Consumers' Reactions to the Interaction Between Scented Environments and Impulsive Purchasing Tendency

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The aim of this paper is to examine the mediating role of consumers' impulsive purchasing tendency in explaining the impact of the presence of a pleasant fragrance over their reactions in a store. A quasi-experiment was conducted in a Sisley clothing store in which two conditions were tested: presence vs. absence of a scented atmosphere. A survey was conducted on a convenient sample containing 200 customers (102 for the unscented environment and 98 for the scented environment). A Partial Least Squares (PLS) method was used to estimate the mediating effect of impulsive purchasing tendency. The results indicate that consumers' impulsive purchasing tendency mediates the impact of fragrance over a multitude of reactions. The presence of an olfactory stimulation in a store increases consumers' impulsive purchasing tendency which leads to more expenses and impulsive purchasing, a better perception of products and the store, more ease in finding products and more intense feelings of pleasure and arousal.

1. INTRODUCTION

Sensorial marketing has a major position within the strategic thinking of retailers. Several researchers (Mattila and Wirtz 2001; Summers and Hebert 2001; Jaccob and Guéguen 2002; Lemoine 2004) focused their attention on examining consumers' reactions towards a variation of one or many components of a retail store's atmosphere. A review of the relevant literature revealed, however, a sparsity of research on the impact of fragrances on consumers' reactions, mainly in a real retailing context (Daucé 2000; Michon, Chebat and Turley 2005; Vaccaro et al. 2009). Nevertheless, it has been shown that ambient scents may

communicate a set of information for customers and act on a multitude of their reactions. Ward, Davies and Kooijman (2007)assume that scent is something that the consumer cannot ignore. Its simple presence alters the perception of other elements. Ward, Davies and Kooijman (2003) insist that scents may act as a component of the retailers marketing mix. It makes the service more tangible which allows for a better differentiation of the offer (Goldkuhl and Styvén 2007). It is nevertheless very difficult, based on the obtained results, to determine the nature of olfactory power and even less to specify the olfactory component (presence, congruence, etc.), which triggers customers' reactions and whether this effect is direct or indirect. Fitzgerald and Scholder (1999) assume that the sometimes inconclusive or contradictory results are due to many factors like a lack of information on the mediating variables associated with fragrances, the impact of some moderating variables and some methodological considerations. Given these observations, several researchers (Spangenberg, Crowley and Henderson 1996a ; Ward, Davies and Kooijman 2003 ; 2007 ; Zemke and Shoemaker 2007 ; Chebat, Morrin and Chebat 2008) recommended further research in order to better catch customers' reactions towards a variation of a store's olfactory environment. It has been established that facing an olfactory stimulation, customers' reactions vary and that these variations are due to the impact of individual and contextual variables which act as mediators (Ward, Davies and Kooijman 2003; 2007). However, the literature offers no sufficient conceptualisation of fragrances-related mediating variables. In particular, few researchers have focused on studying the effect of the interaction between some individualistic variables and some olfactory dimensions on customer's reactions. However, according to Vaccaro et al. (2009), the impact of fragrances may depend on many variables like a customer's characteristics. Exploring whether all individuals are sensitive to olfactory stimulation seems an interesting research avenue (Maille 2003). Accordingly, Morrin and Chebat (2005) stipulate that one of the individual characteristics that differentiates customers and that is interesting to include while studying this kind of interaction is impulsive purchasing tendency. Jones et al. (2003) points out that it is relevant to study the impact of atmospheric variables, mainly fragrances, on several aspects of impulsive purchasing. It seems that customers are particularly sensitive to environmental characteristics which determine and favour impulsions to purchase.

Nevertheless, customers do not have the same predispositions for impulsive purchasing. Some give up easily to temptation, others, however, have a more controlled behaviour (Giraud 2002). It seems then relevant to study the interaction that may exist between ambient scents and impulsive purchasing tendency and the consequences that they may generate in terms of customers' reactions in a store. We will try then to answer the following question: what is the impact of olfactory stimulation on costumers' reactions through impulsive purchasing tendency?

2. THEORETICAL FRAMEWORK

Little research has focused on examining consumers' behaviour variations caused by the diffusing of an ambient scent. Consumers with all their characteristics seem to interact with the store's environment so as to take a multitude of decisions. We will provide the main results on the impact of an ambient scent on customers' reactions. Then, we will try to better apprehend the effect of the interaction between the scent and customers' impulsive purchasing tendency on their reactions.

2.1 Impact of scent on customers' reactions

Researchers have noted that the presence of a scent is more appropriate than its absence (Morrin and Chebat 2005). Although contrasting results have been often reached (Ward, Davies and Kooijman 2007), it has been found that consumers' reactions in a scented environment may take several forms: cognitive, affective and behavioural.

Concerning cognitive reactions, Ward, Davies and Kooijman (2003) underlined the importance of olfactory stimulation in developing a store's image. Spangenberg, Crowley and Henderson (1996) showed that in the presence of a scent the store's global evaluation was perceived more positively. The store was perceived in more favourable tones, that is, as better, positive, and modern. Likewise, evaluation of products was more positive in a scented environment; particularly products judged less pleasant. The authors add that ambient scent influences perception of prices and time spent. In a scented store (vs. unscented), product prices were perceived as lower (although statistical significance was not obvious). Moreover, the subject had the impression of spending less time shopping. Daucé (2000) observed that in the presence of lavender scent (vs. tea) people would tend to underestimate time spent. Daucé assumes as well that ambient scent influences the evaluation of product colours. The author finds out that in the presence of lavender scent a more colourful evaluation of product aspects is noted. Morrin and Chebat (2005) confirm the idea that ambient scents influence customers' cognitive reactions.

They made it clear that the presence of scent facilitates cognitive processes like looking for information. They observed that customers declared that it is easier to find products in a scented environment (vs. unscented). Furthermore, customers evaluate more positively the store's attributes in the presence of scents. Orth and Bourrain (2008) find that scents facilitate cognitive processes relative to a nostalgic memory. The presence of a pleasant scent (vs. absence) in the store activates nostalgic memory. Morrin and Ratneshwar (2000) noted that the presence of a pleasant ambient scent leads the subject to deploy an additional effort for the mainly unknown brands which improves the evaluation of these brands and their memorisation. McDonnell (2007) finds that the presence of a pleasant scent in a public service centre improves the evaluation of the service.

Concerning the impact of scents on a customer's affective evaluation in a store, the literature offers no exhaustive results. The olfactory sensation, however, is considered to be more related to emotional reactions (Bradford and Desrochers 2009). Daucé (2000)noted a decreased affective appreciation of lavender scent as related to the pleasure dimension. The author explains this negative feeling by the presence of a pleasant scent for customers, through the concept of nostalgia. The author emphasises that this affective evaluation includes two components; a pleasant and positive component and an unpleasant and negative one. Orth and Bourrain (2008) validated the importance of an olfactory stimulation on triggering nostalgic memory and consequently on evoking nostalgic feelings. Ward, Davies and Kooijman (2007) noted that the presence of a scent creates a more pleasant and more stimulating environment for customers.

Some behavioural reactions due to a scented environment were noticed as well. Daucé (2000) found that in the presence of a lavender scent (vs. tea), individuals tend to give more time. Vaccaro et al. (2009) noticed also a positive relationship between the presence of a pleasant scent and intention to spend more time at the store. Scents may equally have an impact on purchasing intention and interaction with products (Spangenberg, Crowley and Henderson 1996; 1996a). Indeed, Spangenberg, Crowley and Henderson (1996a) noted that customers in a scented store spend more time observing products. The authors have also noted that customers expressed a stronger intention to visit a scented store. Guéguen and Petr (2006) examined the impact of scents on consumer's behaviour in a restaurant. They noted that time and amount spent are positively influenced by a lavender scent. However, a lemon scent did not affect these variables. The authors explained this result by the relaxing effect of lavender. The relaxing effect provoked, it seemed, consumers into spending more. As it was stimulating, the lemon scent did not provoke consumers into spending more time and money. Chebat, Morrin and Chebat (2008) found out that in the presence of a pleasant scent in a store, young customers spent more money. The scent, however, had no impact on older customers, probably because of their limited sensorial abilities. Zemke and Shoemaker (2007) indicated that a pleasant ambient scent led to higher levels of interactions between people unfamiliar to each other in the same environment. The authors underlined then that diffusion of a pleasant scent facilitates social interaction in people.

Although the results point to the importance of ambient scent presence (vs. absence) to generate more favourable reactions from customers, other olfactory simulations are worth considering as well. Indeed, the sprayed scent should be pleasant to generate approach-based behaviour. Moreover, scents should be congruent with the store and the products to generate positive effects (Fitzgerald and Scholder 1999; Ward, Davies and Kooijman 2003; 2007). Parsons (2009) noted that some scents, even if they are pleasant, are inappropriate for some stores, confusing customers' perceptions. Spangenberg et al. (2006) found that the nature of the ambient scent (congruent/incongruent) had an impact on evaluating the store, the products and avoidance/approach-based behaviour. A congruent scent has a positive impact on any evaluation reactions. In particular, a scent congruent with the product genre generated a positive

effect on the stores' and products' evaluation. Moreover, in the presence of a congruent scent, customers spend more time at the store, buy more items and spend more money. Customers also express a stronger intention to visit the store in the future. Scent congruence cannot relate to the product's genre or store, but other environmental simulations. On this point, Mattila and Wirtz (2001) and Spangenberg, Grohmann and Sprott (2005) examined the effect of congruence between music and scents on customers' reactions. The results indicated that congruence between scents and music generated more favourable evaluations of the store, products and the store's environment. Intention to visit the store was also positively affected by this congruence. However, when music and scents were incongruent with each other, evaluations and intentions were not affected or were negatively affected by the presence of these simulations within the store. Nevertheless, Vaccaro et al. (2009) did not validate the effect of the interaction between music and scents on a customer's behaviour. For their part, Michon, Chebat and Turley (2005) studied the interaction between the presence of a pleasant scent in a store and its density. The results indicated that the scent positively affected consumer's perceptions only when density was average. Density interferes with the scent to generate (or not) primarily cognitive reactions in customers. Many aspects of scents have been tested such as the scent's pleasant odour, its congruence, and its intensity. However, the presence of a pleasant scent (vs. absence) remains the most studied aspect (Vaccaro et al. 2009). According to Ward, Davies and Kooijman (2007), the mere presence of a scent acts on consumers without the latter being aware of its presence.

2.2 Interaction of ambient scent and impulsive purchasing tendency and the effects on customers' store behaviour

Research in the field of consumer behaviour has long tried to understand impulsive purchasing and its importance in a customer's purchasing process. For Hoch and Loewenstein (1991), Giraud and Bonnefont (2000), impulsive purchasing is born out of a sudden increase in desire that consumers are able to adapt to the idea of owning and using the goods. This impulsive purchasing is often seen as the result of an impulsive tendency within consumers. In this sense, impulsion is defined as an individual characteristic that influences consumers' responses through the formation of impulsive behaviour and dealing with various environmental stimuli (Beatty and Ferrell 1998).

Several factors explain impulsive purchasing tendencies. Among these factors, Beatty and Ferrell (1998) distinguish situational factors. Jones et al. (2003) point in this regard to the importance of environmental variables including scents and their greater implications to impulsive purchasing. It seems that environmental stimuli act as a catalyst in giving birth to impulsions to buy which explains the achievement of impulsive purchasing (Giraud 2001). Thus, the very nature of an individual's impulsions while interacting with environmental stimuli may increase this individual's impulsive purchasing tendency. Moreover, Rook and fisher (1995) assume that being in the presence of an impulsive purchasing stimulus, impulsive

customers are more likely to make purchases, mainly impulsive purchases. Thus, the following research hypotheses were formulated:

H1: In the presence of a scent, the consumer has a higher impulsive purchasing tendency
H2: In the presence of a scent, the higher the impulsive purchasing tendency the greater the:

a) purchasing amount
b) impulsive purchasing amount
c) number of impulsively purchased items.

A literature review allowed us to easily observe the impact of scent and its various components in a large number of customers' cognitive responses. However, few researchers attempted to understand the impact of the interaction between scent and customers' impulsiveness in a store with regard to this type of cognitive response. To our knowledge, only Morrin and Chebat (2005) explored this kind of interaction. In their exploratory study, they found that in the presence of scent, customers find it easier to locate the products they want. Moreover, evaluation of the store and products is judged more favourably by impulsive customers. These observations allow us to formulate the following hypothesis:

H3: in the presence of scent, the higher the impulsive purchasing tendency:

a) the better the perception of product quality
b) the better the perception of the store
c) the higher the perceived ease in locating products.

Impulsive customers seem more hedonic. Morrin and Chebat (2005) specify that impulsive customers are considered more awake and more emotional than contemplative ones (not impulsive). The authors assume that impulsive purchasing is marked by hedonic motivations associated with high levels of emotional activation and low levels of cognitive control. However, deliberate purchasing is marked by a more controlled, more deliberate, and unemotional cognitive process. Puri (1996) believes that more impulsive customers show greater accessibility to benefits and pleasures in the short term. More impulsive buyers are likely to be reckless, more emotionally attracted to the product, and desire immediate gratification (Thompson, Loccander and Pollio 1990; Hoch and Loewenstein 1991). According to Giraud (2003), to live an exciting experience, the consumer may release his/her personal control, consistent with his/her initial motivations (have fun). Impulsive customers then seem to have strong emotional activation and low cognitive control over their behaviour in a store. Based on these theoretical foundations, we propose the following hypothesis.

H4: in the presence of scent, the higher the impulsive purchasing tendency

a) the higher is his/her pleasure

b) the higher is his/her arousal

c) the lower is his/her control

Although the mediating role of impulsive purchasing tendency in explaining the impact of scent in a store environment and on a multitude of customer reactions has not been previously studied, review of the literature nevertheless allowed us to formulate a set of assumptions that we can schematise in the following conceptual model. Refer to Figure No. A.1

3. METHODOLOGY

An on-the-field data collection methodology was used. Although more difficult to control, as emphasised by Michon, Chebat and Turley (2005),, it is more realistic. Three methodological steps were used to achieve the goal: the selection of measures, data collection, and the purification of measurement scales.

3.1 Specification of measures

Five scales often believed to be reliable and valid, were selected. The first scale of Weun, Jones and Beatty (1998) is composed of five items to measure respondents' impulsive purchasing tendency. The second scale of Morrin and Chebat [30] consists of an item on the ease of locating products. The third scale of Mehrabian and Russell (1974), composed of 18 items, reflects consumers' affective states. The fourth scale of Spangenberg, Crowley and Henderson (1996),, composed of five items, seeks to evaluate the store and its image. The fifth scale based on the work of Belizzi et al. (1983 cited by Spangenberg et al. [37] p.82), composed of 4 items, measures attitudes towards products. Responses to items related to the first two scales were assessed on a 5-point Likert scale. For the remaining measures, the differential semantic scale was used. Note that a survey of 30 individuals was used to test the questionnaire in its final version.

As for the selection of the scent to be sprayed during the experiment, an expert in the design of olfactory environments for retail outlets was used. The expert proposed the scent of "bloom". Three criteria motivated the choice for this scent. First, the scent was tested in the store (field study) to assess whether it was perceived as pleasant and appropriate to the store. Indeed, Parsons (2009) suggested that for approach-based behaviours, it is not enough that the scent should be pleasant, it should also be perceived as appropriate to the store. Second, the scent was available and could be used in a sales environment like the one that was opted for (clothing store) without being considered incongruent. Indeed, Spangenberg, Crowley and Henderson (1996) pointed out that when any of the products emits no detectable odours, they cannot be interpreted as congruent with the chosen scents. Third, the scent was acceptable to the manager of the store who approved the experiment in the store.

3.2 Data collection

The experiment was conducted in a Sisley clothing store for two successive weeks over five days (Monday, Tuesday, Wednesday, Thursday, Friday). In total, the field phase lasted ten days. Weekends were avoided, where store density is high. The study was conducted under similar experimental conditions during the ten days from 2:00 pm to 7:30 pm. Throughout the experimental period, no change was made to the store (except smell). Also, according to other researchers (Michon, Chebat and Turley 2005; Chebat, Morrin and Chebat 2008), the field investigators were asked to look tidy and avoid wearing fragrances during the course of the experiment to avoid possible interference on the manipulated olfactory environment. A quasi-experiment was conducted as well where both conditions were tested. The first corresponds to a state of absence of scent. Indeed, following Spangenberg, Crowley and Henderson (1996a) and Guéguen and Petr (2006), to measure the effect of the presence of an olfactory stimulation, a control condition of "no scent" was introduced. Note that the experiment was started by using a "no scent" condition to avoid any residual smell caused by the presence of scent condition. The second part of the experiment sprayed scent into the store. Note that the store had an odour delivery system (invisible to consumers), which ensured the same odour intensity during this experimental condition to avoid intensity variation. Note also that some authors (Spangenberg, Crowley and Henderson 1996a) found that low-intensity odour may induce pleasure while the same high-intensity odour may be unpleasant. It was ensured that the intensity was not too high so as not to be perceived negatively. To this end, a test of the strength of the scent was used. It was also clear following Spangenberg et al. (2006) that throughout the experiment the presence of scent was not communicated to customers.

When they were leaving the store, customers were approached to respond to a questionnaire. A total sample of 200 individuals, 102 in an "unscented" condition and 98 in a "scented" condition were collected. Although the store sold both men's and women's clothing, we found that the total sample (Appendix) consisted of 82% women and 18% men. The structure of the subsamples, in terms of gender, is not very different from the total sample (unscented: 85.3% women, 14.7% men; scented: 78.6% women and 21.4% men).

3.3 Purification of scales

We examined the unidimensionality and reliability of the multi-item scales. After eliminating three items because of their poor representation quality, it became clear (Table A.1) that the measures were relatively reliable. Indeed, reliability for all dimensions is superior to 0.7 with the exception of the dimension attitude towards products of Belizzi et al.'s scale (1983 cited by Spangenberg, Crowley and Henderson 1996a, p.82), which is 0.61.

Refer to Table No. A.1

4. RESULTS

To address research problems and validate the model, it was decided to use a Partial Least Square approach by using the SmartPLS software for its flexibility given the following constraints. First, although a set of assumptions had been made, the impact of scent on customers' reactions in a store was rarely tested, focusing instead on its impact on impulsive purchasing tendency. This probably plays a mediating role between olfactory stimulation and customer responses and to our knowledge, has not been studied. This also gives the investigation a rather exploratory twist given the availability of few theoretical foundations (Joreskog and Wold 1982, cited by Akrout 2010, p. 129). The second constraint was a small sample size (Akrout 2010), and the third comprised of the problems in characterising the variables' normal distribution (Hair, Ringle and Sarstedt 2011).. Fourth was the presence of a dummy variable (absence vs. presence of scent) (Akrout 2010).

4.1 Validity of scales

Examining internal consistency, convergent and discriminant validity of the scales were established following the recommendations of some authors (Fornell and Larker 1981; Evrard, Pras and Roux 2003). With the elimination of some low-loading items, it was found that the homogeneity of the scale (Table A.2) was provided by acceptable reliability indices (Cronbach's Alpha) and composite reliability superior to 0.8. Convergent validity for each construct measured by AVE (Average Variance Extracted) was also provided exceeding the cut-off coefficient of 0.6 except for the construct "dominance". The cross-loadings also displayed acceptable values to check for both convergent and discriminant validity of the constructs. Concerning model fitting, the SmartPLS issued moderately low squared R^2 at the accepted thresholds (Wetzels, Odekerken-Schröder and Van Oppen 2009). At this level, it should be underlined that estimation via a PLS method provided a single Goodness of Fit (GOF) index used to assess the overall quality of the model [41]. The results of the GOF index indicate average values (close to the average GOF of 0.25), indicating an acceptable fitting of models.

Refer to Table No. A.2

4.2 Hypotheses testing

Through a process of bootstrapping, we tried to validate the assumptions of the importance and significance of relationships (significant path coefficients β and Student's "t" test greater than 1.96). To test the mediating effect of impulsive purchasing tendency in the scent-consumers' reactions relationship, we referred to Baron and Kenny's (1986) approach. As recommended by Zhao, Lynch and Chen (2010), we studied the last three conditions proposed by Baron and Kenny (1986). To this end, we tested two models (Liang et al. 2007). A model taking into account the indirect effects of scent on consumers' responses and a model taking into account

the simultaneous direct and indirect effects of scent on consumers' responses. Note that the SmartPLS software provided only estimates of direct effect. We then calculated the indirect effects via the mediating variable (Wetzels, Odekerken-Schröder and Van Oppen 2009). Finally, to test the significance of indirect effects, we used the Sobel test (Baron and Kenny 1986).

The obtained results (Table A.3) were used to check the three retained mediation conditions. It was noted that the presence of scent positively and significantly acted on impulsive purchasing tendency (H1 retained). Impulsive purchasing tendency mediated the impact of scent on the various tested reactions, in either a full or partial fashion. First, impulsive purchasing tendency was a perfect mediator (full mediation) for identifying the effect of scent on the ease of locating products (H3c retained), on the perception of a product's good quality (H3a retained), on more intense feelings of arousal (H4b retained) and on dominance (H4c rejected). Impulsive purchasing tendency was a partial mediator for testing the indirect effect of scent on a multitude of reactions. Thus, in the presence of scent and impulsive purchasing tendency (partial mediator), it was easy to observe an increase in spending (H2a retained), the amount of impulsive purchases (H2b retained), and the number of impulsive purchases (H2c retained). Moreover, a better perception of the store (H3 retained) and feelings of more pleasure (H4a retained) were noted. Finally, in line with Belizzi et al.'s scale (1983 in Spangenberg, Crowley and Henderson 1996a, p.82), during the purification phases two dimensions were noticed. The first related to attitudes toward products and the second related to the perception of price. Consistent with the literature review, the results indicated no mediation effects on perception of price.

Refer to Table No. A.3

The mediating role of impulsive purchasing tendency in explaining the impact of scent on a multitude of customers reactions was confirmed. All assumptions were validated with the exception of hypothesis H4c. Regarding the construct of the "dominance" (control) reaction studied under H4c, it is important to point out that there is a positive mediating effect of impulsive purchasing tendency. Additionally, note that the construct "dominance" has rarely been chosen by researchers (Mattila and Wirtz 2001). The other two dimensions of Mehrabian and Russell's scale (1974), "arousal" and "pleasure" seem to account for the emotional responses of customers (Ben Dahmane Mouelhi and Touzani 2003).

5. CONCLUSION

Consumers are significantly affected by the store's environment. Baker and Parasuraman (1994) even assume that through a marketing inference process links are established between the store environment and customers' responses. Based on such findings, some distributors have not hesitated to exploit their store's olfactory atmosphere with the hope of generating approach-based reactions from customers. However, after reviewing the relevant research, it is easy to

observe that it is not sufficient to spray a pleasant scent to generate such behaviour. As an illustration, Maille (2005), although she confirmed the effect of scent on customers' reactions, found different results relating to customers' reactions for the five tested scents. Research results on olfactory atmosphere remains mixed, hence the importance of understanding the obtained differences, including those caused by individual differences. Indeed, consumers with their various idiosyncrasies interfere with different environmental factors, including olfactory determinants in which they found themselves. We thus attempted to better understand the effect of the interaction between a scented environment and consumers' unique traits of impulsive purchasing tendency and the effect on their behaviour in the store. The results confirm that olfactory atmosphere of a store generates a multitude of customer reactions. These reactions are not primarily limited to cognitive reactions as assumed by some researchers (Morrin and Chebat 2005). The impact of scent seems to be larger. Cognitive, behavioural and even affective reactions rarely supported by previous research seem to be activated by the presence of a pleasant scent in a store. However, the results indicate the importance of mediating variables that trigger such a process. Thus, in the presence of a pleasant scent, consumers are more likely to act impulsively, leading them to spend more, make more impulsive purchases, perceive the store and its products more positively, locate products more easily, and ultimately develop more intense feelings of pleasure and arousal.

5.1 Managerial implications

The results of the study emphasise the fact that an olfactory atmosphere seems to raise customers' impulsive purchasing tendency in a store. The impact of scent on customers' cognitive, affective and behavioural reactions turns out to be mediated by customers' tendency to act impulsively. Under these conditions, store managers should be careful about the type of stimulation they opt for in a sales environment. If the offered products stimulate impulsive purchasing, a pleasant scent in the store may raise impulsive purchases, favouring a more emotional environment in which individuals experience more pleasure and arousal. This finding appears to contradict findings which support the assumption that scent is likely to generate cognitive reactions. However, three aspects deserve to be recalled to better understand the implications of the conclusions reported by other research. First, research on the impact of scent is still very limited. Second, the results of past studies are often inconclusive or even contradictory. Third, no previous study has tested the mediating role of individual traits, mainly impulsive purchasing tendency in the "scent-customers reactions" relationship. It seems important for the manager, before making decisions on the type of atmosphere, to be aware of the power of scents. This seems to be a stimulator of customers' affective, cognitive and behavioural reactions, which, even if it is not direct, may manifest itself through the mediation of impulsive purchasing tendency.

5.2 Limitations and directions for future research

The study had some limitations that should be highlighted. Note that these limitations open the door for new research venues which would reinforce interest in this line of investigation. First, it should be noted that the work was conducted at a single clothing store, tested a single scent and on a convenience sample. Replicating the study on other samples, in other stores and exploiting other scents would improve the validity of the results. Second, other individual traits may be interesting to study, mainly as moderators of the impact of scents on customer's responses. In this regard, some authors (Spangenberg et al. 2006) indicated that women and men are not equally sensitive to olfactory stimulation, which may moderate the impact of scent on customers' impulsive purchasing tendency. As part of the research, the sample consisted mostly of women. Thus, examining the effect of gender was not possible. Third, individual traits may be important in explaining variations in behaviour due to olfactory manipulations. It would be convenient in the future to include more sensory stimulations to better understand consumers' reactions to a store environment using a holistic perspective.

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Zhao X., Lynch J.G., Chen Q. (2010), Reconsidering Baron and Kenny: Myths and truths about mediation analysis, *Journal of Consumer Research*, 37 (2), 197-206.

Zemke D.M.V., Shoemaker S. (2007), Scent across a crowded room: Exploring the effect of ambient scent on social interactions, *Hospitality Management*, 26, 927-940. Appendix: Sample characteristics

Relative frequency (in %)				
Women			Men	
82			18	
Age				
Less than 15	15-24	25-34	35-49	50-64
0.5	26.5	43	25	5
Educational level				
University			High school	
86			14	
Job				
Senior	Mid-level	Office	Artisan	Labourer	Retired	Student	Inactive
27	11.5	15.5	5.5	2.5	1	30	7

Table A.1: Purification of scales

Scales	KMO	Eigenvalue	Explained variance in % by extracted dimension	Cronbach's alpha (α)
Mehrabian and Russell (1974)	0.796	Pleasure: 5.30 Stimulation (arousal): 2.37 Dominance: 1.38	Pleasure (5 items): 29.45 Stimulation (6 items): 13.18 Dominance (5 items): 7.7	0.81 0.77 0.72
Spangenberg et al. (1996)	0.794	Store: 2.66	Store (4 items): 53.29	0.82
Belizzi et al. (1983)	0.604	Products: 1.71 Price: 1.01	Products (3 items): 42.83 Price (1 item): 25.12	0.61
Weun et al. (1998)	0.823	Impulsive purchasing tendency: 3.42	Impulsive purchasing tendency (5 items): 68.39	0.88

Table A.2: Validity test and fitting of models

Constructs	AVE	Composite Reliability	Cronbach's Alpha	R²	GOF
Dominance (4 items)	0.55	0.83	0.72	0.13	0.26
Arousal (4 items)	0.62	0.87	0.80	0.13	0.29
Pleasure (4 items)	0.63	0.87	0.80	0.07	0.21
Store (4 items)	0.65	0.88	0.83	0.09	0.25
Impulsive purchasing tendency (5 items)	0.68	0.91	0.88	0.04	0.17
Product (2 items)	0.71	0.83	0.60	0.09	0.25

Table A.3: Test of the mediation effect of impulsive purchasing tendency in the scent-
customers' reactions relationship

Relationships	Condition 2 X -> M	Condition 3 M ->Y/ X->Y controlled	Condition 4 X ->Y/ M->Y controlled	Effects
Scent -> Impulsive purchasing tendency -> Expenditure	$\beta = 0.19$ t = 2.8	$\beta = 0.27$ t = 4.65	z = 2.4 p = 0.01	Partial mediation (positive)
Scent -> Impulsive purchasing tendency -> Amount of impulsive purchases	$\beta = 0.19$ t = 2.8	$\beta = 0.34$ t = 6.71	z = 2.58 p = 0.00	Partial mediation (positive)
Scent -> Impulsive purchasing tendency -> Number of impulsively purchased items	$\beta = 0.19$ t = 2.8	$\beta = 0.36$ t = 7.0	z = 2.49 p = 0.01	Partial mediation (positive)
Scent -> Impulsive purchasing tendency -> Good perception of products quality	$\beta = 0.19$ t = 2.8	$\beta = 0.19$ t = 2.6	z = 1.9 p = NS	Full mediation (positive)
Scent -> Impulsive purchasing tendency -> Good perception of the store	$\beta = 0.19$ t = 2.8	$\beta = 0.31$ t = 4.71	z = 2.41 p = 0.01	Partial mediation (positive)
Scent -> Impulsive purchasing tendency -> Ease in locating products	$\beta = 0.19$ t = 2.8	$\beta = 0.18$ t = 2.4	z = 1.8 p = NS	Full mediation (positive)
Scent -> Impulsive purchasing tendency -> Pleasure	$\beta = 0.19$ t = 2.8	$\beta = 0.27$ t = 3.92	z = 2.17 p = 0.02	Partial mediation (positive)
Scent -> Impulsive purchasing tendency -> Arousal	$\beta = 0.19$ t = 2.8	$\beta = 0.27$ t = 4.24	z = 0.94 p = NS	Full mediation (positive)
Scent -> Impulsive purchasing tendency -> Dominance	$\beta = 0.19$ t = 2.8	$\beta = 0.21$ t = 2.14	z = 1.7 p = NS	Full mediation (positive)