Greenery in the Indoor Retail Environment
The Effect of Greenery on Environment Perceptions, Probable Behavior, and Willingness to Spend

Margrét G. Kristjánsson

Lokaverkefni til BS-gráðu
Sálfræðideild
Heilbrigðisvísindasvið
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Lokaverkefni til BS-gráðu í sálfræði
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Abstract

Retail environments are often described as ‘stressful’ and greenery has been found to put people in a more positive mood and decrease stress (Joye, Willems, Brengman, & Wolf, 2010). Most of the research investigating the effects of greenery in the retail setting has focused solely on the outdoor retail environment (Wolf, 2003) and has shown that ratings for place perceptions were higher and that consumers would pay more for products in the forested retail environments than in the not forested ones. This research paper aims to determine whether the presence of greenery in the indoor retail setting will lead to 1) more positive environment perceptions; 2) increased probable shopping behavior; and 3) an increase in the amount of money customers are willing to spend for clothing items. 306 participants were split into three groups (no-plants, medium-plants, or many-plants), presented with pictures of retail settings and clothing items and answered a questionnaire. The hypotheses were not supported. However, the testing of items separately provided support for statistically significant differences in ratings of the statement ‘the store setting is visually pleasing and desirable’ between no-plants and many-plants conditions.
It has long been known that the environment influences human behavior. Many consumer environments have utilized this aspect in order to increase the flow of customers and in attempts to gain new customers. The physical setting of the retail environment can influence numerous aspects of the consumer’s behavior and their experience. How people perceive the store’s image and what purpose the store serves is communicated through subtle cues in the retail environment (Rapoport, 1982). These cues can in turn influence consumers’ purchase decisions (Dijksterhuis, Smith, van Baaren, & Wigboldus, 2005). The subtle cues present in the retail setting are often processed on an unconscious level and can influence impulse buying (Dijksterhuis et al., 2005). For example, background music in the supermarket and restaurant environments have been found to influence the amount of customers that visit a store (Milliman, 1982). One study found that the type of music actually influenced the specific products that customers bought: an increase in sales of French wine when French music was played in the background of a supermarket and an increase of German wine when German music was played (North, Hargreaves, & McKendrick, 1997).

Mehrabian and Russell (1974) put forward a theoretical model suggesting that people react to atmospheres with either approach or avoidance behaviors. The approach-avoidance behaviors are described as being made up of four values: desire to physically stay (approach) or escape (avoid) the environment; desire to walk around and explore the environment (approach) or tendency to stay in one area and not walk around the environment (avoid); desire to interact with other people in the environment (approach) or avoidance of other people in the environment and tendency to not respond to interaction from other people (avoid); and the increasing amount of (approach) or the decreasing amount (avoid) of performance and satisfaction with finished behavior (Donovan & Rossiter, 1982).

Bitner (1992) claims that approach and avoidance behaviors are determined by cognitive, emotional, and physiological responses to the environment. Cognitive responses refer the beliefs that consumers hold about the products or services offered in the environment. Beliefs about the quality of the products inside the store have been found to be influenced by descriptions of the store environment (Zeithaml, 1988). These beliefs about the environment are communicated through ‘object language’ (Ruesch & Kees, 1956), which refers to environmental cues such as the type of décor in the store setting. The environment can also affect how consumers categorize the store (Bitner, 1992). In the retail setting, consumers can then form beliefs about whether a store is a high-end or low-end store based
on environmental cues, which can then influence perceptions about the quality of the products inside the store. The emotional states that cause consumers to either approach or avoid their environment is determined by consumers’ experience with their environment. The emotional states that people experience when interacting with their environment can be described by the interaction of pleasure and arousal (Donovan & Rossiter, 1982). Donovan and Rossiter (1982) reported that feelings of pleasure induced by the retail setting lead to more time and money spent in the environment. Arousing environments have been found to increase the amount of time spent in the store (Donovan & Rossiter, 1982). However, in cases where the environment was arousing and unpleasant, avoidance behaviors are common (Mehrabian & Russell, 1974).

**Positive effects of greenery**

For decades, there has been a growing amount of research on the positive benefits of greenery on human behavior and well-being. The biophilia hypothesis claims that humans contain a basic, genetic desire to associate with nature (Kellert & Wilson, 1993). This desire to associate with nature is illustrated in several recent studies. Research indicates that natural environments are preferred over man-made environments and that man-made environments containing natural elements (i.e. water and greenery) are preferred over man-made environments not containing such natural elements (Kaplan & Kaplan, 1989; Ulrich, 1993).

**Restorative effects of nature in the environment**

An overwhelming amount of research has indicated that greenery can have constructive or restorative effects on mental functioning and health. The study of the restorative effects of greenery is referred to as ‘Restorative Environments Research’ (Van den Berg, 2009). Two interpretations of what a ‘restorative experience’ means have been abundant in this field of research. ‘Stress Recovery Theory’ (SRT), the first interpretation, asserts that people who are exposed to unthreatening nature experience more positive emotional states and that the presence of natural elements decrease feelings of arousal and stress when compared to environments that do not contain natural elements (Ulrich et al., 1991). Early humans were very dependent on their nature for their survival (i.e. for food, shelter) and it is hypothesized that humans who evolved the restorative response of stress reduction towards the natural elements of their environment had a higher chance of survival than those who did not (Ulrich, 1993). This explains the stress-reducing effects of nature.

Nature has also been found to have restorative and replenishing effects on directed attention (Hartig, Mang, & Evans, 1991), which has been coined ‘Attention Restoration
Theory’ (ART) by Kaplan and Kaplan (1989). The second interpretation is built on this finding. Directed attention can experience fatigue (Joye, Willems, Brengman, & Wolf, 2010), and ART claims that environments that direct people’s attention using ‘soft fascination’ are better at fixing attentional fatigue (Kaplan & Kaplan, 1989). ‘Soft fascination’ is a form of directing one’s attention without straining or causing fatigue, instead attention is directed in an undemanding manner (Kaplan & Kaplan, 1989). The research on the restorative and stress reducing effects of natural elements have been found to occur in multiple different settings, including hospital settings (Dijkstra, Pieterse, & Pruyn, 2008), offices (Kweon, Ulrich, Walker, & Tassinari, 2008), and schools (Han, 2009). The presence of street side vegetation, such as trees and flowers, have also been found to increase restoration likelihood in residential environments (Lindal & Hartig, 2015).

Retail environments often contain a plethora of information competing for attention which can be a burdensome activity and can lead to ‘Directed Attention Fatigue’ (DAF) (Kaplan, 2001). When the information coming from the environment becomes too much for shoppers, this can prevent customers from being able to choose the ‘best’ product (i.e. best quality) and lead to rash decisions based on heuristics (Malhotra, 1984). When products are bought impulsively, it is more likely that the customer will be unhappy with the product after purchase and will not return to the store (Malhotra, 1984). When consumers are exposed to an environment containing so much information, they need an area of the environment to rest and be given the opportunity to restore their attention. The presence of a central area in the retail setting containing seating would be ideal for this and considering the relaxing effects of natural elements in the environment (Kaplan & Kaplan, 1989), the presence of plants in the setting could allow customers a chance to relax.

**Effects of greenery in the retail setting**

Retail environments are often described as ‘stressful’. In fact, 10% of individuals have been found to be in negative moods upon merely entering the shopping environment (Maxwell & Kover, 2003). There are numerous factors that can make the shopping experience negative and stressful after entering the store. Upon entering any shopping environment, people usually have a goal or a purpose in mind. The environment will then either help the customer reach their goal or obstruct it (Russell & Snodgrass, 1987) and environments that obstruct goals, for example due to crowding, can cause stress and lead to avoidance behaviors in consumers (Donovan & Rossiter, 1982). Even when the negative mood is not severe enough to lead to
avoidance behavior, customers in negative moods spend significantly less money than customers in positive moods (Babin & Darden, 1996).

**The Mehrabian-Russell model and SRT**

SRT is centered on the finding that greenery has calming effects on people, reducing stress, negative mood and overall discomfort (Joye et al., 2010). Greenery has been found to reduce stress in the experimental setting (Ulrich et al., 1991) and increase enjoyment and relaxation (Kaplan & Kaplan, 1989). The stress-reducing effects of greenery highlights the potential importance of natural elements in the retail setting. SRT can explain the interaction between natural elements in the environment and approach-avoidance behavior. Donovan and Rossiter (1982) found that the Mehrabian-Russell model was a successful theoretical model for studying approach and avoidance behaviors within the retail setting and that pleasure induced by the store setting determines whether the consumer demonstrates approach or avoidance behavior in the store and that arousal leads to more time spent in the store. The interaction of pleasure and arousal is a key determinant in approach-avoidance behaviors (Bitner, 1992) and greenery has been found to put people in a more positive mood, increase pleasure and decrease stress (i.e. arousal) (Joye et al., 2010).

The positive effects of greenery are widespread. People who live near natural settings were found to be healthier than those who do not live around natural settings and experience greater overall satisfaction with multiple aspects of their lives, including their jobs and homes (Kaplan & Kaplan, 1989). One classic study found that hospital patients who had recently undergone gall bladder surgery healed faster and experienced less post-surgery complications when their windows faced trees than patients whose windows faced a brown brick wall (Ulrich, 1984). Another study found that patients undergoing surgery who viewed a picture of an open natural environment with water experienced less anxiety prior to the surgery than patients who viewed a rather closed forestry picture, an abstract picture, or no picture (Ulrich & Lunden, 1990). This suggests that the mere picture of natural environments or elements can influence well-being. Greenery has also been found to lead to more prosocial behavior, increasing agreeableness, empathy, and generosity (Zhang, Piff, Iyer, Koleva, & Keltner, 2014). Prosocial behavior was described as an aspect of approach behavior by Mehrabian and Russell (1974).
Research on effects of greenery in the retail setting

While the restoring and calming effects of greenery has been researched, the effects of greenery in the retail setting is widely under-researched. Most of the research has been done by Kathleen Wolf (2003, 2004, 2005, 2006, 2008) and focused solely on the outdoor retail environment with the main purpose of assessing multiple aspects of consumer responses to forested retail settings. Wolf found that consumers preferred forested retail environments compared to ones that were not forested, that ratings for place perceptions (i.e. perceptions of comfort, employee interaction, product quality) were higher, that consumers were willing to travel further and stay longer in the forest retail environment, and that consumers would pay more for products in the forested retail environments than in the not forested environments.

This research paper aims to determine whether the presence of greenery in the indoor retail setting positively influences the consumers’ perception of the environment (i.e. visual desirability of store, perceived comfort, perceived cleanliness, perceived quality of products), increases probable shopping behavior (i.e. frequency of visit and duration of stay), and whether it increases the consumer’s willingness to pay for clothing items. Based on prior research by Wolf (2003) it is believed that the presence of plants in retail environments will lead to 1) more positive environment perceptions; 2) increased probable shopping behavior; and 3) an increase in the amount of money customers are willing to spend for clothing items.
**Method**

**Participants**
There were originally 524 participants, but 194 did not complete the survey and 24 were under 18 years of age leaving 306 participants (296 women and 10 men) for analysis. The age range was 18 to 81 years old (M = 33.11 years, SD = 12.15). Most participants resided in Iceland (85.6%), with 5.2% in the United States of America, 2.9% in Norway, 2% in Sweden, and the rest residing in other countries.

**Stimuli**
The self-compiled survey composed of responses to four indoor retail scenario pictures. The pictures differed with respect to the quantity and location of greenery. Other aspects of the scenery were kept minimal to avoid distraction (i.e. no excessive architecture, bright colors, etc.). Each individual survey was based on one of the three indoor retail scenarios (no-plants, medium-plants, or many-plants). The plants used in the experiment were placed into the experimental photos using Adobe Photoshop CS6.

The ‘no-plants store scenarios’ had no greenery or plants of any type in the photos, the ‘medium-plants store scenarios’ contained one to two plants in each image, and the ‘many-plants store scenarios’ contained three or more plants in each image. Figure 1 depicts examples of each of the three conditions for the retail setting.
The survey is also composed of responses to individual clothing item photographs. The pictures differed with respect to the quantity and location of greenery and other aspects of the scenery were kept minimal to avoid distraction (i.e. no excessive architecture, bright colors, etc.). The ‘no-plants clothing items scenarios’ had no greenery or plants of any type in the photos, the ‘medium-plants clothing items scenarios’ contained one to two plants in each image, and the ‘many-plants clothing item scenarios’ contained three or more plants in each image. Each clothing item was shown in the store setting with a circle around it depicting what clothing item was to be assessed. The clothing items shown in the experiment were chosen based on availability and depict ‘typical’ clothing items in retail settings. Figure 2 depicts examples of each of the three conditions for the individual clothing items.
1. No-plants clothing item scenario

2. Medium-plants clothing item scenario

3. Many-plants clothing item scenario

*Figure 2*. Sample of the clothing item scenarios for the experimental conditions

**Research design**

A between-groups research design was used. The independent variable was the presence of greenery in the retail scenario, which had three levels (no-plants, medium-plants, and many-plants). There were three dependent variables: Environment perceptions, probable behavior, and price perceptions.

Environment perceptions were made up of five statements regarding the indoor retail scenario presented to the participants. The statements were: ‘the store setting is visually pleasing and desirable’, ‘I would like to visit the store’, ‘I perceive the store as being uncomfortable’, ‘the store is clean and well-kept’, and ‘the clothes in the store appear to be of
high quality’. These statements were rated on a 5-point Likert scale with 1 meaning ‘strongly disagree’ and 5 meaning ‘strongly agree’.

Probable behavior was made up of how often participants believed they would visit the store per year (1 – one to two times a year, 2 – three to five times a year, 3 – once a month, 4 – two to three times a month, 5 – once or more a week) and how long participants believed they would stay in the store (1 – more than one hour, 2 – forty to sixty minutes, 3 – twenty to forty minutes, 4 – ten to twenty minutes, and 5 – less than 10 minutes).

Price perceptions refers to ratings for ‘how much participants would be willing to pay’ for four individual clothing items. The clothing items shown were varied in price range. The photos show a woman’s shirt (low-cost item), a purse (medium-cost item), a leather jacket and a down jacket (high-cost items). Participants were asked to indicate how much they would be willing to pay for the clothing item using an 11-point Likert scale.

**Procedure**

The participants voluntarily participated in the study and were recruited using social media platforms (e.g. Facebook and Reddit). The experiment, which was conducted online, contained information on the purpose of the study and a guarantee of anonymity and participants were not offered a reward for participating in the study. The survey was self-compiled and began with a set of background questions. Each participant was randomly placed in one of the three experimental conditions (no-plants, medium-plants, or many-plants). Participants were presented with four different pictures of retail settings (clothing store with neutral colors, typical department store, women’s clothing store, and a shoe store) and four pictures of individual clothing items (shirt, purse, leather jacket, and down jacket). The images were randomly presented to the participants.
Results

Average ratings for each of the survey questions were calculated, shown in table 1. Responses to these variables were then grouped into three dimensions: environment perceptions, probable behavior, and price perceptions of clothing items. The three variables were compared between the no-plants, medium-plants, and many-plants conditions using one-way analyses of variance (ANOVA) with Bonferroni post-hoc analyses.

Table 1

<table>
<thead>
<tr>
<th>Survey question</th>
<th>No plants</th>
<th>Medium plants</th>
<th>Many plants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>The store setting is visually pleasing and desirable*</td>
<td>3.68</td>
<td>0.59</td>
<td>3.62</td>
</tr>
<tr>
<td>I would like to visit the store*</td>
<td>3.59</td>
<td>0.61</td>
<td>3.40</td>
</tr>
<tr>
<td>I perceive the store as being comfortable*</td>
<td>3.55</td>
<td>0.61</td>
<td>3.65</td>
</tr>
<tr>
<td>The store is clean and well-kept*</td>
<td>4.16</td>
<td>0.49</td>
<td>4.21</td>
</tr>
<tr>
<td>The clothes in the store appear to be of high quality*</td>
<td>3.36</td>
<td>0.48</td>
<td>3.36</td>
</tr>
<tr>
<td>How often you would like to visit the store**</td>
<td>1.61</td>
<td>0.62</td>
<td>1.63</td>
</tr>
<tr>
<td>How long you would stay in the store***</td>
<td>2.01</td>
<td>0.64</td>
<td>1.97</td>
</tr>
<tr>
<td>How much would you be willing to pay for the leather jacket****</td>
<td>3.07</td>
<td>1.60</td>
<td>3.04</td>
</tr>
<tr>
<td>How much would you be willing to pay for the down jacket*****</td>
<td>4.31</td>
<td>2.07</td>
<td>4.01</td>
</tr>
<tr>
<td>How much would you be willing to pay for the shirt******</td>
<td>3.54</td>
<td>1.67</td>
<td>3.65</td>
</tr>
<tr>
<td>How much would you be willing to pay for the purse*******</td>
<td>2.25</td>
<td>1.26</td>
<td>2.27</td>
</tr>
</tbody>
</table>

*Items were measured on a 5-pointLikert scale the following values: 1 - strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, 5 – strongly agree

** Item was measured on a 5-point Likert scale with the following values: 1 - 1 to 2 times a month, 2 - 2 to 3 times a month, 3 - once a month, 4 - 2 to 3 times a month, 5 - once or more a week

*** Item was measured on a 5-point Likert scale with the following values: 1 - less than 10 minutes, 2 - 10 to 20 minutes, 3 - 20 to 40 minutes, 4 - 40 to 60 minutes, 5 - more than 1 hour

**** Item was measured on a 11-point Likert scale with the following values: 1 - 0 to 5.000 ISK, 2 - 5.000 to 10.000 ISK, 3 - 10.000 to 15.000 ISK, 4 - 15.000 to 20.000 ISK, 5 - 20.000 to 25.000 ISK, 6 - 25.000 to 30.000 ISK, 7 - 30.000 to 35.000 ISK, 8 - 35.000 to 40.000 ISK, 9 - 40.000 to 45.000 ISK, 10 - 45.000 to 50.000 ISK, 11 - 50.000 ISK or more

***** Item was measured on a 11-point Likert scale with the following values: 1 - 0 to 1.000 ISK, 2 - 1.000 to 2.000 ISK, 3 - 2.000 to 3.000 ISK, 4 - 3.000 to 4.000 ISK, 5 - 4.000 to 5.000 ISK, 6 - 5.000 to 6.000 ISK, 7 - 6.000 to 7.000 ISK, 8 - 7.000 to 8.000 ISK, 9 - 8.000 to 9.000 ISK, 10 - 9.000 to 10.000 ISK, 11 - 10.000 ISK or more

Table 1 shows that the first five values (marked with *), which make up environment perceptions, contain averages which are greater than the middle value. The average rating is thus above a neutral view and leaning towards agreeance with the statements. Of these values, the statement ‘the store is clean and well-kept’ is rated most positively of the environment perception values, with an average of above 4 (agree), indicating that on average participants agree with the statement. The two statements making up probable behavior (marked with ** and *** ) are rated relatively low on average. The final four statements which make up price perceptions of clothing items (marked with **** and *****) are rated well below the half-way range. There are minor differences in average rating according to plant condition for a number of variables, however the standard deviations are quite small indicating that there is a
small amount of variance. The standard deviations in table 1 indicates that there is more variance in the variables making up price perceptions than in the other variables.

Results for environmental perceptions are analyzed first. There is not a statistically significant difference found in environmental perceptions (the five items combined) between the plant groups determined by a one-way ANOVA ($F(2, 303) = 1.74, p = 0.178$). Therefore, hypothesis 1) is not supported. However, when testing the items separately, a statistically significant difference is found in ratings for the statement ‘the store setting is visually pleasing and desirable’ ($F(2, 303), = 3.19, p < 0.05$). Post hoc comparisons using the Tukey HSD test indicate that the average ratings for how ‘visually pleasing and desirable’ the stores are rated are significantly different between the no-plants condition and the many-plants condition ($p = 0.05$).

There are no statistically significant differences between the plant conditions for probable behavior ($F(2, 303) = 0.074, p = 0.929$) or for price perceptions ($F(2, 302) = 0.050, p = 0.951$), indicating that hypothesis 2) and 3) are not supported. Similarly, there are no statistically significant differences found when testing items separately making up probable behavior and price perceptions.

Since the hypotheses in this research are not supported, it would be interesting to see whether different store environments have an effect environmental perceptions, probable behavior and/or price perceptions. When analyzing differences between the plant groups in environmental perceptions for store 1, a statistically significant difference is present ($F(2, 303) = 7.19, p < 0.001$). Post hoc comparisons using the Tukey HSD test indicate that the average ratings for environment perceptions in store 1 are statistically different between the no-plants and many-plants conditions ($p < 0.005$) and between the medium-plants and many-plants conditions ($p < 0.005$). There is a statistically significant difference between the plant groups for ratings of a ‘pleasing and desirable store setting’ ($F(2, 303) = 10.24, p < 0.001$) with post hoc comparisons using the Tukey HSD test indicating that there is a statistically significant difference in average ratings between the no-plants and many-plants conditions ($p < 0.001$) and between the medium-plants and many-plants conditions ($p < 0.001$). There are also statistically significant differences between the plant groups for ratings of ‘store comfort’ ($F(2, 303) = 3.24, p < 0.05$) and the for ratings of ‘clothing quality’ ($F(2, 303) = 3.05, p < 0.05$), however the post hoc tests do not reveal any statistically significant differences between the plant conditions for these two variables.
There is also a statistically significant difference between the plant groups in environment perceptions for store 4 ($F(2, 303) = 3.74, p < 0.05$). Post hoc comparisons using the Tukey HSD test indicate that there is a statistically significant different average rating for environmental perceptions in store 4 between the no-plants and medium-plants conditions ($p < 0.05$). There is a statistically significant difference between the plant groups for a ‘desire to visit the store’ ($F(2, 303) = 5.19, p <0.01$) with the post hoc Tukey HSD test indicating that there is a statistically significant difference between the no-plants and medium-plants conditions ($p < 0.005$). There is also a statistically significant difference between the plant groups for average ratings of ‘store comfort’ ($F(2, 303) = 4.47, p < 0.05$). Post hoc comparisons using the Tukey HSD test indicate that there is a statistically significant difference between the no-plants and medium-plants conditions ($p < 0.05$) and between the medium-plants and many-plants conditions ($p < 0.05$).
Discussion

The aim of this study was to determine whether the presence of greenery in the indoor retail setting positively influenced consumers’ environmental perceptions, increased probable shopping behavior, and whether it increases the consumer’s willingness to pay for clothing items. It was hypothesized that the presence of plants inside retail environment would lead to 1) more positive environment perceptions; 2) increased probable shopping behavior; and 3) an increase in the amount of money that customers were willing to spend for clothing items.

Upon first look of the results, table 1 indicated very little differences between the plant groups. The variables making up environmental perceptions (marked with *) were rated above the middle value, indicating that, on average, the participants had positive outlooks on the store settings.

The one-way ANOVA’s conducted in this research did not provide support for any of the hypotheses. However, the testing of items separately provided support for statistically significant differences in ratings of the statement ‘the store setting is visually pleasing and desirable’ between no-plants and many-plants conditions. The statistically significant finding for this item lends support to the claim that the presence of plants could influence how positively people view their environments.

The differences between plants in individual store environments had more interesting effects on environment perceptions. When analyzing store 1) and store 4) independently, there were statistically significant differences present between the plant groups. Post hoc comparisons for store 1) revealed that there was a statistically significant difference between both the no-plants and medium-plants groups and between the medium-plants and many-plants groups, with the environment perception ratings steadily increasing according to plant conditions. The aspects of store 1) that contained statistically significant differences were for ratings of how ‘pleasing and desirable’ the store was viewed; ratings of ‘comfort’; and ratings of ‘clothing quality’. Store 1) (shown in figure 1) was a clothing store with neutral-colored clothing items, the interior was mostly brown and off-white, there was wooden plating on the tables and floors and there was nothing on the tables in the no-plants setting. Therefore, the store was free of clutter and when the plants were inserted in the medium-plants and many-plants’ settings, there were few aspects in the environment that would direct one’s attention away from the plants. In addition, the natural colors in the environment could have added to the potential effects of the greenery in the room.
Post hoc comparisons for store 4) revealed that there was a statistically significant difference between the no-plants and medium-plants conditions. Store 4) was a shoe store and some of the tables and shelves were empty, but most had shoes for display. The tables were already more cluttered than store 1), which could explain why there was just a statistically significant difference between the no-plants and medium-plants for this store environment and not with the many-plants scenarios. Perhaps there is a cutoff for the amount of items in a store before the effects become negative for environment perceptions. The aspects for store 4) that contained statistically significant differences were for ‘a desire to visit the store’ and ‘store comfort’. Both ratings for ‘store comfort’ in store 1) and store 4) were increased according to number of plants, indicating that there was some aspect present in both of these stores that was not present in the other two stores which allowed the presence of plants to increase ratings of ‘store comfort’.

The results of this study are not in line with the results showing the positive effects of greenery in the retail setting performed by Wolf (2003, 2004, 2005, 2006, 2008). Wolf’s research however focused on the effects of the outdoor retail environment, where the presence of trees and other aspects of greenery are more common place. Research on greenery in the indoor retail setting has not been performed before and the research method could use more polishing and testing before potential effects emerge. This research could be used as a starting point on future research and the small differences present in store 1) and 4) for environment perceptions will hopefully be further explored.

There were statistically significant differences for the statement ‘the store setting is visually pleasing and desirable’ when analyzing that item individually and also when analyzing store 1) individually. Prior research had shown that the emotional states that people experience when interacting with their surroundings are influenced by the interaction of pleasure and arousal and that feelings of pleasure when in the retail setting led to increases in the amount of time and money spent (Donovan & Rossiter, 1982). Since people experienced more elevated feelings of pleasure within the store scenarios used in this research, the amount of time and money spent could also be influenced by greenery in the retail environment. Further testing is needed to explore this connection further.

There were multiple limitations in this research. The statements making up environment perceptions, probable behavior and price perceptions were not pretested for reliability or validity. In addition, the responses to the statements making up probable
behavior were not likely affected by confounding variables. How often an individual visits a store and how long they are likely to stay in the store is likely affected by shopping styles and not a direct result of the store itself or the elements inside the store. It could very well be that the presence of greenery has a positive effect of bringing people into a store and keeping them inside longer, but this cannot be explored through the method used in this study. Future research could potentially observe real time shoppers and investigate whether there is a difference in these aspects, but it is unlikely that self-reporting of probable behaviors is a reliable method of obtaining this information. Willingness to pay is likewise effected by shopping style and it is difficult to determine whether factors in the environment have an effect using a questionnaire. The pictures used in this study were not pretested, thus it is not known how the Photoshop used affected the results. In addition, there was no testing to determine how realistic the greenery was viewed or to test the photos themselves. However, the small differences noted in environmental differences for store 1) and 4) can potentially be a starting point for further testing on the effects of greenery in the indoor retail setting.
References


