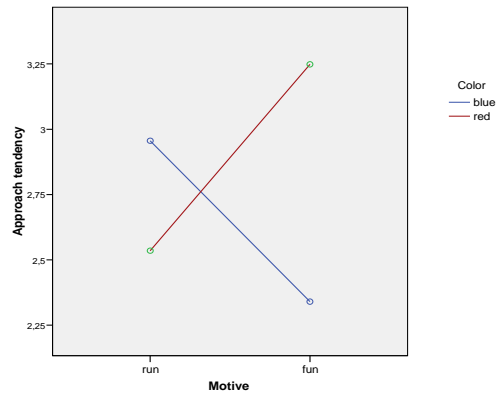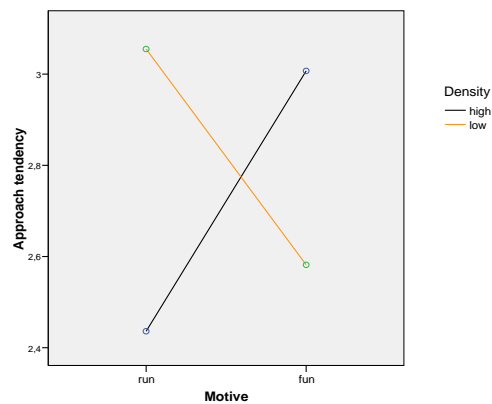*Figure 3.* The interaction effect of Color x Motive on approach tendency.

Figure 4. The interaction effect of Density x Motive on approach tendency.

Store personality

A marginally significant main effect emerged of Density on sophistication ($F(1,118)=3.2$, $p=.07$). A low-density store is judged as being more sophisticated than a high-density store. A significant main effect was found of Density on solidity ($F(1,118)=5.5$, $p=.02$). A low-density store is seen as more solid than a high-density store. Additionally, a significant interaction effect is observed of Color x Density on solidity ($F(1,118)=4.8$, $p=.03$). This result, however, was only significant for the red condition ($F(1,122)=11.1$, $p<.01$). A red, low density retail environment is assessed as being more solid than a red, high density retail environment (see figure 5). Furthermore, a significant three way interaction emerged for genuineness ($F(1, 118)=5.7$, $p=.02$). The result was significant for the fun/high-density condition ($F(1,118)= 4.3$, $p=.04$) and marginally significant for the run/low-density condition ($F(1,118)=3.0$, $p=.09$). This result suggests that run shoppers find the low- density/red retail environment, as opposed to the blue retail environment, to be the most

reliable. Fun shoppers however, find the high- density/red store to be more reliable (see figure 6).

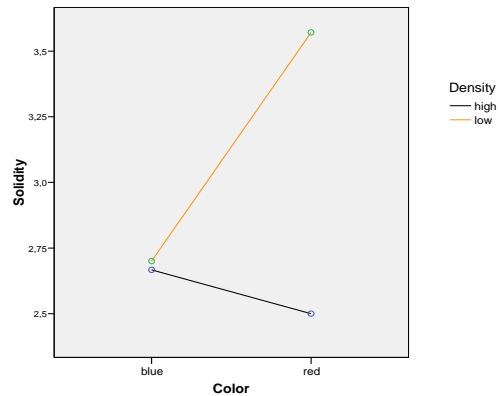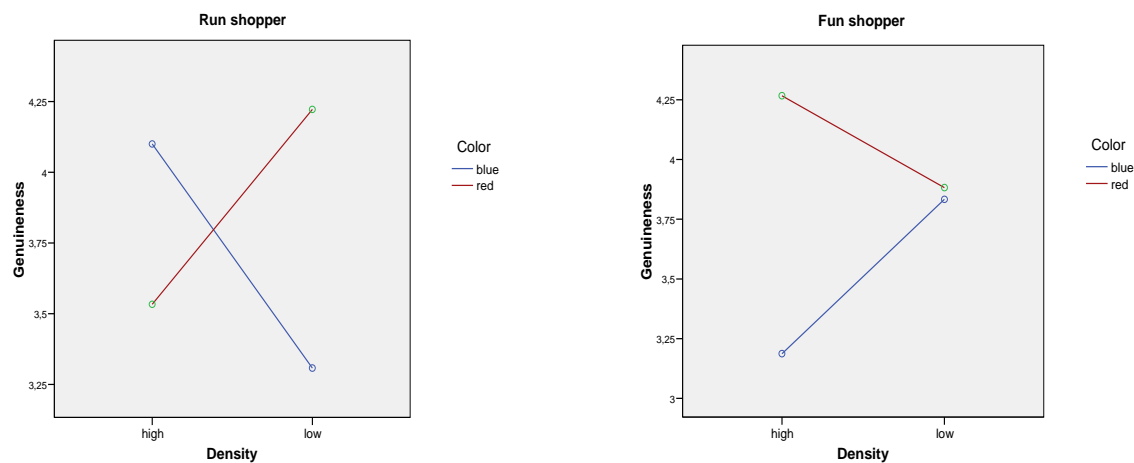*Figure 5.* The interaction effect of Color x Density on solidity.

Figure 6. The three way interaction effect on genuineness.

Additional analysis

While not hypothesized, it was evaluated whether gender differences exist in retail crowding perceptions. The mean crowding scores were significantly higher for men compared to women ($F(1,124)=5.9$, $p=.02$). This is consistent with the findings of Baum and Koman (1976) and Friedman et al. (1972) who showed that under high density conditions men reported a greater discomfort than women. This result may be explained by the fact that research has shown that women are more often fun shoppers and men run shoppers (Campbell, 1997).

Discussion

With this study an attempt was made to determine how color, retail density and motive have an effect on shoppers in a retail environment. Never before did a study focus on these two atmospheric variables and situational variable simultaneously. The findings of this study can be easily translated into practical advice for retailers searching for better ways to run their business.

Overall, the results of this study support the moderating effect of shopping motives on consumer responses. Motive interacts with both color and density to affect pleasure, approach tendency and the perception of the store personality. It is thus important to consider not only the effect of atmospheric variables when designing a store but also situational variables.

The findings of this study support the notion that color has an influence on the arousal experienced by a shopper (e.g., Valdez & Mehrabian, 1994). The red retail environment was found to be significantly more arousing than the blue retail environment. Complementing previous experiments (Walters, Apter & Svebak, 1982), the fun shopper experiences more pleasure and approach tendency in a red retail environment. Run shoppers on the other hand, show a slight preference for a blue retail environment. Since red was found to be more arousing, it is possible that this result is explained by the different arousal qualities of red and blue. Fun shoppers seek entertainment and find high-arousal environments to be pleasant (Kaltcheva & Weitz, 2006).

As expected, no significant difference was found between red and blue in their effect on dominance (Bellizzi & Hite, 1992; Valdez & Mehrabian, 1994). Surprisingly, no evidence was found to suggest that a high-density retail environment causes feelings of crowding and a sense of losing control, as previous studies have shown (Hui & Bateson, 1991). An explanation as to why the effect of density on dominance could not be replicated in this experiment is that density was not tested individually: Color was also tested. The findings of this study show that the *interaction* of color and retail density has an effect on the sense of control a shopper experiences (dominance). A red store that has low-density provides a shopper with the most sense of control. Red seems to increase the arousal level experienced in a low-density store creating a comfortable amount of arousal in a shopper.

Retail density and shopping motive have a significant effect on approach tendency. Run shoppers show more approach tendency in a low-density store, while fun shoppers seem to do so in a high-density store. Since a run shopper is task-oriented, he/she wants to accomplish their task as efficiently as possible (Eroglu & Harrell, 1986). A dense store with clothing racks in the middle of the store possibly deters the run shopper from accomplishing his/her task. A fun

shopper likes to browse and thus seems to prefer a dense store with plenty of merchandise (Eroglu & Machleit, 1990).

Depending on the effect the retailer wishes to have on its shoppers, they can adjust their store accordingly. A red/low-density store gives both run and fun shoppers the most sense of control. If a retailer wishes to achieve this, they should consider red walls and clothing racks placed only along the walls. If a store only wishes to make a profit, they should adjust their store according to the motive of the shoppers they receive. A store focused on fun shoppers should consider using the color red profusely and place many clothing racks throughout the store. This will give a store the most positive response possible from its fun shoppers. A retailer that receives many run shoppers (perhaps due to its location) should consider a low-density lay-out (clothing racks placed only along the walls) and using the color blue. These variables will have an effect on the buying behavior and the probability of return of a shopper.

The formation of the store personality is primarily influenced by retail density. No effect of retail density on pleasure, arousal, dominance and approach tendency was found. The results do however show that density has an effect on sophistication and solidity. The low density store was judged as being more sophisticated and solid than the high density store. In practice, this would mean that if a retailer wants to present itself as being thriving, well-organized and stylish they should consider a low-density lay-out.

Since an interaction of density and color was found on solidity, the effect of density can be amplified or diminished by using a color. A low-density store is most positively assessed with red walls. A blue store is not affected by the density in being thriving and well-organized. Blue walls are, in this case, a safe choice for a retailer. Run shoppers find a red/low-density store to be the most genuine while fun shoppers find the red/high-density store to be the most genuine. If a retailer wishes to seem genuine, they should adjust their store accordingly. More research is necessary to determine what other atmospheric cues and situational variables affect the store personality.

Limitations and future research

This study used videos of different shopping scenarios of a retail environment to stimulate actual shopping behavior. A limitation of this method must, however, be acknowledged here. Although the videos depicted an actual retail setting, some real world characteristics were inevitably missing. Observation is not the same as participation and certain dimensions known to affect crowding perceptions and arousal are eliminated altogether (such as sounds, temperature, scent) and others may be distorted. Despite these shortcomings, Hui & Bateson (1992) have

found scientific evidence to support their theory that "photographic slides and videotapes, used as environmental stimulations in testing a theory of crowding, have ecological validity". Furthermore, McClelland and Auslander (1975) argue that seeing a picture of an actual store is more real than entering a psychology lab that is supposed to represent a store.

As suggested in previous literature, this study has shown that gender differences exist in the perception of retail crowding (Baum & Koman, 1976; Friedman et al., 1972). Campbell (1997) suggested that this was due to the fact that women are more often fun shoppers and men run shoppers. An interesting research question would be if this is the same across different types of stores. It would be curious to see what would happen if this study was replicated in an electronics store. Would the men become the fun shoppers and the women run shoppers?

Another interesting research idea could be the measurement of crowding at times when crowding can be expected (day before Christmas, weekends and lunch breaks). The goals that a shopper wants to achieve may be different since they may adjust their shopping motives accordingly. Wirtz, Mattila & Tan (2000) discovered that people associate specific expectations with specific retail settings, saying that arousal that is anticipated in a specific environment influences the emotions experienced in that environment. When anticipated arousal is high, an interaction between arousal and pleasantness is observed, while no such interaction is observed when anticipated arousal is low. It would be interesting to examine the effects of crowding in a store celebrating Christmas; a period when environments everywhere are highly arousing. Everything is red and green, music is played, stores are packed with gift ideas, strong scents fill the air, bright lights flashing everywhere and usually it's a busy season. High arousal may be anticipated, but how does this affect the run shopper? The results of this study suggest that the run shopper would be overwhelmed, but perhaps the expectations diminish the negative emotions.

In conclusion, this study is a first step in examining the simultaneous impact of two atmospheric variables and a situational variable, whilst reckoning with the motives of shoppers that have been shown to independently influence shopper evaluations and behaviors in the retail context. The findings are consistent with previous findings on the effects of color, density and motive independently. The results seem to suggest that color and density can be used as an atmospheric tool to minimize the effects of crowding in the shopping environment. Most importantly, evidence to support the moderating effect of shopping motives on consumer responses is presented. Although caution is advisable before applying the findings to other types of stores, this study provides a starting point for further empirical investigation of retail crowding,

use of color and shopping motives. Hopefully this study will inspire other researchers to further examine these under-researched topics.

Appendix A
Screenshots of the research videos

Blue/ high-density

Blue/ low-density

Red/ high-density

Red/ low-density

References

Babin, B.J., Darden, W.R. & Griffin, M. (1994). Work and/or fun: measuring hedonic and utilitarian shopping value. *Journal of Consumer Research, 20*, 644-656.

Babin, B.J. & Attaway, J.S. (2000). Atmospheric affect as a tool for creating value and gaining share of customer. *Journal of Business Research, 49*, 91-99.

Bagozzi, R.P. (1988). The rebirth of attitude research in marketing. *Journal of Market Research Society, 30*, 163-195.

Baker, J., Grewal, D. & Levy, M. (1992). An Experimental approach to making retail store Environmental Decisions. *Journal of Retailing, 68*, 45-61.

Bateson, J.E.G. & Hui, M.K.M. (1987). Testing a theory of crowding in the service experience. *Advances in Consumer Research, 17*, 866-873.

Baum, A, Reis, M. & O'Hara, J. (1974). Architectural variants of reactions to spatial invasion. *Environment and Behavior, 6,* 91-100.

Bellenger, D.N. & Korgaonkar, P.K. (1980). Profiling the recreational shopper. *Journal of Retailing, 56*, 77-92.

Bellizzi, J.A., Crowley, A.E. & Hasty, R.W. (1983). The effect of color in store design. *Journal of Retailing, 59*, 21-45.

Bellizzi, J.A. & Hite, R.E. (1992). Environmental color, consumer feelings, and purchase likelihood. *Psychology & Marketing, 5*, 347-363.

Brengman, M. & Geuens, M. (2004). The four dimensional impact of color on shopper's emotions. *Advances in Consumer Research, 31*, 122-128.

Burger, J.M. (1987). Desire for control and conformity to a perceived norm. *Journal of Personality and Social Psychology, 53*, 355-360.

Cahoon, R.L. (1969). Physiological arousal and time estimation. *Perceptual and Motor Skills, 28*, 259-268.

Campbell, C. (1997). Shopping, pleasure and the sex war. In C.F. Ng (2003). Satisfying shoppers' psychological needs: from public market to cyber-mall. *Journal of Environmental Psychology, 23*, 429-455.

Clynes, M. (1977). *Sentics: the touch of emotions*. Garden City, NY: Anchor Press.

Craik, K.H. (1970). Environment psychology. In K.H. Craik, et al.(1970). *New directions in psychology*. New York: Holt, Rinehart & Winston.

Crowley, A. E. (1993). The two dimensional impact of color on shopping. *Marketing Letters, 4,* 59–69.

Donavan, R.J. & Rossiter, J.R. (1982). Store atmosphere: an environmental psychology perspective. *Journal of Retailing, 58,* 34-57.

Donavan, R.J. & Rossiter, J.R., Marcoolyn, G. & Nesdale, A (1994). Store atmosphere and purchasing behavior. *Journal of Retailing, 70,* 283-294.

Eroglu, S. A, & Harrell, G.D. (1986).Retail crowding: Theoretical and strategic implications. *Journal of Retailing*, *62(4),* 346-363.

Eroglu, S.A. & Machleit, K.A. (1990). An empirical study of retail crowding: antecedents and consequences. *Journal of Retailing,66*, 201-221.

Eroglu, S.A., Machleit, K.A. & Chebat, J.C. (2005). The interaction of retail density and music tempo: effects on shopper responses. *Psychology and Marketing, 22,* 577-589.

Eroglu, S.A., Machleit, K.A. & Mantel, S.P. (2000). Perceived retail crowding and shopping satisfaction: what modifies this relationship? *Journal of Consumer Psychology, 9*, 29-42.

Evans, G.W. & McCoy, J.M. (1998). When buildings don't work: the role of architecture in human health. *Journal of Environmental Psychology, 18*, 85-94.

Friedman, J.L., Levy, A.S., Buchanan, R.W. & Price, J. (1972). Crowding and human aggressiveness. *Journal of Experimental and Social Psychology, 8*, 528-548.

Gerard, R. (1958). Differential effects of colored lights on psychophysiological functions. In J.Walters, M.J. Apter & S. Svebak (1982). Color preference, arousal and the theory of psychological reversal. *Motivation and Emotion, 6*, 193-215.

Gilboa, S. & Rafaeli, A. (2003). Store environment, emotions and approach behavior: applying environmental aesthetics to retailing. *The International Review of Retail, Distribution and Consumer Research, 13*, 195-211.

Gorter, C. Nijkamp, P. & Klamer, P. (2003). The attraction force of out-of-town shopping malls: a case study on run-fun shopping in the Netherlands. *Tijdschrift voor Economische en Sociale Geografie, 94*, 219-229.

Grossman, R.P. & Wisenblit, J.Z. (1999). What we know about consumers' color choices. *Journal of Marketing Practice, 3*, 78-88.

Harrel, G.D., Hutt, M.D. & Anderson, J.C. (1980). Path analysis of buyer behavior under conditions of crowding. *Journal of Marketing Research, 17,* 45-51.

Hui, M. & Bateson, J.E.G. (1992). The ecological validity of photographic slides and videotapes in simulating the service setting. *Journal of Consumer Research, 19,* 71-81.

Hui, M.K. & Bateson, J.E.G. (1991). Perceived control and the effects of crowding and consumer choice on the service experience. *Journal of Consumer Research, 18*, 175-184.

Jacobs, K.W. & Hustmyer, F.E. (1974). Effects of four psychological primary colors on GSR, heart rate and respiration rate. *Perceptual and Motor Skills, 38*, 763-766.

Jacobs, K.W. & Suess, J.F. (1975). Effects of four psychological primary colors on anxiety state. *Perceptual and Motor Skills*, *41*, 207-210.

Jaensch, E.R., (1930). *Eideric imagery*. London; Kegan, Paul, Trench and Tubner, Ltd.

Kaltcheva, V.D. & Weitz, B.A. (2006). When should a retailer create an exciting store environment? *Journal of Marketing, 70*, 107-118.

Korgaonkar, P. (1981). Shopping orientations of catalog showroom patrons. *Journal of Retailing, 52*, 78-90.

Langer, E.J. & Saegert, S. (1977). Crowding and cognitive control. *Journal of Personality and Social Psychology, 35*, 175.

Langer, E.J. & Rodin, J. (1976). Effect of choice and enhanced personal responsibility for aged – field experiment in an institutional setting. *Journal of Personality and Social Psychology, 24,* 191-198.

Machleit, K.A., Eroglu, S.A. & Mantel, S.P. (2000). Perceived retail crowding and shopping satisfaction: what modifies this relationship? *Journal of Consumer Psychology, 9,* 29-42.

Machleit, K.A., Kellaris, J.J. & Eroglu, S.A. (1994). Human versus spatial dimensions of crowding perceptions in retail environments: a note on their measurements and effect on shopper satisfaction. *Marketing Letters, 5,* 183-194.

Martineau, P. (1958). The personality of the retail store. In A. D' Astous & M. Lévesque (2003). A scale for measuring store personality. *Psychology & Marketing, 20*, 455-469.

McClelland, L.A., & Auslander, N. (1975). Determinants of perceived crowding and pleasantness in public settings. In S.A. Eroglu, & K.A. Machleit (1990). An Empirical study of retail crowding: antecedents and consequences. *Journal of Retailing*, *66,* 201-221.

Mehrabian, A. & Russell, J.A. (1974). *An approach to environmental psychology*. Cambridge: MIT Press.

Milgram, S. (1970). The experience of living in cities. *Science, 167*, 1461-1468.

Milliman, R. E. (1982). Using background music to affect the behavior of supermarket shoppers. *Journal of Marketing, 46*, 86–91.

Ng, C.H. (2003). Satisfying shoppers' psychological needs: from public market to cyber-mall. *Journal of Environmental Psychology, 23*, 439-455.

Prior, M. (2001). Toys 'R' Us Times Sq. store raises retailtainment bar. *DSN Retailing Today, 40*, 46.

Prohansky, H.M., Ittelson, W.H. & Rivlin, L.G. (1974). Freedom of choice and behavior in a physical setting. In H.M. Prohansky et al. (1974). *Environmental Psychology*. New York: Holt, Rinehart & Winston.

Rodin, J., Solomon, K. & Metcalf, J. (1978). Role of control in mediating perceptions of density. *Journal of Personality and Social Psychology, 35,* 133-158.

Russell, J. A. & Pratt, G. (1980). A description of the affective quality attributed to environments. *Journal of Personality and Social Psychology, 38,* 311-322.

Sherman, E., Mathur, A. & Smith, R.B. (1997). Store environment and consumer purchase behavior: mediating role of consumer emotions. *Psychology & Marketing, 14*, 361-378.

Solomon, M.R. (2003). *Conquering consumerspace: marketing strategies for a branded world*. New York: AMACOM.

Stokols, D. (1972). On the distinction between density and crowding: some implications for future research*. Psychological Review, 79,* 275-277.

Stone, G.P. (1954). City shoppers and urban identification: observations on the social psychology of city life. *American Journal of Sociology, 60*, 36-45.

Tauber, E.M. (1972). Why do people shop? *Journal of Marketing*, *36*, 46-49.

Valdez, P & Mehrabian, A. (1994). Effects of color on emotions. *Journal of experimental psychology, 123*, 394-409.

Ward, J.C. & Barnes, J.W. (2001). Control and affect: the influence of feeling in control of the retail environment on affect, involvement, attitude and behavior. *Journal of Business Research, 54,* 139-144.

Yildirim, K., Akalin-Baskaya, A. & Hidayetoglu, M.L. (2007). Effects of indoor color on mood and cognitive performance. *Building and Environment, 42*, 3233-3240.