Would you like a cup of coffee after dinner?

A review on the influence of environmental stimuli on customer behaviour in restaurants

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Abstract

In this review there will be given a summary on the existing literature about the environmental stimuli in restaurants. First the theoretical background provided consisting out of 3 leading theories regarding stimuli and behaviour. After the background the different stimuli will be discussed based on four different sense: eyes, nose, ears and skin. After chapter there will be presented an implementation for restauranteurs. The review makes use of different studies out of different fields of research that are either directly linked or closely linked to restaurant environments. The review concludes that various stimuli can influence behaviour, the best way achieve maximum effort is when stimuli are congruent to each other. However, the congruent stimuli tactic is debatable, because the chance on information overload is highly possible.

Contents

Introduction

In a restaurant the customer faces many impressions, especially if they have never been there before. These impressions will have a certain impact on the way customers will behave in the restaurant. When consumers go to a fine-dining restaurant, they will behave differently compared to when they visit a quick-service restaurant. This might be because the reason for visiting is different. Quick-service restaurants are not known for their astonishing environmental atmosphere, because the purpose of visiting this kind of restaurant is to get food fast. The role of a fine-dining restaurant is more hedonic (Yuksel & Yuksel, 2003). The consumer visits these restaurants because of the atmosphere and the food. Each impression in a restaurants environment is caused by a stimulus, each stimulus can be presented in a different way by the restauranteur, the manager/owner of the restaurant. This way it is possible for the restauranteur to provide the customer with an image about his restaurant. Not every restauranteur has time and money to experiment with different stimuli and different reactions on these stimuli. By creating an overview of multiple articles it is possible to have all the articles per stimulus group placed together discussed and criticized, to provide knowledge for the restauranteurs on how to implement the discovered information on the different stimuli in practice.

In this overview the topic of environmental stimuli in a restaurant environment will be discussed. This be done with by a literature study, combining various articles about stimuli, perception, restaurants and behaviour, to different environmental stimuli a customer might face in a restaurant. The different environmental stimuli will be divided on the base of how they can be perceived, the senses will therefore be the leading theme throughout the review. The visual stimuli will be divided in lighting, colour and interior, because each subgroup of stimuli cannot be compared with the other or combined under a common flag. The olfaction stimuli will not have a subgroup, this is not necessary since olfaction stimuli are more similar compared to other sense stimuli. The sound stimuli will be divided into two groups, noise and music, since music is too large of a topic to be combined with noise. The last are haptic stimuli which are divided in touch and temperature, because these are the two ways that haptic stimuli can influence a customer. The sense of taste will not be discussed in this review since this is not an environmental stimulus, but more a stimulus linked to the food perception. Food perception also relies heavily on the different senses such as for instance the visual appearance of food, the smell and the texture of the food. Despite the notion that food perception also relies on individual differences it has been excluded from the review, because the stimuli observed by food perception are not the same as those observed in the perception of the restaurant environment. First of all the review provides some theoretical background about how environmental stimuli might affect human, more specifically how environmental stimuli affect behaviour of customers. In this theoretical background one theory about the effects of stimuli on behaviour will be explained and two more fields of research regarding this phenomenon will be explained to provide a better view on the approach of some of the articles that will be discussed.

Theoretical background

SOR Model

The SOR model (Fig 1.) is one of the most used models in literature regarding the effects that stimuli might have on the behaviour of people. The model was founded by Mehrabian and Russel (1974). They claimed that stimuli affected the emotional and cognitive state of being an individual and that the emotional and cognitive state of the individual has influence on the behaviour of that individual. Their model implies that stimuli can provoke the individual to think and feel. In this model a stimulus is considered a change in the extrinsic environment, for example it could be the sound level of a conversation or a symbol of a restaurant. These stimuli trigger feelings of pleasantness, arousal and dominance. Dominance is proven not to have a significant effect on the behaviour of the individual (Donovan & Rossiter, 1982; Donovan et al., 1994; Russell & Pratt, 1980) and is not used in the determination of whether a stimuli influences behaviour. However, pleasantness and arousal are determining variables that influence the emotional and cognitive state of the individual. So, stimuli can be measured on the scales of pleasantness and arousing and then can be subscribed to the behaviour of an individual. An individual can either show approach behaviour, behaviour showing that the individual is more likely to 'approach' and could be considered happy. The opposite of approach behaviour is avoidance behaviour, behaviour showing that the individual does not want to be in that environment and tries to avoid it. This behaviour could be considered as unhappy. As stated earlier this model is the most used in literature, yet it is incomplete according to other researchers. They argue that the PAD scale (pleasantness, arousal, dominance) does not provide enough information to tell what influence a stimulus has on the emotional state (Richins, 1997; Eroglu et al., 1998, Babin et al. 1998). It is not detailed enough to capture what stimulus affects which emotion on what level. Therefore, they offered a different scale using 9 emotions that can be linked to behaviour (Babin et al., 1998). Despite the debatable limitation of the SOR-model this review takes it as its main theory for predicting and explaining how certain stimuli can result in behaviour. There are different fields of research that have done studies towards the topic of stimuli influencing behaviour of customers. This review will present two fields that provide the most information on the area of environmental stimuli influencing behaviour.
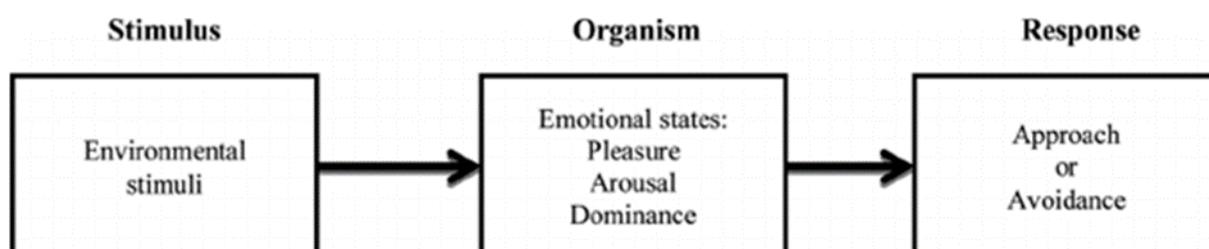

Figure 1. Mehrabian & Russel's SOR model (1974)

Sensory Marketing

Sensory marketing is a field of research that looks at the consequences of sensory perception (Houston & Gassenheimer., 1987; Unnava et al., 1996), such as the influence of music on mood (Gardner, 1985). The studies conducted in this field of research are mainly focused on retail stores, since these are the places where managers want to manipulate consumers in buying the most profitable products. Research looks for instance to what extent product design can make the product more appealing to the customer and also how environmental stimuli can affect the customers' perception and therefore behaviour. Krishna (2012) was able to capture the field of sensory marketing in one framework (Fig 2.)
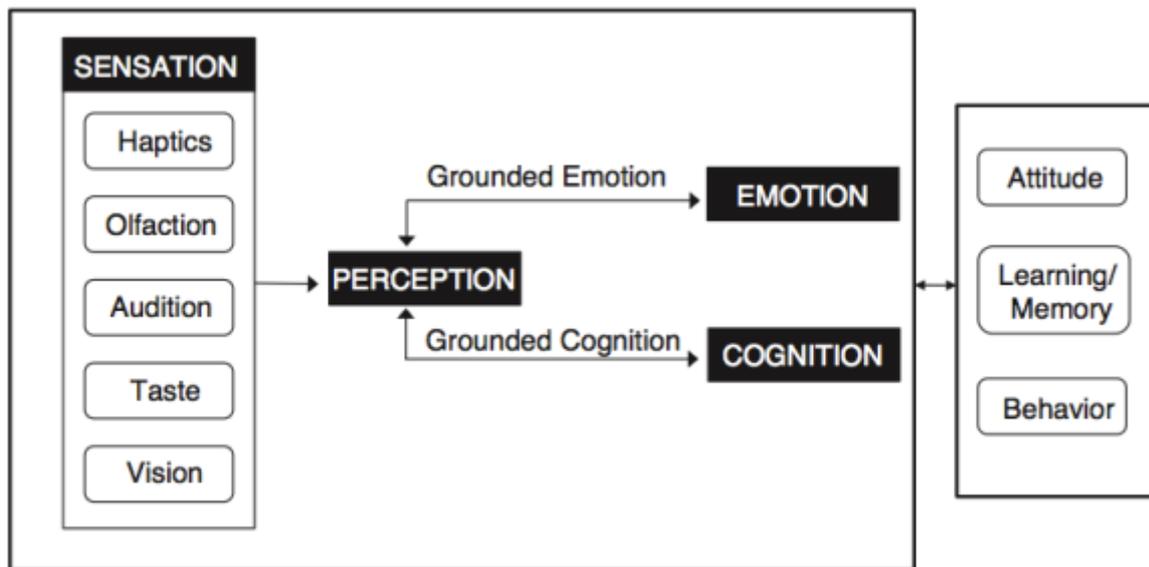

Figure 2. Sensory marketing framework by Krishna (2012)

The framework indicated that stimuli can be perceived in five different ways. These ways stand for the different senses that humans use to perceive the world around them. Humans use their eyes to perceive visual stimuli, ears to perceive auditory stimuli, tongue for taste stimuli, nose for olfactory stimuli and their skin and body to perceive haptic stimuli. The perception is influenced by the already present cognitive and emotional attitude towards stimuli and in combination with the sensation perception has influence on behaviour. As stated before sensory marketing is mostly targeted at retail environments, this makes it difficult to use studies and apply them to a restaurant environment which is generally considered as a service environment. Despite this distinction restaurants are not completely different from bakeries or supermarkets. They are both trying to persuade customers into buying their products and both have employees who are there to provide extra service. For that reason there is a possibility that applications in a retail environment to manipulate stimuli have more or less the same effect in a restaurant environment. So the restaurant environment is defined by the customer on product but also on service, Bitner (1982) created a model that reveals how different elements influence customer's approach and avoidance behaviour.

Servicescape

Bitner (1982) created the servicescape model to provide researchers with a structured overview of for all different service environments such as hospitals, banks, retail stores and restaurants. Bitner based her model on research conducted earlier in this field. The first researcher to make a connection between structured environmental stimuli and behaviour was Kotler (1973). He pioneered the conceptual research towards environmental stimuli with his framework 'Atmospherics', which looked at ambient conditions. The base of her framework is also related to the SOR model of Mehrabian and Russel (1974) as will be explained later in this chapter.

Bitner looked various stimuli and how they could affect the customer in the internal and external responses (Fig. 3). The servicescape model consist out of three different environmental dimensions: ambient conditions, space/function and signs and symbols and artifacts. These dimensions contain types of stimuli that are linked to each dimension. Stimuli linked to the dimenison of ambient condition can be light, music and smell. Stimuli that are linked to the dimension of space/function could be density, layout and obstacles and the last dimension signs, symbols & artifacts contain stimuli that have meaning to customers such as language, clothing and signboards.
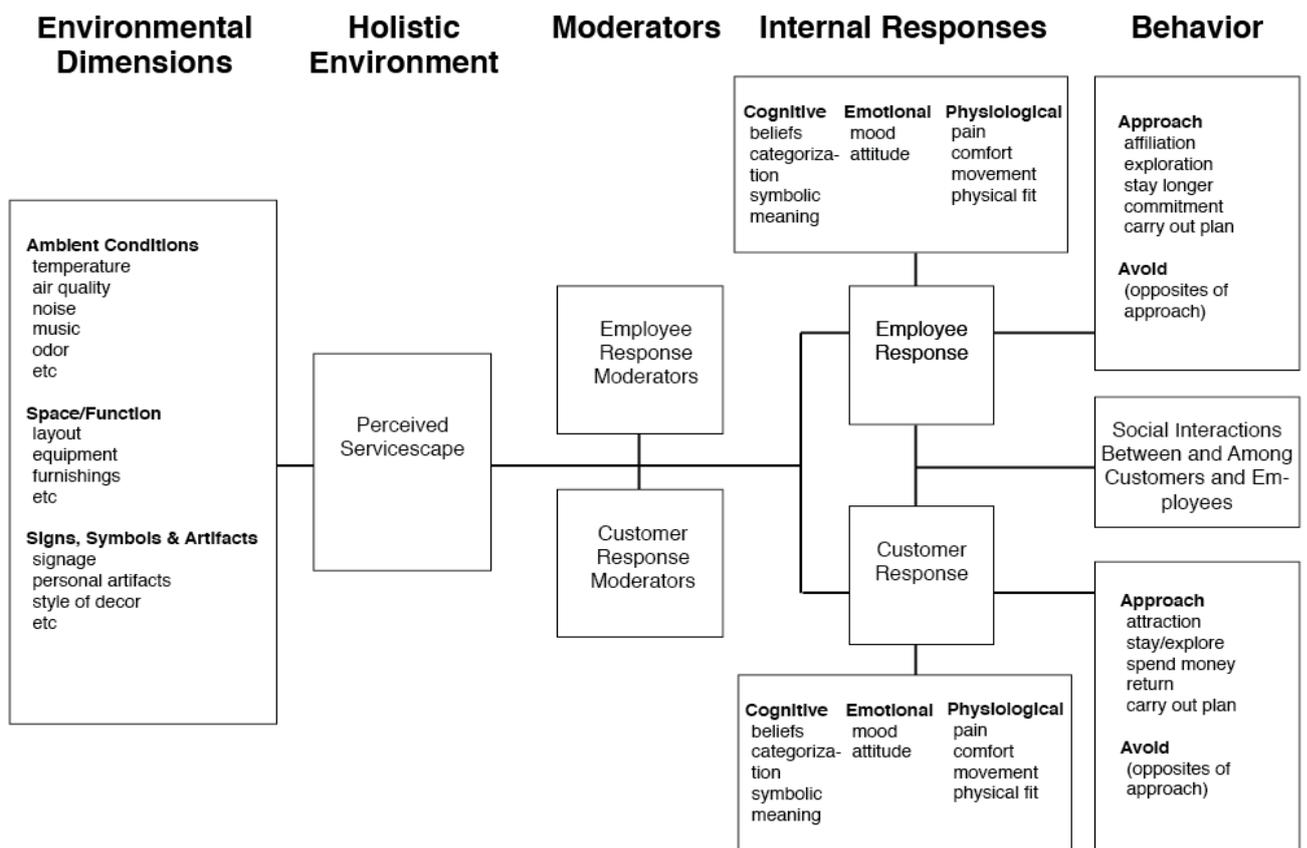

Figure 3: Bitner's servicescape (1982)

These stimuli are perceived hollistically and then two responses follow an internal response and an external response according to Bitner's model. The perceived dimensions can influence an internal response in three different ways: on a cognitive, emotional or physiological level. It has been proven that the servicescape affects consumers cognitively and emotionally (Babin & Darden, 1996; Chebat et al., 1993; Dube-Rioux et al., 1995; Swinyard, 1993; Yalch and Spangenberg, 1990), but not for physiologically aspect. Sherman et al. (1997) suggest that the cognitive response influences planned actions, such as restaurant choice whilst the emotional response influences unplanned actions, which in the case of restaurants would be the decision to take coffee or tea after the dessert.

The other response is external and as seen earlier in the SOR model, can either consist out of approach or avoidance behaviour.

Bitner's model is based on stimuli that are man-made (Bitner, 1982) and that can be transformed and manipulated by humans. That is why most studies reference the servicescape model in their research because it shows how managers and restauranteurs themselves can change the environment of their restaurant or retail store to influence the consumer. The stimuli target by the framework are objective and managerially controllable, but the subjective, difficult to measure objectively and managerially uncontrollable stimuli are left out of this model (Edvardsson et al., 2010; Zomerdijk & Voss, 2010). Furthermore, this model does not deal with natural and social servicescape (Rosenbaum & Massiah, 2011) and if these other servicescapes are left out certain stimuli are missed and the perception of stimuli will not be holistic anymore. Despite, the conclusion that Bitner's model is not complete, the model provides a good focus on dimensions that could influence the behaviour of customers. It also offers stimuli that should be included in this review as environmental stimuli.

These models provide theories on how stimuli might affect the customer behaviour in restaurants. The SOR model provides an insight in how a stimuli influence approach and avoidance behaviour. The idea behind the SOR model is also exploited in sensory marketing, but this field of research focuses on the perception of the stimuli through the senses and points out that stimuli are perceived holistically. The last concept of servicescape combined the SOR-model and sensory marketing. It adds the environmental dimensions which should be taken into account when implementing stimuli manipulation. The following chapters will discuss different stimuli (e.g. a pink colour) and will explain per subcategory (e.g. Colour) what effect they could have on behaviour. The subcategories are grouped together based on by what sense they can be observed. In the next chapter stimuli that are observed through the eyes, are discussed.

Visual

Sight is the first sense that will be discussed. Sight is one of the distance receptor, which means that stimuli are perceived on a distance. Also it is difficult to perceive stimuli through the eyes without being conscious of the perceived stimuli. This way customers can be influenced in their behaviour by consciously perceiving and actively adjusting their behaviour to the stimuli. For instance, if the restaurant has a red logo, but the customer does not like the colour red, he shows avoidance behaviour and can explain why this happens. If he did not consciously perceives these visual stimuli, he cannot explain his avoidance behaviour. There are different stimuli that could have an effect on the conscious and unconscious perception. The following stimuli are the easiest to manipulate by the manager and cover most of the possible stimuli perceived with the eyes.

Lighting

Lighting is one of the factors that can be controlled by managers of restaurants. Through controlling the light the managers are empowered to make customers see certain key elements of the restaurant in a different perspective so that the customer will adjust their image of the restaurant. Not a lot of research has been done in the empirical area of the effects of lighting in restaurant. Yet many conceptual frameworks that measure ambient factors include lighting as one of the important items for determining the ambience (Bitner, 1982; Han & Ryu 2009). If lighting plays a role in ambience of an environment (Kotler, 1973; Bitner, 1982), then it should have an additional influence on the ambience and therefore behaviour of customers.

Lighting can be used in different ways to achieve various goals. One of these ways is to either brighten the lighting in a restaurant, dim it or in some experimental cases do not have any light at all. Research by Areni and Kim (1994) addressed the feeling of comfort in different levels of lighting in-store environments. They came to the same conclusion as Baron (1994) who stated that customers are experiencing a higher feeling of comfort at a low level of lighting. Dimmed lights also cause customers to stay longer in restaurants (Wansink, 2004), this can be linked to the feeling of comfort experienced by the low level of lighting. There is one more type of lighting which is no lighting. Scheibehenne and colleagues (2010) were one of the first to research behaviour in a fully dark restaurant. They concluded that eating in the dark limits the visual cues of customers in such a way that the customer tends to "overeat". This phenomenon is caused by the lack of visual cues which a customer normally uses to indicate portion sizes. By eliminating all the visual cues the customer cannot see his portion size and is not able to estimate how much he has eaten. Both of these studies point out that if the light gets dimmed customers are becoming less cognitive consumers (Cajochen, 2007). Customers have less visual stimuli to process. Therefore, they also have less visual stimuli to gather information from and they become less alert (Cajochen 2007) and less inhibited (Hirsch et al., 2011). The lowered mental alertness or the feeling the comfort explain why customers stay longer in the same environment (Wansink, 2004; Areni & Kim, 1994), but it is unclear whether it is the lowered mental alertness, being less aware of where you are, or the feeling of comfort makes customers stay longer.

Other studies focused on the impact of lighting on the image of stores (Baker et al., 1994; Baker et al., 1992). A study by Wansink & Van Ittersum (2012) conducted a research on the lighting of fast-food restaurants. In the study lighting and music were adjusted to a fine-dining experience condition. The results showed that customers dining in the manipulated area were staying longer and eating less compared to the regular dining area. By manipulating the lighting customers acted like they were in a different kind of restaurant by showing behaviour conform regular fine-dining behaviour. Moreover, Knez and Kers (2000) revealed that indoor lighting can be used to convey an emotional message to all kinds of people, since different groups based on age and gender react differently to various forms of lighting. However, Helmefalk and Hultén (2017) claimed that lighting had no positive effect on emotions. Further research implies that the type of lighting used in an environment affects the perception of the environment and behaviour of people (Kurtich & Eakin, 1993), yet the statement is called into question by Wang et al. (2016), who did not find a significant difference between LED lighting and other light sources.

So, one thing can be concluded for the influence of lighting on behaviour: dimmed lighting makes customers more comfortable in their environment (Baron, 1990; Areni & Kim, 1994) and lowers their mental alertness (Cajochen, 2007). According to Spangenberg and colleagues (2000) sleep-inducing scents in combination with lighting contribute to a less alert state of mind and Mattila and Wirtz (2001) argue that the same effect happens when lighting is combined with certain music tempos and volumes, which will be addressed later in the review.

Colour

As with lighting colour is an aspect that is perceived through the eyes. Several studies have proven that colour can influence a person's mood and behaviour (Goethe, 1840; Frank & Gilovich, 1988; Soldat et al., 1997). Some colours trigger positive internal responses where other colours trigger negative responses (Goldstein, 1942). Also perceived colours can make presumptions about the attractiveness of objects (Stephen et al., 2009; Stephen & McKeegan, 2010). This chapter focusses on how colour influences the mood and behaviour of customers and how it can apply to a restaurant.

Each colour consists of three factors: hue, saturation and value (Fairchild, 2013). Hue is the extent to which a colour is similar or dissimilar to the colours yellow, blue, red and green. Saturation is the lightness of a colour and value contains a more abstract meaning to an individual. The meaning given to a certain colour may strongly depend on the culture of the individual (Chebat & Morrin, 2007; Fehrman & Fehrman, 2004), there has been made a connection between saturation and value to a level of arousal. Saturation of a colour has a positive effect on arousal contrasting to value which has a negative effect on arousal (Valdez & Mehrabian 1994). Furthermore, high value has a positive relation to calmness (Gorn et al., 1997), which is interesting since these findings can help customers relax during their stay at a restaurant. These three factors are essential for communicating with customers by the use of colours.

Goldstein (1942) discussed that the wavelengths of colours influence arousal. If the wavelengths are long, which is the case for colours such as red and yellow, the individual will be more aroused. Whilst by shorter wavelengths, e.g. green and blue, the individual will feel calmer. Different colours affect the mood of customers. Take for instance the primary and secondary colours. The colour red is linked to feelings of excitement and arousal that can be connected to the long wavelengths. Orange comes close to the feelings of excitement but not as intense (Wexner, 1954), it symbolizes a more energetic, extrovert and sociable feeling (Mahnke, 1996). Yellow is based on more medium wavelengths, which means it still arouses but more in a cheerful way (Clarke & Costall, 2007) and less intense as orange (Murray & Deabler, 1957), it also hints at a more optimistic and happy experience (Fraser & Banks, 2004; Odbert et al., 1942; Wright, 1988). On the other side there are purple, blue and green. Purple has very short wavelengths and this makes up for a calm feeling. Furthermore, purple is acknowledged as a formal colour (Murray & Deabler, 1957; Odbert et al., 1942; Wexner, 1954), providing quality and together with pink considered a feminine colour (Mahnke, 1996). Blue stands for intelligence, trust, efficiency, (Fraser & Banks, 2004; Mahnke, 1996; Wright, 1988) and also has the calming effect due to the wavelengths. Green evokes a feeling of connection with the outdoor (Clarke & Costall, 2007) and a feeling of security (Kaya & Epps, 2004).

The influence of colour does not only apply to the colour of objects but also to the colour of the lighting. Most of the time bright lighting makes people more aroused (Cajochen, 2007). The interesting part is that the roles of colours are turned around. Blue light evokes a greater alertness and causes the brain to process information faster compared to situations where yellow light is used (Lehr, 2007). Unfortunately there is no literature regarding the topic why this happens.

So, colour psychology is a complex area of expertise. This might be since colours in many studies are seen as an independent factor rather than dependent factors, meaning that colours are always depending on situational factors and intrapersonal factors that influence the perception of them. The variety of factors influencing the perception of colour and little knowledge about the effects of colour (Fairchild, 2015), makes the complete control over colour impossible (Committee on Colorimetry of the Optical Society of America, 1953).

Interior

Next to the colour of objects the whole building can be used to provide stimuli as well. This chapter will be focused on a few different factors that can play a major part in the emotional response and behaviour of the customer. The focus in these factors will lie on the stimuli and cues that can be perceived by sight. Beginning with the floorplan which is the lay out of the restaurant (e.g. where the chairs are placed). The floorplan guides the customers to their seats but also reveals the crowding of the place, which is the next topic that will be discussed. At last, the role of different signs and symbols in the interior will be discussed.

To begin with the floorplan, if a manager sets up a restaurant he needs to make a blueprint of what his restaurant is going to look like, where he places the tables and chairs and where the kitchen will be placed. The kitchen has the most important role in a restaurant, since it is where the food is prepared. There are two ways of presenting the kitchen, an open or a closed kitchen. Many studies show the correlation between visibility of food and adjusted eating behaviour in a positive way for management (Cohen & Babey, 2012; Painter & Prisecaru, 2002; Sobal & Wansink, 2007; Rollings and Wells, 2016; Wansink, 2004; Wansink et al., 2006). Therefore an open kitchen would be preferable, since the customer eats more if the food is visible. Another study even pointed out that customers tend to give higher tips when there is an open kitchen (Rollings & Wells, 2016).

Another part of the floorplan is the placement of the seats, tables and couches, which can influence a person to stay longer (Thompson, 2003). By furniture placement a manager can provoke feelings of status to the customer, define personal space and regulate privacy (Robson, 2002). The way tables are placed, if they are centred in the middle of the room or in the outer ring, can make a difference in the way customers feel comfortable. Often in Western culture the customers are not happy to sit in the middle of the room. This is because they experience a decrease in privacy since all the other customers can look at them from all angles. Due to this 'goldfish bowl' effect (Kimes & Robson 2004) customers go home early. However, in Chinese culture it is common that customers seated in the middle of the restaurant obtain status, since they are the centre of the whole restaurant (Robson, 2002).

The way furniture is placed can also make the room seem very dense and overcrowded, even when only 50% of all seats is taken people evaluate a restaurant as overcrowded (Seaton, 1968). Overcrowding causes customers to evaluate the restaurant negatively and lower the satisfaction (Buckley, 2009; Ryan & Cessford, 2003; Saveriades, 2000). People tend to consume less and leave faster if the room is perceived to be crowded. (Harrell et al., 1980). In contrast to these findings there are studies that point out the good things of a crowded place.

Tse et al. (2002) examined how different levels of perceived crowdedness affected consumers' perceptions of food quality, restaurant image, and price level. The study concluded that consumers tend to attribute the high level of crowding to high food quality, good restaurant image, and reasonable food price, suggesting that crowdedness can be considered as an indication of quality or reputation of products and/or services. Accordingly, when consumers are uncertain about restaurants in unfamiliar places, they might choose a more crowded one, assuming that high crowdedness of the restaurant indicates better quality of food and service (Tse et al., 2002; Ha et al., 2016). This results in the paradox of crowding (Robson, 2000) since crowding is experienced unpleasant (Hui & Bateson, 1991), but it also attracts other people.

Signs and symbols can also play an important role in guiding behaviour. When common descriptive labels are used the customer will have a lower level of imagination (Lutz & Lutz, 1977; Miller & Kahn, 2005; Wyer et al., 2008). This is mostly the case with the restaurant name or with the names of dishes, such as 'Sushi from Li' or 'Grilling and chilling'. Still, if the commonly described label is supported by a picture

or a symbol people tend to have a more positive attitude towards the label. Continuing on the menu cart, Yang and colleagues (2009) found theoretical proof for the exclusion of monetarily cues on the menu cart. However, after testing their hypotheses they did not find significant evidence to confirm this, but they suggested that removing a dollar sign of the cart would not be too much effort compared to the potential benefits to gain from it.

To conclude, it can be stated that the interior can provide some guidance for desired behaviour. This is often due to the social factors playing a part. The customer tips more because he can see the chefs busy for him, the customer has a face to link to the food to which he can show gratitude in the form of a tip. The customer gets attracted to a restaurant, because it seems crowded and assumes the food must be good, too many people on the other hand influence the atmosphere in a negative way. The negative influence of crowd density will be discussed in the chapter about noise. Signs and symbols unconsciously influence the customers' behaviour by providing visual cues to abstract construct and offer more clarity to the consumer regarding the abstract constructs. By changing the interior the restaurant manager can make the restaurant more attractive to consumers.

Implementation

Restauranteurs can use the lighting to make customers less alert. If customers are less alert they put less thought into decisions (Woodruff et al., 2008). This way customers might be persuaded more easily in buying coffee after dinner. By changing the colours of a restaurant the restauranteur can target different groups of customers for instance younger customers, who are looking for excitement, colours like red could be a key element to get them interested. The other way around a fine-dining restaurant, which needs to look exclusive, will have more value by using purple. The restauranteur can also shape the interior of the restaurant to make it look like more customers are inside. One of the oldest tricks is to put customers near the windows to let people outside believe there are more people inside since it seems crowded through the windows.

Conclusion

Visual stimuli can influence customer's behaviour. The lighting can be manipulated to cause lesser mental alertness and let customers stay longer, but it is most effective in combination with other stimuli such as music and darker colours. Lighting can be used to stimulate approach-behaviour. Colours on the other hand, have an effect on the approach/avoidance behaviour without the assistance of other stimuli. However, there are no guidelines for the manipulation of colour, because there will never be complete control over the stimuli colour. This depends on the control of other uncontrollable variables. The interior can also be manipulated to guide customers into approach behaviour by making the restaurant look attractive, but it can cause avoidance behaviour as well when the restaurant may seem too crowded. It is hard to draw the line when a particular visual stimulus affects the approach behaviour of customers, since other variables such as stimuli perceived through other senses, intrapersonal responses or situational factors that cannot always be controlled, seem to have influence on getting untampered results. However, it can be stated that visual stimuli do have influence on approach/avoidance behaviour.

Smell

Smell can also be used to guide the behaviours of consumers. Scent can be useful tool for stores to draw customers to their shops (Bone & Ellen, 1994). This trick has been applied for centuries by bakeries, but also more recently by stores such as nut shops, coffee shops, tobacco shops and cinema's (Borowsky, 1987; Shappro, 1986; Simmons, 1988). Since a restaurant also relies on the scent that comes out of the building, it is worth looking into the ways scent could influence behaviour in a restaurant environment. There will be looked at the ambience scent, this is the scent that cannot be linked to a specific object in the environment. A manager is not capable of 'choosing' the flavour of the food, but he is able to manipulate the ambience scent in the restaurant. Not many research has been done towards ambience scent influencing buying environments (Bone & Ellen, 1994; Gulas & Bloch, 1995), especially not for restaurant environments, therefore the information provided will come from various disciplines that study scents. First an explanation will be provided on how scent can influence emotion and behaviour, which is followed by a description of the effects of scent on behaviour. After this there will be various implications on how the effects can be regulated in a restaurant environment.

Scent consists of three components: **affective quality** that indicates the pleasantness of a scent, **arousing nature**, referring to the arousing effect of a scent and **the intensity**, which indicates the strength of the scent (Engen, 1982; Moskowitz, 1979; Schiffman, 1979; Woskow, 1968). A study by Krauel and Pause (2001) argued that customers in retail stores might respond on a subconscious level to scent. This implies that is perceived through the limbic system in the brain, which is also the system that processes emotions. Therefore, research pointed out that around 75% of the emotions are generated by smell (Lindstrom, 2005). This is not a coincidence since the SOR model (Mehrabian & Russel, 1974) suggests that emotions are affected by the level of pleasantness and arousal, which also relate to two of the three components of scent. The last component intensity relates to the impact of scent and correlates negatively to the emotional reaction (Doty et al., 1978; Henion, 1971; Richardson & Zucco, 1989). This means that if the scent is stronger in smell the more negative the emotional response may be and the more likely it is to elicit avoidance behaviour.

Scent can influence consumer behaviour, but only when the scent is spread over a larger environment, such as a retail store (Mattila & Wirtz, 2001; Spangenberg et al., 2006; Haberland, 2010). The large environment will lower the intensity and heighten the effects of scent. Yet still there are personal characteristics such as age, gender (Kivity et al., 2009) and culture (Damhuis, 2006; Schleidt et al., 1988), that affect the perception of scent, which is also the case with colour. These intrapersonal factors cause an individual to perceive the scent as pleasant or unpleasant, which will guide the approach/avoidance behaviour (Spangenberg et al. 1996). Since manipulating a factor that could be perceived in various ways, it might be good to look at another way. For example, Henshaw (2014) found that smell had a strong connection to memory and nostalgia (Dove, 2008; Engen, 1991; Henshaw, 2014).

Scent can trigger two different sorts of memories. The first level are pleasant associations. Consumers are capable of remembering scents for very long periods of time (Engen & Ross, 1973; Zucco, 2003; Schab & Crowder, 1995) and much longer than other sensory inputs (Ebbinghaus, 1913). Although consumers might not know what the scent is called (de Wijk et al., 1995; Lawless & Engen, 1977), they can retrieve particular experiences and the emotions they felt while smelling the scent (Aggleton & Waskett, 1999). These retrieved emotions are sometimes even better remembered then 'facts' (Halloway, 1999). When smelling a particular scent the consumer might retrieve the emotion, which could influence their behaviour. The second level consists of scents linked to shopping. In this case scents can be linked to specific retailers, such as bakeries with a unique smell of bread. Furthermore, ambient scents can be in play as well, because it has been shown it improves product evaluation (Bosmans, 2006) and helps in brand recognition (Morrin & Ratneshwar, 2003). Both levels are based on retrieval of memories and can be useful for managers to apply to their ambient scent.

Another interesting effect of scent is the time spent in stores. The time spent in a store increases due to the influence of scent (Mitchell et al., 1995; Knask, 1989; Leenders et al., 1999; Nixdorf et al., 1992; Gueguen & Petr, 2006), because consumers perceive that they spent less time in the store (Spangenberg et al. 1996). Consumers are subconsciously distracted from time. Bone and Ellen (1994) also performed an experiment in which they had two rooms, one scented and one unscented. Respondents spent more time performing a task in the scented room. Therefore, ambient scent can make consumers stay longer and it even may increase the money spent by young customers or impulsive consumers (Morrin & Chebat, 2005; Spangenberg et al., 2006).

Scent can make consumers spent more time in a store because of the pleasantness of the scent. A scent becomes more pleasant if is it congruent with the thematic level of other sensory cues and arousal, such as high arousal scent and high arousal music (Mattila & Wirtz, 2001) or Christmas scent with Christmas music (Morrin & Chebat, 2005). Not only music works, congruent pictures work also on the pleasantness of a scent (Sakai et al., 2005). Next to 'time spent in the store', the shopping experience becomes more pleasant when the ambient scent is in line with background music. However, incongruent scents can have a positive influence on product evaluations, for instance the food in a restaurant, but this is more depending on the value an individual attaches to the particular scent (Bosmans, 2006)

Different scents can affect the mental state of a consumer by either relaxing or arousing the mind. Some arousing scents are: peppermint (Ho & Spence, 2005; Moss et al., 2008; Warm et al., 1991; Warrenburg, 2002), rosemary (Moss et al., 2003; van Toller, 1988) and citrus scents like lemon (Diego et al., 1998; Warrenburg, 2005). These scents are known to heighten the senses and increase their awareness. On the other hand there are scents to lower the senses and provide a relaxed feeling. For instance: lavender (Lehrner et al., 2005; Moss et al., 2003), chamomile (Moss et al. 2006), ylang-ylang (Moss et al. 2008), geranium (Morrin & Ratneshar, 2000) and spiced apple and eucalyptus (Lorig & Schwartz. 1988). Nevertheless, perception plays an important role since men and women perceive scents differently (Milinksi & Wedekind, 2001). Generally, women are more sensitive to scents compared to men (Milinksi & Wedekind, 2001). However, grapefruit seemed to have somewhat the same effect on

men and women and therefore would be a good scent to use when consumers need to be aroused.

Furthermore, several studies pointed out that the impact of ambient scent can be enhanced by congruent verbal information (Herz & von Clef, 2001), visual cues (Elder & Krishna, 2010; Krishna et al., 2010b) like colour (Kemp & Gilbert, 1997; Schifferstein & Tanudjaja, 2004; Österbauer et al., 2005) and music (Mattila & Wirtz, 2001). Studies regarding colour found that the rating of scents can be improved. Incongruent scents also have influence but significantly less (Bosmans, 2006).

Implementation

For a restaurant scent is very important, since scent is an important factor in food perception (Small & Prescott, 2005) but also the ambient scent can have influence on the customers. According to Spangenberg (1996) managers need to keep three things in mind. Firstly, managers need to find a distinctive scent, one that is unique for their restaurant. If the customer has had a nice experience he will link the experience to the scent. So, the next time he smells the scent, he will be reminded to this experience. Secondly, managers need to make sure the scent is congruent with the environment (Schifferstein & Blok 2002). For instance by using lavender in a fine-dining restaurant to create a relaxing mood. Lastly, the manager needs to find a cost-efficient way to use ambient scent in his advantage. A possible solution could be a fragrance machine that not only fills the environment with the scent the manager wants but at the same time filters the environment for unwanted scents. Furthermore, the use of lemon or pine scents is not recommended since this could remind customers too much of cleaning, which would indicate that the environment was dirty and just has been cleaned.

Conclusion

In conclusion, ambient scent has an influence on approach behaviour by providing a relaxing environment in which customers want to stay for a coffee. Furthermore, the influence of ambient scent is the highest when the scent is congruent with its environment. Concluding that ambient scent has the most influence if it is congruent to other environmental stimuli

Sound

This chapter will be about the effects of sound on the behaviour of customers in a restaurant environment. Sweetow and Tate (2000) wrote about the topic of experiencing the diner and they claimed that you do not only experience food through your mouth, but it is also influenced by the ears. The noises and sounds in a restaurant can make a difference in how customers perceive the restaurants environment. In this chapter the topics of noises and music will be discussed. These two topics cover most of what is written about the sounds in a restaurant environment. With the topic noise, the most annoying sound will be discussed as well as some independent noises that could influence behaviour. The other item 'music' is also part of restaurant noises, but since there is much more detailed research conducted to this specific part of restaurant noises, this topic will be covered in a broader perspective.

Noise

There is a continuous presence of noise in restaurants. The presence of noise can be pleasant or unpleasant to customers. The average level of dB in a restaurant is between 80 and 90 dB (Kang & Lok, 2006), while the ideal level of dB in these environments is estimated to be between 70 and 75 dB (Chen & Kang, 2017). So the average noise level is too high, which could result in pleasant stimuli turning into unpleasant stimuli. One of the reasons the average noise level is higher is due to crowd density (Meng & Kang, 2015; Nie & Kang, 2015). Some research has been done on the extent of the noise of crowding contributes to the influencing of behaviour (Li & Meng, 2015; Meng & Kang, 2015). Crowding can lead to the Lombard reflex (Lane & Tranel, 1971). This reflex is a reaction of a speaker on his environment, when the noise around him is too loud he raises his voice so he can be heard. However, by this reaction he also raises the noise level for people around him, who also start raising their voice. This 'endless' loop' leads to an increased level of noise and can explain why conversation of others is found to be the most dominant noise source in a restaurant. Next to being dominant 'conversation of others' are also rated as the most annoying noise in a restaurant (Christie & Bell & Booth, 2006), probably since it limits social interaction with others (Christie, 2004). Other research points out that frequency of conversations may differ between dinning styles. Meng and colleagues (2017) found that when the dinner table is centralized with one plate, there tend to be more conversations. This in turn leads to a higher noise level.

Furthermore there are various other sounds that can be heard in a restaurant. For instance a coffee bean grinder or the cash register printing receipts. According to common experiences these sounds can either be perceived extremely positive of extremely negative, which does not help a restauranteur filter such sounds. In the case of a coffee bean grinder, it can produce an annoying sound, but on the other hand represents a certain quality for the coffee. Although more scientific studies should be conducted towards other restaurant noises and how they might influence perception and/or behaviour (Lindborg, 2015). Lindborg (2015) provides a small indication of certain sounds in his SSR taxonomy-concept that should be eliminated in a restaurant. For instance screeching chairs, clanking dishes and footsteps, but on the other hand he also lists cooking and glassware sounds as likeable and useful sounds, which should be promoted.

One sound that is not necessarily considered part the environment, but more part of the product is the sound of food. The sound of the crispness of food is the strongest auditory indicator for food (Vickers, 1982). Customers use this sound as indicator for the quality of the food (Zampini & Spence, 2004). The better the sound the more quality customers prescribe to it. Yet the crispness sound is not the only auditory indicator (Christensen & Vickers, 1981) but it could also be a way of influencing the behaviour of consumers, since in a full restaurant customers can hear the sound of food at other tables. If customers can hear this they can adjust their cognitive and emotional image of the food and therefore the restaurant, which in the end might influence the behavioural pattern of the customer.

Different sound stimuli have different impacts, the same as with sight stimuli and smell stimuli concluded earlier in the review. Moreover, the impact of an individual sound stimuli can differ per person. Donavan and Rossiter (1982) implied that there are two kinds of people and the way they perceive sound stimuli. There are screeners, who are less sensitive for noise and will be less aroused by it and non-screeners, who are high sensitive for noise and experience more arousal in a noise environment. Because the non-screeners are more sensitive for sound, they are the first to get annoyed by it and will start to show avoidance-behaviour (Luz, 2005). Therefore, the background noise should not be too high otherwise customers will leave because they are annoyed by the sound level. There is, however, one other major sound source that could have an important role in the determination of the sound level: background music.

Music

Music has been proven to reduce anxiety (Peretti and Swenson, 1974; Stratton, 1992), increase a positive mood (Fried and Berkowitz, 1979), decrease frustration (Caspy et al., 1988) and even lighten a depression (Pignatiello et al., 1986). So, many restauranteurs applied this to their restaurant in the form of background music. The background music in a restaurant can indeed influence the mood and the behaviour of the consumer (Bruner, 1990; Langrehr, 1991; North & Hargreaves, 1996). More specifically it may influence eating behaviour, dining rate, meal volume and sensitivity to food (Milliman, 1986; Lily et al., 2008; Woods et al., 2010, Fiegel et al., 2014) and the notion made earlier that the background music influences the conversation behaviour. According to the literature (Dowling & Harwood, 1986; Bruner, 1990; Herrington & Capella, 1994) music consists out of six structural elements: tempo, volume, mode, pitch, rhythm, and harmony, which individually provide each piece of music with a unique character. However, Burner (1990) argued that these six elements might not be enough to create a good scale to measure musical impact. On the other hand, Herrington and Capella (1994) presented evidence that any of these structural elements was able to affect customers in retail environments. The elements that affected the customer the most were volume and tempo (Herrington & Cappella, 1994) and to capture the other elements of music most studies (Zhang et al. 2016; Wu & Mohi, 2015, Huang et al., 2012) investigated different sorts of music rather than each element individual. Furthermore, the influence of music on the duration of the stay of a customer in the same environment is also a topic which has been given much attention and will also be addressed in this review.

Background music can be a tool for the restauranteur to determine the overall volume in the restaurant. Since the Lombard effect causes customers to talk on average 7 dB louder than the environmental sound level (Woods et al., 2010), restauranteurs need to lower the volume of the music lower to reach an ideal sound level for conversations. Cohen and colleagues (1990) even suggest to use background music to distract customers from crowd noise. Several other studies (Beverland et al., 2006; North et al., 2000) pointed out that music has a dissatisfying result when it is not in the 'zone of tolerance'. If music is played as background music at 60 dB, customers tend to be more satisfied compared to foreground music, which is played at 80 dB, and no music (Kang & Meng, 2012). This indicates the zone lies somewhere around 60 dB at which customers are the most satisfied.

The other major predictor is the tempo of the music, which can either be fast or slow. A faster tempo often can be related to an increase in arousal level (Vanderark & Ely, 1993). According to Kellaris & Altsech (1992) the ideal tempo for listeners varies between the 68 and 78 beats per minute (bpm). Furthermore, there are several studies that confirm the correlation between arousal and music (Caspy et al., 1988; Holbrook & Anand, 1990; Rohner & Miller, 1980), but there are also studies indicating that the tempo and volume influence the pleasantness of an environment rather than the arousal (Holbrook & Anand, 1990). Nonetheless, both theories refer to the PAD model, which earlier demonstrated the effects of pleasantness and arousal on approach/avoidance behaviour. Also interesting is that stimuli perception concerning music can vary between sexes. Females tend to react more positively to music at lower volumes than men, what could lead to different behaviour under the same circumstances (Kellaris & Altsech, 1992).

Due to the complexity of the other elements, these are combined and grouped together defined by different music genres such as pop, rock and classical music. Research by To and Chung (2015) gave insight in the effects of music genres on the speed of conversations and acoustic comfort of customers. They found that jazz, rock-and-roll and classical music each had a distinctive effect on the speed of conversations. Additional research to classical music (Yalch & Spangenberg, 1990; Areni & Kim, 1993; North & Hargreaves, 1998; North, Shilcock, & Hargreaves, 2003) showed an increase in the spending intentions when classical music was played compared to situations when Top40 music was playing in the background or when there was no music at all. Agmon (1990) even argued that specific music genres could influence customers to buy more expensive products. Areni and Kim (1993) found that classical music influenced customers in a wine cellar to buy more expensive bottles, which could imply that classical music can influence customers in a restaurant to buy more expensive products on the menu.

Furthermore, Yalch and Spangenberg (2000) found that familiar music such as Top40 music, which is popular and could be perceived as familiar, influences customers to spend less time in a retail environment, despite perceiving their in-store time as respectively long. There are three different theories on how familiar music influences this phenomenon (Kellaris & Kent, 1992). Ornstein (1969) argued that if a customer can remember more about a period of time it will appear to be longer, so the customer recognizes the music and will remember it better indicating that a longer period of time has passed. Fraise (1984) argues that time duration is coherent to noticing

changes within a certain period. The beginning and ending of a familiar song will be earlier recognized and so change will be more noticeable, hinting at the time duration perceived as longer. The last theory comes from Zakay (1989) who figured that an increased number of distractions would reduce the memory of a time period, familiar music is easy to notice and can form an easy distraction so that the customer would have less memory of that period of time. These different theories show that there is a connection between familiarity and perception of stay but it remains unclear on the details how this exactly happens. This makes it difficult to implement for restauranteurs. Other studies demonstrate that loud music of high tempo music causes customers to eat and drink much faster (Smith & Curnow, 1966; Milliman, 1982; Roballey et al., 1985; Milliman, 1986; McElrea & Standing, 1992) and playing slow music is resulting in customers spending more time in the buying environment (Knöferle, 2012; Milliman, 1986).

Implementation

For restaurateurs the soundscape of their restaurant can be a key to win over customers. By playing background music around 60 dB the conversations of the customers do not get annoyingly loud and will not hinder others in their dining experience. Also the background music may help to cover up the other annoying noises such as the coffee bean grinder. Furthermore, restauranteurs can vary in music genre over the course of the day. For instance more Top40 music in restaurants where there is a relatively young group of customers and more classical music and/or 'golden oldies' for a restaurant with older customers (Herrington & Capella, 1994). As seen before congruency between different stimuli groups has a strong effect on the customers (Palmer et al., 2013). Palmer and colleagues (2013) found that fast and louder music is linked to lighter and yellowish colours compared to slow music which is related to darker and bluish colours.

Conclusion

To conclude sound stimuli can play a part in determining the dining experience of customers. Different sounds can evoke feelings of annoyance that will result in avoidance behaviour. On the other hand, the music can influence customers to experience more feelings of approach behaviour and less perception of time. It should, however, be noted that when research conducted with different music variables it can be difficult to isolate specific results from one another, generating a lower internal validity in researches experimenting with music variables (Kellaris & Kent, 1992)

Haptic

The last sense this thesis will discuss is the sense of touch. Compared with the other senses, touch is a sense that needs direct contact with a stimulus to feel or experience it. Little research has been done on this topic in restaurant and retail environment, which makes it difficult to get a good overview what implementations restauranteur might change in his restaurant to make the customer stay longer. The review will contain two elements that will be taken into account since these are the two main groups of stimuli for touch-sense found in the literature. The first one is touch itself, it contains an overview regarding the one thing customers will touch for the entire visit in a restaurant, their seats. The other stimulus is also there for customers to notice the entire stay, the temperature. After these stimuli are discussed there will follow some implementations for restauranteurs and a conclusion.

Touch

The first to point out an evaluative design for the touching of products, were Klatzky and colleagues (1987). They presented four items to what extent the likeability of a product could be summarized. These items were texture, hardness, weight and temperature. This design was made for products on a shelf, but can also be applied to the seating in a restaurant. The texture depends on whether fabric is used, which fabric is used and whether the entire seat is covered. Some fabrics are tougher than others and feel less comfortable such as jute which is less comfortable than silk. Furthermore, Grohmann and colleagues (2007) argued the effects of the texture and hardness for the quality of the product. So for a restaurant to have customers sitting in upholstered seats would indicate that a restaurant does not want customers sitting on quality seats. The hardness of a chair or couch can be determined by the filling. A chair can have no filling, which makes it less comfortable to sit on but it can also be filled with foam or feather to enhance comfort for customers who stay for a long time. The weight of a chair can also part in comfort, since a heavy chair, couch or booth cannot easily be moved from a table so stand up of sit closer to the table what can lead to irritation of the customer. The last aspect named by Klatzky and colleagues (1987) is the temperature. The temperature of a seat can be important for a customer, because a hot seat can give the customer the feeling he is not the first to sit on that place. It makes the customer feel less special, which is a negative feeling and will trigger avoidance behaviour.

There is not much research on the different sort of seating in restaurants. Little research presented booth seats as most preferred seat in restaurants under the older population, followed by chairs with arms. The older population also rated chairs with wheels under them as unacceptable in a dinning environment (Ghiselli, Lee, & Almanza, 2014). Despite this useful information, the article lacks an explanation as to why older people prefer booth seats and detest swivel chairs. Other research also conducted by the same group of researchers did not help to provide the explanation even arguing that booth seats are not ideal for older people since they are hard to get in and to get out of (Almanza et al., 2016). This research, however, can be useful in predicting what other age groups would prefer for seats. Booth seats are hard to get out of (Almanza et al., 2016). This would be a general rule not just for older people. Chairs with arms could be preferred by others groups as well since every age groups

face the same problem of putting their arms somewhere that is not the table. However, there is not much evidence in general to support certain theories and more empirical research has to point out whether theories can be proven right or wrong.

Temperature

The other factor that has an influence on the touch sense is the temperature. Temperature can be experienced in two ways: a hot or cool sensation.

Anderson and colleagues (1996) conducted a research to uncomfortable temperature rates. They found that these uncomfortable temperatures, too hot and/or too cold, showed increasing state of hostility (Anderson et al., 1996; Anderson et al., 1995; Anderson et al., 1997), in this the definition of hostility means that the respondents reported higher on the descriptors "upset" and "distressed". Lam et al. (2011) investigated the effects of temperature and found that customers of casino's felt physically uncomfortable due to too hot or too cold temperatures and poor air quality. The comfortable temperature range lies between 14 degrees Celsius and 34 degrees Celsius. Temperatures outside this range are argued as uncomfortable, yet inside this range temperatures between 24 and 26 degrees Celsius reported the least hostility (Anderson et al., 1996; Anderson et al., 1995).

Not only does temperature influence feeling of distress, but it also affect the body. A warm sensation inside the body helped individuals become aware of muscle tensions so that this tension could be released (Tihanyi & Köteles, 2017). For people to feel these warm sensations inside them, it would be better to create a colder environmental temperature for people so that the whole body temperature decreases and the warm sensations could be noticed earlier. Furthermore, a warm environment increases the heart rate and decreases perceived arousal, while on the other hand cold environments decrease the heart rate and increases perceived arousal (Anderson et al., 1995, 1996). The decrease in perceived arousal in warm environment also causes a feeling of sleepiness (de Dear et al., 2013).

Next to the influence on the body, hot and cold have a psychological influence. For instance in the research by Williams and Bargh (2008), in this experiment people were given a cup of coffee to hold in the elevator and after this elevator ride they had to evaluate a targeted person's personality. The respondents holding a cup of hot coffee graded the person's personality significantly "warmer" than respondents who were given a cup of cold coffee. Warm objects can influence an individual's perception of other people and the perception of warmth and the evaluation of a personality will also be categorized in the same memory, so that each time the individual thinks of that person, he thinks of a "warm" memory (Niedenthal et al., 1999). The connection between temperature sensation and psychological warmth has also been supported by neurological research (Insel & Young, 2001). Therefore, a restaurant with a warm environment higher than the ideal temperature might induce psychological feelings of warmth and trust.

Despite the proven influences that temperature might have on the arousal and therefore behaviour of customers, there are also studies that emphasize that these findings need to be placed in perspective. For instance individual differences of respondents in the perception and evaluation of haptic stimuli such as the comfort of seats or the temperature of the environment and differences in experimental

conditions (Filingen et al., 2017; Schepers & Ringkamp, 2009). On the other hand, thermal stimuli go hand in hand with light and sound stimuli (Amano et al., 2017), arguing that the combination of various stimuli does influence large groups of people.

Implementation

Restauranteurs can use the information about the seating easily to their advantage. While choosing the interior they need to use the space efficiently. It is possible for them to have booth seats, considering they are can easily fill the space against the walls, so the space is used more efficiently compared to chairs but above all else booth seats are preferred by at least one group of customers (Ghiselli et al., 2014). On the other hand a booth seat lacks movability and is fixed compared to chairs which are easily movable, this is useful for the restauranteurs as he can frame density, which has been proven earlier to have effect on the customer behaviour. Furthermore, restauranteurs can set the temperature themselves so if they want the customer to feel less alert, they raise the temperature. A customer who is less alert, notices less stimuli, both positive and negative, which could lead to less avoidance behaviour and for the customer to stay longer. If the restauranteur wants his customers to feel more aroused, he should lower the temperature, but never outside the ranges by Anderson et al. (1996). The restauranteur, however, needs to pay attention to how high he sets the temperature since too high temperatures can cause sweating. Sweating is a very negative effect of raising the temperature, since sweating during a dinner with other people might make the customer feel insecure and induce avoidance behaviour from the environment. Furthermore, sweat has a specific overwhelming scent that might overrule the scent the restauranteur is trying to spread in the environment.

Conclusion

Concluding haptic stimuli can influence the customer in various ways, by differentiation in temperature or changing the seating. Yet, all the findings should be placed in perspective like most of the other stimuli that are investigated in this review, haptic stimuli are also influenced by other groups of stimuli (Amano et al., 2017). Due to the lack of empirical evidence for haptic stimuli in restaurants, restauranteurs are depended on themselves to complete the challenging task to find the right combination of haptic stimuli and visual of sound stimuli.

Discussion

In the first chapter about the theories behind the influences of stimuli on behaviour, only one theory concerning the effects of stimuli on behaviour by Mehrabian and Russel (1974) was presented and explained. However, this is not the only model that theorizes the effects of stimuli on behaviour, see for instance the Gestalt theory (Gurwitsch, 1964). Furthermore, the model is criticized by other researchers (Richins, 1997; Eroglu et al., 1998, Babin et al. 1998), because of the PAD-scale with which it tries to conceptualize the transfer concrete stimuli to concrete behaviour output, does not capture emotional responses. The concept of different pleasure and arousal levels cannot be linked to either a positive emotion or negative emotion. If they cannot be linked to either one, according to Babin and colleagues (1998), they cannot be excluded from one another. Therefore, a positive emotion can occur at the same time that negative emotion can occur, making it almost impossible to track whether behaviour came from a positive or negative emotional response.

For this review there was looked solely to the influence of stimuli on behaviour, not precisely how stimuli turned into certain behaviour. This is because there is a still a debate going on if perception of stimuli is firstly a cognitive activity followed by emotions (Lazarus, 1999) or that emotions precede cognitive activity (Pham et al., 2001). Unfortunately, this remains an unresolved topic (Lin, 2004).

Furthermore, the sensory marketing point of view treats all sensory perceptions holistically and most research is conducting in search of congruence between stimuli observed in through different senses. So, most research is focussed on proving that two stimuli are congruent to one another, but there is almost no research that investigates what stimuli are incongruent to one another (Krishna, 2012). More research on what stimuli do not go well together also can help restauranteurs in managing environmental stimuli. Besides the incongruence of stimuli, too much stimuli can cause an information overload (Miller, 1956). When the point of information overload is reached for customers, the effects of the managed environmental stimuli will decrease. The exact point of information overload cannot yet be stated. Therefore restauranteurs do not know how much stimuli they should provide for the customers. The little amount of research done to this topic (Krishna, 2012) should be extended to provide the restauranteurs with more information concerning stimuli overload.

Servicescape is also a conceptual model that is debated by other researchers. The model is criticized because it does not capture all there is to the servicescape. According to Tombs and McColl-Kennedy the servicescape model lacks a social and natural aspect. This review is based on environmental stimuli, but did not include the environmental stimuli that are not manageable for a restauranteur. Stimuli that are influenced by the employees of the restaurant or stimuli occur naturally such as the type of weather outside. These different aspects are not taken into account with the servicescape model and many articles that are used for this review. Furthermore, many groups of stimuli have some flaws as well.

Colour research over a longer period of time shows the adaptation and cultural value of colours might change over time for instance pink was considered a feminine colour (Mahnke, 1996), but this might have changed over in the past decade. The use of older articles was sometimes necessary because there was no earlier article available in some cases. But still in the case of colour research there is still a lot unknown concerning controlling colour perception (Fairchild, 2015) and many other factor playing parts in the implementation of colours to influence behaviour (Committee on Colorimetry of the Optical Society of America, 1953).

Next to the example of colour research all stimuli can be perceived differently. Every customer has a different background and has certain attitudes towards signs, symbols, crowd density, and specific music genres or physically react more to sensations (Michael et al., 2015). This makes the research to these stimuli very difficult since it is very hard for researchers to get to a universal truth when stimuli do not work on the same on each person in a restaurant. The review points that the influence of stimuli on behaviour could be demographically determined. Large groups of people react more or less the same to the same stimulus-manipulation. For instance, people from a western react differently to stimuli compared to people from an eastern culture (Robson, 2002; Kimes & Robson 2004). Servicescape can merely play a moderating role between expectation and reality, the best a restauranteur can hope for is that his servicescape is higher than expected (Lin, 2004). Furthermore, research confirming that multiple stimuli are effecting behaviour once they are congruent are doubted by Homburg and colleagues (2012) who claim that two congruent stimuli indeed have a positive effect but a third will lead to negative results

Then there is an ethical part about servicescape that should be addressed. Servicescape might be a way to influence people in general. This is, however, an unconscious process in which restauranteurs have a big hand, since they are the ones who implemented the stimuli in order to influence the customer. This could be considered unethical, because the customer is not aware of the well-thought marketing strategy behind the jazz music from Louis Armstrong coming out of the speakers. His behaviour is guided to spending more money while he is not aware of it. So he might be spending money he did not want to spend in the first place, but is manipulated to spend it. This is a topic faced by marketers and restauranteurs and they should be asking themselves the question on how ethical stimuli and therefore behaviour manipulation actually is (Henshaw et al., 2016).

Lastly, restaurants are not only designed environments filled will manageable stimuli, there are many more factor playing a part in the determination whether the customer wants to stay longer. Factors such as the food quality, food price and the restaurant image itself (Tse et al., 2002). If a restauranteur wants his customers to stay longer, he needs to put effort in all the factors that he can manage and make the atmosphere as pleasant as possible to make the customers leave satisfied. Also a lot of the information used came from articles based on retail environments. A retail environment shows comparison with the restaurant environment, but there are still big differences between the two environments. Therefore, on a few occasions the information of retail environments is used, but applied to the restaurant environment as a best educated guess.

Limitations & Further research

The review had some limitation to what extent a topic could be explored. This is due to the fact that there is very little empirical research on restaurant stimuli. Therefore, research on other environments that could be compared to the restaurant environment had to be used. An addition on this matter could have extended the review some more. Furthermore, there is a lot of discussion between scientists about what good methods are to measure the phenomenon of stimuli influenced behaviour. That makes reviewing a lot harder since there is sometimes more than one truth. Also the debates about what happens inside the brain while perceiving stimuli did increase the information supply, because the separation of scientists of this matter influences the way of finding new measuring techniques. Establishing a universal truth would combine scientist to find the ideal way of researching the influences of stimuli, on the other hand debate on this matter caused scientist not to narrow their view. Furthermore, more research should be conducted on the matters of haptic stimuli in restaurants, there is some research on the ideal temperature in restaurants, since this is also a distance stimuli that is not measured by the eyes, nose or ears.

Conclusion

Stimuli do influence behaviour of customers. How this exactly happens is not clear. In a restaurant environment there are multiple stimuli that can be perceived either consciously or unconsciously by the customer. The environmental stimuli can be divided in subgroups and their effect can be measured. Visual stimuli can be divided into interior, lighting and colour. The interior can frame customers' perception on the density and lure them inside the restaurant. Lighting can be used to lower the alertness of the customer and make him more at ease. Colours that are more yellowish have a stimulating effect whereas blueish colours have a more relaxing effect. In combination with congruent ambient scents blueish and darker colours cause a relaxed environment (Kemp & Gilbert, 1997; Schifferstein & Tanudjaja, 2004; Österbauer et al., 2005). Furthermore scent can be used in congruence with certain genres of music (Mattila & Wirtz, 2001. The genre of music combined with a congruent scent makes time seem to slow down. Also comfort provided by the seats and a slightly higher temperature can make the customer less alert to ambient stimuli. Concluding that the congruence of stimuli makes the best servicescape environment in restaurants, preferable a more relaxed atmosphere that results in more relaxed customers, who do not look at the time. Customers want to be in this restaurant environment for a longer period of time, maybe long enough to get a second coffee at the end of dinner.

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