Miralem Helme Falk

Multi-sensory cues in interplay and congruency in a retail store context:
Consumer emotions and purchase behaviors
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MULTISENSORY CUES IN IN Replay AND CONGRUENCY IN A RETAIL STORE CONTEXT

Consumer emotions and purchase behaviors

MALTEM HELLFALK

LINNAEUS UNIVERSITY PRESS
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AND CONGRUENCY
IN A RETAIL STORE CONTEXT

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MIRALEM HELMEFALK

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To address the purpose, a sequential method was adopted with four essays. The first essay explores multi-sensory interplay in marketing contexts with a literature review that forms the basis for a research agenda. The second essay employs focus groups to highlight the congruency between cues, products and the retail setting, and identifies which category of cues is in need of investigation. The third essay uses filed experiments to investigate two congruent visual, auditory and olfactory cues (six cues in total) in a retail setting, and their impact on consumer emotion and purchase behavior. The final essay, also use filed experiments to examine and duplicate one cue from each sense, and employs these together in interplay, to show how multi-sensory cues in interplay impacts emotions and purchase behaviors.

This research concludes that multi-sensory cues in interplay in a retail store atmosphere have a greater impact on consumer emotions and purchase behaviors than single visual, auditory and olfactory setting congruent sensory cues. Among single sensory cues, those perceived as complementary in the atmosphere, specifically auditory and olfactory in an already visual dominated atmosphere, have the largest impact on consumer emotions and purchase behaviors. Overall, this research signifies that congruent multi-sensory cues in interplay emerge as reliable predictors for the influence on consumer arousal, valence, time spent, touching, browsing and purchasing. Theoretical and managerial implications are discussed.

Keywords: Atmospherics, Congruency, Emotions, Multi-sensory, Purchase behaviors, Sensory cues, Sensory interplay, Sensory marketing, Retailing.
Abstract


While research has shown the positive impact of sensory cues and cue-congruency on emotion and behavior in retail store atmospheres, these cues have primarily been investigated in isolation or in pairs. Consequently, little is known on how multi-sensory cues in interplay impact on consumer emotions and purchase behaviors. In addition, research has not yet provided any clear conceptualization of congruency in marketing when designing retail store atmospheres, other than stating that some cues are expected to match, therefore become pleasantly perceived. Thus, the main purpose of this research is to examine and show how multi-sensory cues in interplay and congruency can be utilized in creating a retail store atmosphere to enhance consumer emotions and purchase behaviors.

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Firstly, I would like to express my sincere gratitude to my supervisor Prof. Bertil Hultén for the constant support during my Ph.D. journey and related research, for his patience, vision, discussions, and knowledge. His supervision helped me throughout the research and writing of this thesis. I would like to thank him for believing in me, keeping me going when times were tough, and offering me invaluable advice.

In addition, I would like to thank my co-supervisor Dr. Leif Marcusson who helped me to expand my mind and text. I am still impressed by your ability to spot the smallest errors in the writings, and of course for your mental support during this time. I also express particular gratitude to Dr. Clarinda Rodrigues who has offered me valuable insights during my Ph.D., and to my examiner Prof. Helén Anderson whose comments have helped me to develop my research.

It is also important for me to mention the people who have read my research during the seminars and have given me valuable feedback. I would like to thank Dr. Adele Berndt, Prof. Anders Pehrsson, Charlotta Karlsdóttir, Lydia Choi Johansson, Dr. Richard Afriyie Owusu and Dr. Åsa Devine.

Dear Dr. Niklas Åkerman, how many different and enlightening discussions did we have in the corridors during these four years? Surprisingly, these have been very insightful.

I would like to thank the head of the marketing department, Dr. Katarina Zambrell for her superb leadership and support during this time of writing my Ph.D.

I would moreover like to express thanks to my colleague and friend, Andreas Eklund for listening and sharing my worries during the process of writing this thesis. I cannot count the number of times you have helped me and for that I owe you a lot.

Furthermore, I cannot express my gratitude enough to Kalmar Handlande-Borgares Donationsfond for financing my studies and making my Ph.D. possible. Without them, none of this research would have been possible.

Additionally, this research would not have been possible without the support and help from IKEA, and all involved in the process.

Now to the more informal part of the acknowledgements. Going back to the parallel of me holding a torch in the darkness; the ones shining brightest, not necessarily on the path of research, nevertheless most important, are those that shine bright enough for me to see what is important in life.
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Miralem Helmefalk

Kalmar, October 2017

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II. Essay 2

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The introduction chapter presents an overview and a theoretical background. It discusses contemporary theoretical and practical problems within the scope of sensory marketing research in retail contexts, which subsequently motivates the main research question. Furthermore, our research questions respectively contribute to answering the main question and purpose of this thesis. Lastly, an outline for the structure of the thesis is presented.

Imagine yourself walking inside a furniture retail store, following the predetermined path in an almost theatrically assembled setting, which guides your journey through the different product sections, halting you like a tourist with different destinations in mind. While attempting to keep track of the handwritten shopping list you had made earlier, you notice a green eye-catching shelf, almost like a stage, seemingly different from all the others. The contrast draws your attention to the shelf and you feel compelled to examine it. By touching the products, you feel the texture and material and you immerse yourself in the product. The green color of the signs, packaging and decorations signifies associations to life, plants and nature. Suddenly, you smell the vague, almost unnoticeable pleasant scent of a pine tree. Bird sounds are chirping in the background and calm guitar music is playing. Piece by piece, your senses and mind start to pull the different sensory cues into a whole picture. Like a theatrical presentation of a theme, you become a spectator while consuming the experience. You look swiftly at your wristwatch realizing that you have spent more time than intended, and you decide to move on with your shopping adventure. The shopping experience inside the store not only draws attention, but also provides a wellbeing, which ends in you grabbing a product, a behavior that would not otherwise have exhibited.

This visualization represents how a shopping experience can occur in a well-thought-out retail store atmosphere. The experience becomes enhanced...
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1.1 Background

Visualize yourself walking inside a furniture retail store, following the predetermined path in an almost theatrically assembled setting, which guides your journey through the different product sections, halting you like a tourist with different destinations in mind. While attempting to keep track of the handwritten shopping list you had made earlier, you notice a green eye-catching shelf, almost like a stage, seemingly different from all the others. The contrast draws your attention to the shelf and you feel compelled to examine it. By touching the products, you feel the texture and material and you immerse yourself in the product. The green color of the signs, packaging and decorations signifies associations to life, plants and nature. Suddenly, you smell the vague, almost unnoticeable pleasant scent of a pine tree. Bird sounds are chippering in the background and calm guitar music is playing. Piece by piece your senses and mind start to puzzle the different sensory cues into a whole picture. Like a theatrical presentation of a theme, you become a spectator while consuming the experience. You look swiftly at your wristwatch realizing that you have spent more time than intended, and you decide to move on with your shopping adventure. The shopping experience inside the store not only draws attention, but also provides a wellbeing, which ends in you grabbing a product, a behavior that would not otherwise have exhibited.

This visualization represents how a shopping experience can occur in a well-thought-out retail store atmosphere. The experience becomes enhanced
when it involves more senses; hence it makes you more likely to make a purchase. It is therefore important for retailers to utilize the notion of including several senses in their offerings.

This example represents how I originally became interested in sensory marketing. I have spent countless hours leisure shopping, as I find it enjoyable, and have been simultaneously curious about how and why physical retail stores are built the way they are. To me, the creation of a retail store atmosphere was as composed as an orchestra, where every delicate detail had their own part in contributing to the complete shopping experience, convincing consumers to browse longer and to make purchases. For me, it was more than solely purchasing a product, but rather the experience of purchasing. Regardless of whether or not a product, display or brand is exhibited, eventually, they will all be perceived by our sensory organs, as sensory cues, prior to being evaluated. Continuing to ponder on what happens once these cues reach our senses made me reflect on my own psychological reactions and how I found some retail stores to be more enjoyable than others.

While philosophical and psychological literature have recognized the human senses as a tool for gathering information about the external world and for exploration (Marks, 2014), they are most certainly applicable in retail contexts and in analyzing consumers purchase behavior (Morrison et al., 2011). Our senses are commonly described as the organs which provide input to our interpretation of the surrounding world, our emotions and how we as humans behave (Macpherson, 2010). Many ideas in the literature portray how the inclusion of additional senses increases our perceptions and understanding of the external world as more detailed (Macpherson, 2010). Think of how a perceptual experience can be changed by either including or excluding a sense. Taste without scent, or silence in movies would indisputably leave less information for our minds to interpret, hence becoming entirely different experiences. The same rationale could be applied to today’s contemporary retail contexts, where excluding or adding potential sensory input may essentially influence the experiential outcome in terms of emotions and purchase behaviors.

Today it is common that the sensory experience of retail stores is highly visual. Retailers put emphasis on showing prices, goods, information and many other attributes relevant for conducting a transaction between consumers and firms (Hultén, 2012; Spence et al., 2014). Despite the fact that retailers have considered the impact of music and olfaction on consumer emotion and purchase behavior in retail atmospheres (Mattila and Wirtz, 2001; Spangenberg et al., 2005), they have not understood how to fully utilize the five senses together in physical retail stores (Carter, 2013). While both sensory marketing and retailing have provided various approaches to designing retail atmospheres, there are some concepts that are essential when considering the senses in a retail store context. These are sensory cues, emotions, purchase behaviors, interplay and congruency.
To further develop an understanding of the mentioned concepts, I will briefly explain these in a retail context. With respect to the impact cues have on consumers in retail store settings, a widely known model by Mehrabian and Russell (1974), has been used to examine how cues as stimuli for the senses have impact on consumers (e.g. Lwin and Morrin, 2012; Schifferstein et al., 2013). The model depicts the impact stimuli, such as light, sound or scent, has on humans’ emotions, sometimes in terms of valence and arousal (Di Muro and Murray, 2012; Gorn et al., 2001; Russell et al., 1989; Seo and Hummel, 2011). These subsequently facilitate various behavioral responses, such as approach and avoidance behaviors; moreover, they have also been studied in terms of purchase behavior (Donovan et al., 1994). Purchase behaviors are sometimes referred to as the time consumers spend in-store, time spent browsing products or purchasing in a retail atmosphere (Bloch and Richins, 1983; Bloch et al., 1989; Morrison et al., 2011; Spies et al., 1997). To further clarify how consumers feel and behave in a retail store’s specific atmosphere, this thesis undertakes a retail store context in the same manner as of an atmosphere, servicescape or point of purchase (POP) in a retail store (Bitner, 1992; Donovan and Rossiter, 1982; Donovan et al., 1994; Dube and Morin, 2001; Kotler, 1973), meaning the physical environment and its sensory cues where products and services are offered to consumers. A retail store atmosphere is in this thesis hence related to a specific category of products where they are displayed and sold; retailers can create, modify, design and construct various sensory cues there in order to be pleasant (e.g. Michel et al., 2017; Yalch and Spangenberg, 2000).

The senses and sensory cues are not only investigated one at a time, but also in pairs or in other combinations. These are referred to as multi-sensory cues in interplay. There are two similar concepts although being different in sensory marketing. One is multi-sensory interplay and the other one multi-sensory cues in interplay. In order to make a distinction between the two, I define multi-sensory interplay as the interaction between the senses and cues within the mind of the consumer (see Driver and Noesselt, 2008). Although similarly perceived, multi-sensory cues in interplay are cues that together travel in a medium, for example, in air (Gibson, 2014), which can induce various emotions and purchase behaviors. Objects, such as products or elements in an atmosphere can act as sensors, providing cues (Hultén, 2011; Macpherson, 2010). Moreover, since research sometimes labels ‘multi-sensory cues’ as single cues in a retail atmosphere (Spence et al., 2014), to avoid misconception in this thesis, I also include the term interplay.

Furthermore, for sensory cues in a retail atmosphere to have an emotional impact on consumers, the level of congruency between cues and the retail atmosphere becomes highly important. This thesis uses the definition presented by Krishna et al. (2010a, p. 410) who consider: “[...] cue congruence to be the degree of fit among characteristics of a stimulus”. Achieving this fit between the retail atmosphere and sensory cues has shown
to increase purchase rate, preferences, evaluations, perceptions and enhanced purchase behaviors (Jacob et al., 2009; Krishna et al., 2010a; Mattila and Wirtz, 2001).

When retailers match congruent cues, they can in turn modify store atmospheres, allowing the senses to become more receptive and to thereby perceive the atmosphere as more holistic, and hence more pleasant. Research and practice have clearly demonstrated that sensory cues can influence consumer emotions and purchase behaviors in a retail store, such as IKEA (Hultén, 2012; Krishna, 2013). For retail stores and the atmosphere in it, multi-sensory cues in interplay can be of utter importance. My viewpoint is in line with Spence et al. (2014, p. 480) who state that: “Clearly, congruent multi-sensory store environments ought to be rated as more pleasing and engaging to consumers than environments that stimulate fewer of the customer’s senses or offer incongruent multi-sensory experiences”. Thus, for practitioners to fully explore and exploit sensory cues in retail store contexts, they need to understand how and why these congruent sensory cues, individually and in multi-sensory interplay, affect consumer emotions and purchase behaviors.

To further understand the relevance of this research, the practical problems of multi-sensory cues in interplay and congruency in a retail store context needs to be discussed.

1.2 Practical relevance

As mentioned, despite knowledge of the importance of retail atmospheres for consumer experiences (Bäckström and Johansson, 2006), many retailers have yet to comprehend the evident benefits or possible problems of involving all five of the human senses into their marketing strategies (Hultén, 2011; 2015; Krishna, 2012; Spence and Gallace, 2011). Carter (2013) agrees with this notion and discusses how retail brands simply fail to fully utilize the physical environment’s potential in comparison to other marketing channels. This implies that retailers’ physical stores have better opportunities to engage the five senses in a multi-sensory manner than for instance, online stores, which fail to exploit all the senses, as they are primarily visual.

Thus, for physical retail stores to remain relevant, it is crucial that they influence consumers emotionally in order to attract revisits. This shift puts demands on the design of retail atmospheres in order to remain relevant in today’s competitive markets, or as Howes and Classen (2013) state, “A major reason for the sensory revolution in retailing is that physical stores are losing sales to online retailers” (p. 138). Additionally, the authors elucidated the history of retailing, its transformation and how managers have adapted the atmosphere design of retail stores to be pleasant. Therefore, having the senses in mind and how they interact when creating retail store atmospheres can be a
fruitful tool for staying competitive amongst different firms and channels (see Lindstedt, 2016; Mathandel, 2016).

The State of Retail (Wallace, 2015) investigated this notion by surveying consumers' perceptions and behaviors around retail shopping. Despite the indicated trend that consumers visit physical retail stores less frequently, the desire to visit them is still strong. From the same source, TouchPoints (2015) state that the major reason (85%) consumers still wish to pay physical retail stores a visit is because they desire to use all their senses to evaluate products. Moreover, consumers prefer to inspect the products in a multi-sensory manner before making purchase decisions, as in line with the real exposure effect (Müller, 2013). This consequently indicates that retailers that offer multi-sensory experiences can accommodate superior consumer shopping experiences, which is also confirmed in research (Donovan et al., 1994; Hultén, 2012).

Retailers have adapted their marketing efforts with technology and time to include music and scents in-store (Björklund, 2014), but as Carter (2013) points out, the problem is that many do not understand why and how to implement them efficiently, or how cues, when in multi-interplay contribute to the total experience. To illustrate, a manager who wants to modify an atmosphere to be more hedonic, experiential or aesthetic, can rely either on retail designers’ knowledge of which cues are congruent in-store, or simply trust their gut-feeling. While a manager’s gut-feeling may seem reasonable in representing what consumers actually desire, potential risks exist (Bäckström and Johansson, 2006). Thus, it is vital for retailers and managers to understand their customers and how make single cues and cues in interplay congruent to the store’s offerings. Retailers that fail to understand how sensory cues function in relation to the store image, products and retail setting, risk designing cluttered and incongruent atmospheres with negative outcomes on consumer emotion and purchase behavior (Mitchell et al., 1995; Spence et al., 2014).

It is therefore relevant for retailers to understand the underlying rationale behind how to modify retail store atmospheres and its sensory cues to be emotionally pleasing. For instance, studies have highlighted that planning and creating atmospheres that are emotionally pleasing can make the difference between a business success or failure (Bitner, 1990; Turley and Milliman, 2000). Few retailers start out by building up an atmosphere from scratch, but rather continue to improve existing ones. Yet, little is known that can guide retailers in understanding what and how much impact sensory cues actually have on consumer emotions and purchase behaviors in a retail atmosphere. Identifying these would ease the work of modifying the POP to be more lucrative. As mentioned, understanding how congruency works between cues and the retail store context could also provide a great opportunity for managers to design store atmospheres that are more pleasing (Demoulin, 2011). Practitioners are to some extent also co-producers (Etgar, 2008;
Wikström, 1996), and can simultaneously embody the role of a consumer. It can therefore be beneficial for consumers and those that represent consumers to understand how our sensory channels integrate, function and how multi-sensory cues in interplay impact emotions and purchase behaviors in consumption processes.

To illustrate the above, retail stores, such as IKEA can consider and understand how congruent sensory cues could best be implemented for each section in-store. Subsequently, understanding congruency becomes important for the creation of atmospheres in several different aspects. Should the same music be used in the whole retail store, congruent to the store image, or should it be specifically tailored to each product section in-store? Which cues are relevant and how do they function when single in comparison to when they are in multi-sensory interplay? To address these issues, this thesis investigates congruency and multi-sensory cues in interplay in a retail context, more specifically in an IKEA retail store.

### 1.3 Problem discussion

To understand the theoretical problem of this thesis, there are issues that need to be raised and discussed.

Retailing research is constantly investigating and modifying retail store atmospheres to satisfy consumers (Rayburn and Voss, 2013). It is not sufficient to simply supply consumers with functional and logistical solutions, but rather it is also required for some to be emotionally appealing (Ballantine et al., 2015; Holbrook and Hirschman, 1982). A number of retailing studies highlight that consumers require emotional features when shopping (Arnold and Reynolds, 2003). Delivering these shopping experiences requires the point of purchase (POP) to be carefully constructed in line with what consumers find appropriate and expect in retail contexts (Mari and Poggesi, 2013), which according to the authors has not yet been sufficiently addressed in the literature.

Many contemporary marketing studies that aim to create retail store atmospheres have experimentally conducted individual cues, for example, visual as aesthetics, auditory as music, olfactory as scent, haptic as touch or gustatory as taste (Krishna, 2012; Turley and Milliman, 2000). Although according to studies these have evidently been shown to impact consumer evaluations, judgements and purchase behavior, these have undeniably been questioned in a holistic context (Ballantine et al., 2010). Nonetheless, research has little understanding of how to construct congruent multi-sensory cues in retail contexts and to determine the impact each cue has on consumer emotions and purchase behaviors at a POP, thus constituting a problem of uncertainty for retailers (Spence et al., 2014). This uncharted area leaves research an opportunity to examine this problem by addressing what type of
sensory cues exerts the most or least impact; moreover, how these together impact consumer emotions and purchase behaviors in a retail atmosphere individually or in multi-sensory interplay.

As it becomes increasingly problematic to design experiments for each single sensory cue added in the analysis (Ballantine et al., 2010), most multi-sensory research does not examine more than two senses or sensory cues in the same retail setting (Baker et al., 1992; Baker et al., 1994; Mari and Poggesi, 2013). Thus, it becomes difficult to actually determine how significant each single cue is for consumer emotions and purchase behavior when compared to other ones at the point of purchase. Spence et al. (2014, p. 483) agree and state: “Considering the difficulty associated with trying to study multi-sensory atmospherics and the relative paucity of research in this area, further research is clearly going to be needed”. Therefore, to further guide retailers and researchers in designing retail store atmospheres, it becomes important to show how multi-sensory cues in interplay influence consumers compared to single sensory cues and how much each cue impacts emotions and purchase behaviors.

As mentioned earlier in Carter (2013), physical retail stores have the ability to stimulate consumers through all the five senses. However, the knowledge of how to do this most effectively, with the right congruency, balance and intensity between the store image, product and retail settings, is still not fully uncharted.

With regards to cue-congruency when developing retail store atmospheres, it has been found that ten of forty-two atmospheric articles include the concept of congruence, half of which were published after 2008 (Mari and Poggesi, 2013). Despite this, sensory marketing literature has failed to clarify how and why retail stores are affected by the concept of it, except stating: “incongruent environmental cues tend to result in lower perceived unity or less coherent ensemble effects” (Mattila and Wirtz, 2001, p. 278). As previously discussed, the interplay between cues is complex due the contextual perceptions of them (Foster and McLelland, 2015; Sherman et al., 1997; Wertheimer, 1938), emphasizing the importance of congruence and intensity between the cues and environment (Spangenberg et al., 2006; Sullivan, 2002). Crossmodal research in psychology and neurology has tried to investigate this and explain the matchings and synesthesia between the senses (Crisinel et al., 2013; Spence et al., 2013; Velasco et al., 2013). Despite this knowledge, retailing research has not fully understood, nor conceptualized cue-congruency, which is crucial for the success of developing pleasant atmospheres (Spence et al., 2014). The problem in lacking a conceptualized sensory congruency model leaves retailing research consequently eclectic, which subsequently fails to explain how congruent cues can best be employed by retailers to construct pleasant atmospheres. This problem is highlighted in Mari and Poggesi (2013, p. 185) who encourage researchers to continue the investigation of: “the interactions
between different environmental cues and the congruity within them […]”, which they state is needed.

Together, this discussion falls into the still-existing problems when creating retail store atmospheres at the POP, and while multi-sensory cues in interplay and congruency are discussed to solve these issues, they are still in need of further research. More precisely, to advance the theoretical knowledge, I need to understand what research has been conducted in multi-sensory interplay, as sensory marketing is highly interdisciplinary. Moreover, it is difficult to understand the complexity of implementing and all sensory interactions in a retail store, as the number of possible interactions increases exponentially. Thus, in order for the investigation to be feasible to conduct and understand, I must create particular visual, auditory and olfactory cues that ought to be congruent to an existing retail context prior to conducting a multi-sensory experiment. This implies that it is important to know which cues are applicable, while still relevant for the given context.

The following sections elaborate this discussion with specific problems, questions and the purpose of this research.

1.4 Research questions

Main research question

So far, the introduction emphasizes practical and theoretical problems when creating multi-sensory retail store atmospheres. Moreover, research and practice do not offer enough evidence of how and why congruent multi-sensory cues in interplay in an atmosphere affect consumer emotions and purchase behaviors. In order to understand congruency and multi-sensory cues in interplay impact on consumer emotions and purchase behaviors, I need to examine the previously conducted research in multi-sensory literature. Thus, a main research question is formulated:

How do congruent multi-sensory cues in interplay, impact consumer emotions and purchase behaviors?

To address this main research question, I employ four essays. The first one reviews multi-sensory cues in interplay in a sensory marketing context that forms a basis for a research agenda. The second one highlights the congruency between cues, products and the atmosphere in question, and identifies which cues needs to be examined with the help of focus groups. The third one investigates two congruent visual, auditory and olfactory cues each, and its effects on consumer emotion and purchase behavior in a retail context. The final essay examines identical cues, one from each sense, and employs these together as multi-sensory cues in interplay, and how it impacts emotions and
purchase behavior. These essays and their methodological considerations are discussed and presented in the fourth chapter.

**Research sub-question 1**

The gestalt theory (Wertheimer, 1938) and retailing research (Ballantine et al., 2010) have both raised a problem when conducting multi-sensory research. It is difficult to isolate ‘all’ senses and cues in a retail store, as the numbers of experiments increases drastically. The majority of studies that conduct multi-sensory interplay, more specifically, the interaction between the senses within the mind of the consumer, have been examining the effects of sensory cues in pairs (e.g. Churchill et al., 2009; Littel and Orth, 2013; Piqueras-Fiszman et al., 2011). The number of studies that examine combinations of three or more senses is significantly fewer. This signifies that it is harder to conduct studies involving more than two senses and cues, however, it leaves huge gaps of unexplored interactions in designing retail atmospheres (Mari and Poggesi, 2013; Spence et al., 2014). The importance of actually isolating cues, and investigating interactions becomes gradually more relevant to explore, as congruity in retail atmospheres is vital, both for the consumer emotional experiences and for the firm (Dubé and Morin, 2001). However, there is as yet a scarce amount of research that proposes further guidance on what to investigate with regards to multi-sensory interplay and congruence in marketing. To summarize, it is crucial to understand and synthesize the bulk of multi-sensory interplay research and how multi-sensory interplay impacts consumers, congruency and suggestions for further research. To address these issues, a research sub-question is developed:

- **R1. How does multi-sensory interplay impact consumer emotion and behavior, according to contemporary research?**

This sub-question is addressed with the first essay of this thesis, which reviews contemporary research.

**Research sub-question 2**

As previously mentioned, I argue that sensory marketing and retailing literature has not yet provided any clear conceptualization of congruency when creating a retail store atmosphere, but states rather that some combinations are expected and therefore pleasantly perceived (Mattila and Wirtz, 2001). Prior to conducting experiments, many sensory marketing studies establish the fit between cues and retail contexts and have confirmed that it is crucial for the success of an atmosphere (Herrmann et al., 2013; Spangenberg et al., 2006).

Although sensory marketing research is trying to understand how sensory cues fit together, how consumers prefer them, in relation to a POP in a retail store, is not discussed.
Despite being well evidenced and discussed within psychology and marketing (Ballantine et al., 2015; Lavack et al., 2008; North et al., 2015), sensory cues and congruency have not yet been conceptualized and understood in retail contexts. This consequently leaves many questions unanswered within the scope of marketing research and for this thesis. Understanding what kind of sensory cues fit a retail store and its products is crucial for the success of the forthcoming experiments (Bosmans, 2006; Schifferstein and Verlegh, 1996a; Spangenberg et al., 2006).

As this thesis wants to investigate multi-sensory cues in a retail store context, it is crucial that congruency is established prior to conducting the experiments. Thus, understanding how consumers prefer sensory cues at a POP is required. In order to investigate and analyze how shoppers prefer congruency, the following research sub-question is formulated:

- **R₂. What preferences do consumers have regarding how congruent sensory cues should be in relation to products, service and store image in a retail store context?**

This sub-question is addressed with the second essay of this thesis.

**Research sub-question 3**

As mentioned before, the congruency between a retail store atmosphere and sensory cues has been scarcely discussed in literature, thus insufficient knowledge exists for understanding what congruent cues actually impact most. As it can be convincingly argued that visual cues are the most important for consumers, it mainly includes utilitarian properties, such as the building, interior layout, price, product offerings, effectiveness, service and other (Michon et al., 2005; Turley and Milliman, 2000). Nonetheless, I argue that most retail stores (must) have these utilitarian properties in order to operate. A considerable amount of research conducts field experiments in retail stores with an already established atmosphere (Biswa et al., 2014; Guéguen and Jacob, 2010; Yalch and Spangenberg, 1993). The question is, should retailers that want to improve their store atmosphere change, remove or add new sensory cues in order to impact emotion and purchase behavior? This question remains unanswered in research, mostly because few cues are tested and many others are neglected. Ballantine et al. (2010, p. 642) raise this issue and state that: “The typical customer experiences degrees of all these and other stimuli as an ongoing, collective experience”.

To address this sub-question, it is required to investigate the retail store atmosphere beyond two cues and senses (Spence et al., 2014). Similarly, Rodrigues et al. (2011, p. 46) ask: “What sensory cues and stimuli for seeing, hearing, smelling, touching and tasting impact significantly on how consumers perceive and experience different brands?”.
Additionally, in order to understand how different sensory cues can impact consumers in the same retail store context, it is crucial that these cues are congruent to each other and the POP at the retail atmosphere. I therefore formulate the following research sub-question:

- **R₃. What congruent visual, auditory and olfactory sensory cues impact consumer emotions and purchase behaviors in a retail store atmosphere?**

This question is addressed with the third essay of this thesis.

**Research sub-question 4**

Retail stores are indeed perceived in a holistic and multi-sensory manner (Ballantine et al., 2010). Although multi-sensory cues in interplay have been proven to impact consumer behaviors (e.g. Morrison et al., 2011; Schifferstein et al., 2013; Spence and Gallace, 2011), few studies have combined more than two sensory cues when investigating the impact of multi-sensory modified atmospheres on consumer emotions and purchase behaviors. Nor has research been able to pinpoint and compare congruent visual, auditory and olfactory cues when they are separate from an interplay context. This setup would require the single sensory and multi-sensory conditions to comprise the exact same congruent cues, measured both individually and in interplay. To understand the differences between single and multi-sensory cues in interplay, I pose the question:

- **R₄. How do congruent multi-sensory cues in interplay impact consumer emotions and purchase behaviors when compared to single visual, auditory and olfactory cues?**

This sub-question is addressed by comparing the findings from the third and the fourth essay.

**1.5 Purpose**

By discussing the importance of theory and practice, research problems and research questions, a main purpose of this thesis is formulated:

*The main purpose is to examine and show how multi-sensory cues in interplay and congruency can be utilized in creating a retail store atmosphere to enhance consumer emotions and purchase behaviors.*
In addition to the main purpose, two additional sub-purposes are formulated:

- *The first sub-purpose is to increase knowledge within sensory marketing and retailing research by providing a conceptual model of how congruent multi-sensory cues in interplay impact consumers in a retail store context.*

- *The second sub-purpose is to highlight the importance and relevance of cue-congruency in sensory marketing and retailing, and to discuss how it can be implemented to enhance consumer emotions and purchase behaviors.*

I will address the main and sub-purposes by investigating the research questions and examining how congruent multi-sensory cues in interplay, in a retail store context can be superior to employing only a single cue, with regards to the effects on consumer emotions and purchase behaviors.

### 1.6 Outline

The overall structure of this thesis takes the form of five chapters together with four essays. Chapter two begins by laying out the theoretical framework, such as sensory cues, sensory marketing, environmental psychology, multi-sensory interplay and congruency. It correspondingly synthesizes the theoretical framework and how these concepts are of relevance to this research. The third chapter describes the employed scientific approach, the overarching research design, the research approach and the research process. This chapter also presents, the empirical departure and ethical considerations and examines the justification of the overarching methods to ensure the quality of the essays. Chapter 4 presents the methods and reflections of the four essays, with their own designs, sampling, gathering, procedures and summaries. The final chapter discusses findings, conclusions and presents a model, followed by theoretical, managerial and ethical implications.
2. Theoretical framework

This chapter begins with a presentation of the theoretical background and the relevance for the choice of theory. The theoretical framework will then outline the key concepts and theories in relation to the research questions and purpose of this thesis. After discussing the theoretical concepts in a retail and sensory marketing context, these are subsequently synthesized.

2.1 Background

A retail atmosphere is defined in this thesis as a retail environment, servicescape or specific setting, as described in Burns and Neisner (2006), where consumers experience a retail environment and its elements. A retail atmosphere does not require the whole store as uniformed, but can involve different sections within a store, such as at a point of purchase (Bitner, 1992; Donovan and Rossiter, 1982; Donovan et al., 1994; Dube and Morin, 2001; Kotler, 1973; Spence et al., 2014). Thus, I use the view of a retail store atmosphere or context as a product section in-store and point of purchase where consumers have opportunities to conduct purchase behaviors, such as touching, exploring and buying (Hultén, 2012).

To answer the main research question, I explored numerous theoretical routes. This persisted until the theoretical framework was sufficiently reasonable and appropriate. To achieve this, I employed sensory cues as characterized in sensory marketing (Hultén, 2015; Macpherson, 2010), and studied how these function in isolation and in multi-sensory interplay, all this, in a retail context. In some cases, theories overlapped between the concept of retail store atmospherics and sensory cues, which were perceived similarly in research (Ballantine et al., 2010; Spence et al., 2014; Turley and Milliman, 2000). Both will be discussed in this theoretical chapter as well as the motivation for choosing the viewpoint of sensory cues.

To address the latter part of the main research question, namely emotions and behavior, I employed the perspective of environmental psychology, which comprises emotions as a mediator for actual behavior. Moreover, field
experiments, as employed in this thesis, took into consideration the work of Mehrabian and Russell (1974) and Donovan et al. (1994) in order to investigate how stimuli in environments affect people (Biswas et al., 2014; Doucé and Janssens, 2013; Hultén, 2012; Martin, 2012; Mohan et al., 2012). To delimit myself, the concept of emotions and behaviors as employed in this theoretical framework was chosen in regard to practicality and relevance for field experiments, and will be explained later in the theoretical and method chapter.

Searching for appropriate sensory marketing literature to answer how multi-sensory cues in interplay impact consumers compared to single cues, I came across a problematical pattern that many studies had in establishing congruency between cues. Although the concept of congruency was considered in methodological pretests, nowhere was it conceptualized. Neither did the research field offer any well-defined methodological guidance for establishing cue-congruency other than pairing cues (Mattila and Wirtz, 2001). These issues motivated my research and the engagement of an extra step, where the concept of congruency was explored and conceptualized in retail contexts (essay 2) and will be described in more detail later in this chapter.

At first, consumer and brand experience seemed to be relevant components in retail contexts, however, these theories conflicted with the behavioral research I was interested in. For instance, in the literature, brand experience studies tend to examine the relationship between brand loyalty, trust or intention (e.g. Brakus et al., 2009; Iglesias et al., 2011; Sahin et al., 2011). These concepts are mere perceptions and not real consumer behaviors, such as purchasing behavior that I was interested in examining. Similarly, consumer experience is either presented as an outcome or predictor (Bonnin and Goudey, 2012; Schifferstein et al., 2013), but less of a mediator for behavior, which was more appropriate for my research.

Prior to illustrating the linkages between the theoretical concepts in a theoretical framework, it is important to understand what congruency, sensory cues, multi-sensory interplay, emotions and purchase behavior mean in a retail context, and how they relate to each other. Firstly, sensory cues, atmospherics and sensory marketing will be presented. Secondly, visual, auditory and olfactory sensory cues in a retail context will be discussed in relation to emotions and behaviors. Thirdly, multi-sensory cues in interplay in retailing will be presented. Fourthly, congruency, and lastly the environmental and behavioral psychology in marketing will be discussed. At the end of the theoretical framework discussion these will be synthesized and illustrated in a model.
2.2 The perspective of sensory marketing in a retail context

Prior to discussing the perspective of sensory marketing, I will distinguish and explain theoretical concepts, such as sensory cues and atmospherics, which saturate the domain of sensory marketing research in retail contexts.

2.2.1 Sensory cues

In this thesis, the concept of sensory cues is aligned with those described in Gibson (2014) and Macpherson (2010), as information traveling in a medium, such as air, from which our sensory organs are evolved to extract specific information. Regardless of whether this information is heat, light, sound or other cues, it lacks meaning until it is processed by our mind (Vannini et al., 2013). Light is, physically speaking, electromagnetic radiation illuminating objects back on our retinas. These objects can be visually sensed, perceived, then categorized into words, associations and meanings, with regard to their complexity (Macpherson, 2010). This implies that a visual sensory cue can verge on being both simple, such as a color, but also complex, such as aesthetics and written signs. Auditory cues, on the other hand, are the actual medium, the air, vibrating and propagating as a wave. The complexity of these waves is likewise sorted and categorized by our mind to be comprehensible. Thus, a voice can be perceived as a form of auditory cue, but likewise intricate information, such as composed music (Spence and Shankar, 2010). In contrast, olfactory cues are molecules dispersed from objects in-air providing humans information of properties, such as nearby objects or food quality (Hultén, 2015). To summarize, the sensory organs, most commonly known as the eyes, ears, nose, tongue and skin, encode cues when in interplay, puzzle them together and present a subjective version of the present (Macpherson, 2010).

Sensory cues are defined simply as sensory stimuli and have been used in numerous sensory marketing studies (e.g. Biswas et al., 2014; Hultén, 2012; Krishna and Schwarz, 2014; Velasco et al., 2013; Woods et al., 2011).

Moreover, sensory marketing in retail contexts has developed considerably since the modified Stimulus, Organism and Response model (S-O-R) by Mehrabian and Russell (1974). Environmental psychology portrays how humans as organisms are affected by stimuli in our environment. These stimuli, as previously mentioned, are referred to as cues, reaching the sensory organs of humans, which subsequently are processed in the mind of the organism. These stimuli become sensations, when encountering the sensory organs and the organism (Hultén, 2011; Krishna, 2012). The organism, in Mehrabian and Russell's model, could, for instance, from these sensations and perceptions, enhance the emotions, which then cause responses, such as
purchase behaviors. The principles of the S-O-R model have been investigated in a myriad of marketing studies (Babin and Attaway, 2000; Donovan et al., 1994; Madzharov et al., 2015). This thesis recognizes the importance of the environment for the individual and how it can influence certain emotions and behaviors, which is in this thesis portrayed as emotions and purchase behaviors in a retail store atmosphere.

### 2.2.2 Atmospherics

Atmospherics is a marketing oriented concept coined by Kotler (1973), which is similar to the definition of sensory cues in a retail context. Kotler discussed how physical objects in a store’s atmosphere are perceived through consumers’ sensory channels, which causes an increased likelihood of making a purchase. Since then, a considerable amount of marketing and retailing research has investigated various elements in an atmosphere, ‘atmospherics’, and its applications for retail and marketing practices (Ballantine et al., 2010; Michon et al., 2005; Skandran et al., 2011). Turley and Milliman (2000) continued to review research in retail atmospherics and acknowledged the need to further explain, develop and predict consumer behavior. Since then the gaps have been filled by many retail atmospheric oriented studies that have considered, behaviors, (Gilboa and Rafaeli, 2003; Michon et al., 2005; Pan et al., 2008) experiences, emotions, arousal and pleasure of atmospheric cues (Andreu et al., 2006; Ballantine et al., 2010; McGoldrick and Pieros, 1998), and branding (Baker et al., 1994; Beverland et al., 2006; Collins-Dodd and Lindley, 2003). What then is the difference between atmospherics and sensory marketing?

Retail atmospherics can sometimes be mistaken with the approach of sensory marketing (see Soars, 2009; Spence et al., 2014). While sensory marketing might confer cues, atmospherics also include social, quality and service components in a retail atmosphere, which includes more complex concepts and dimensions than sensory stimuli. The difference between these two perspectives is that retail atmospherics is usually within retail contexts, whereas sensory cues in marketing may also investigate other components outside retailing contexts, such as packaging (Littell and Orth, 2013; Reimann et al., 2010), food research (Spence and Shankar, 2010; Woods et al., 2011; Zampini and Spence, 2004), or product design (Chen et al., 2009; Rahman, 2012). One of the few syntheses between atmospherics and sensory marketing is presented in Spence et al. (2014), where the study reviews the human senses in relation to consumer cognitive, affective and behavioral effects in retail store atmospheres.
2.2.3 Sensory marketing
This thesis is within sensory marketing, which is an interdisciplinary research domain with theories ranging from marketing strategy and sociology to psychology (Hultén, 2015). While the field can at first seem eclectic with different theoretical branches, there is an area of concurrence. As mentioned, sensory marketing is examined in various different contexts, everything from hospitality and food industry research (Wansink et al., 2005b), to retailing (Fiore et al., 2000), branding (Tilburg et al., 2015) and product design (Krishna, 2006). Sensory marketing employs the five human senses as a basis for marketing research and investigating consumer emotions and purchase behaviors. To specify, sensory marketing utilizes the understanding of the five human senses as a tool for employing marketing strategies (Hultén, 2011). In order to affect consumer emotions and purchase behaviors with an intended marketing strategy, firms may consider employing sensors, such as speakers or scent dispersers as a means of enhancing a brand experience, which individually have been shown to mediate and increase purchase intent, loyalty and brand equity (Brakus et al., 2009; Zarantonello and Schmitt, 2010).

However, for the time being sensory marketing is represented in three different models with their own strengths and weaknesses. The first model in Hultén (2011) explains how marketing strategies, such as sensors, can impact consumer senses, subsequently enhancing brand experiences (figure 2.1). Combining appropriate cues with the right intensity can consequently evoke superior multi-sensory brand experiences. Retailers can then try to manage these experiences to create customer equity. The limitation of the model is that it does not completely emphasize the mental processes of the consumer. Thus, this perspective leans to strategic marketing and actions that impact concepts that are firm-oriented. Firms can utilize this model as a marketing strategy for enhancing customer equity, which is a firm-oriented concept per se.

Moreover, Hultén (2015) explains the development of the historical evolution of marketing and the importance of sensory marketing for contemporary research. The author furthermore emphasizes the emerging field within marketing that is shifting from cognitive and behavioral science and consumer satisfaction to a sensory and neurological perspective, where it is actually possible to understand the effects of sensory cues. Hultén (2015) states that forces, such as culture, values and digital technology set new demands on marketing. It is no longer enough for marketers to satisfy only basic physical needs, but also emotional, intellectual and experiential needs. This requires new concepts, models and approaches in order to satisfy consumers.
In contrast, another psychological oriented model by Krishna (2012), reviews psychological and marketing literature, and illustrates cognitive, emotional and behavioral effects (figure 2.2). The model illustrates mental processes after a sensory cue has interacted with the sensory organ. These, referred to as sensations, are interpreted by the brain, which acts as a filter moderated by past experiences. This filter is referred to as perceptions, which then influence emotions and cognitions of the consumer. This implies that past experiences are actually very important to how consumers react to sensory stimuli. Even so, cultural and geographical differences should thus occur. Furthermore, emotion and cognition subsequently influence the concepts of attitude, learning and behavior of consumers. However, the model does not explain external influences, such as cues. As good as it is to understand the processes in the human brain, when already subjected to stimuli, it does not offer guidance as to how it should best be applied in a retail contexts.
This marketing problem is addressed by Spence et al. (2014). The model, similar to the one of Krishna (2012), (figure 2.3) also discusses cognition, emotion and shopping behavior of consumers. In contrast to Krishna, the model illustrates the sensory marketing perspective in retail stores. It describes how sensory cues, together or individually, influence affections and cognitions of consumers that in turn impact shopping behavior in retail store atmospheres. Moreover, the authors highlight that the optimum level of stimulation, general positivity, association and direct behavioral effects are influenced by sensory cues. The model is thus very applicable in retail contexts, since it explains how these cues can be employed individually, and in addition, how consumers feel, think and act. However, the model lacks the conceptualization of how these cues interact or interplay with each other in retail contexts.
Taken together, these models represent how cues in sensory marketing affect consumers. Each model has its own strengths and weaknesses and together present the complete perspective of sensory marketing. Marketing in retail stores influence consumers to certain behaviors and highlight these behaviors as mediated by consumer perceptions, meaning consumers are prone to be affected by past experiences, upbringing and demographics. Cultural factors can, and do influence the outcome of brand experiences and are recognized externally in Hultén et al. (2009), and internally in Mosley (2007). This might explain the asymmetrical preferences of cues, such as colors, music, scents, design and foods, which are moderated by demography and geography. However, the evidence for this relationship is inconclusive regarding multi-sensory interplay between senses and whether combinations of senses influence consumer emotions and purchase behaviors. These models can partly help me explain how senses, individually and in multi-sensory interplay, compare in regard to their influence on emotions, and subsequently on behaviors, as in sub-question 3 and 4.

2.3 Environmental and behavioral psychology

To further develop an understanding of how multi-sensory cues impact consumer emotions and purchase behaviors, two critical theories, which constitute every aspect of them, must be explained. These two theories are behavioral and environmental psychology in a retail context.

Furthermore, brief psychological concepts will be illustrated that are common in sensory marketing. As mentioned in the introduction, psychology as a field of research is indisputably one component of many in consumer marketing, even more evidently in sensory marketing research. Thus, it would be naive to ignore the link between them.
Kimmel in Baker and Saren (2010) summarized the concept of psychology to encompass the behavioral and mental processes of individuals. Psychology as such, is interconnected to other disciplines, such as biology, philosophy and other social sciences.

To understand the application of psychology in sensory marketing, sensory cues and how they affect consumer emotions and purchase behavior, it is crucial to stress the perceptions of consumers and the mechanisms that influence their mental processes and subsequently lead to a variety of consumer behaviors. Perception is one of the oldest concepts within psychology and refers to the process of acquiring, selecting, interpreting and organizing sensory information (Marks, 2014). Sensory marketing research usually confers and discusses perceptions in studies where consumers are subjected to different sensory stimuli that have impact on behaviors. Conversely, cognition and emotions are sometimes measured as mediators of such behaviors. In research, many authors employ these concepts to highlight how sensory cues influence peoples’ thought-processes, emotions and behaviors (Chebat and Michon, 2003; Krishna, 2012; Schmitt, 1999; Spangenberg et al., 1996; Spence et al., 2014).

Environmental psychology studies have additionally had an immense impact on sensory marketing and retailing (Vieira, 2013). The stream of literature inquires how stimuli in different environments can affect emotions that subsequently lead to consumer purchase behaviors such as purchase intent and time spent in an environment (Donovan et al., 1994; Mehrabian and Russell, 1974; Russell and Mehrabian, 1978). The view of cues in environments eventually evolved into atmospherics in marketing (Kotler, 1973).

Together, the studies demonstrate that the most common concepts used in environmental psychology and sensory research are; cognition, emotion and behaviors of consumers when subjected to marketing. These marketing activities can be further divided into different sensory cues or stimuli that reaches the human senses (Hultén, 2015).

Regarding the relevance for the research questions of this thesis, only emotion and purchase behavior will be explained and illustrated in order to understand different outcomes from sensory cues in sensory marketing.

2.3.1 Consumer emotion

To understand how sensory cues and multi-sensory interplay affect consumer emotions and purchase behavior, I will define and discuss emotions in retail contexts.

Consumer emotions are far more complex to measure than behaviors, as they are subjective and difficult to recall through self-reports (Nisbett and Wilson, 1977). Emotions can also be influenced by contexts and language abilities, which makes it even more difficult to find patterns or establish
defined as the cognitive mental process, judgements and mental states difficult to directly Mood for instance describes the positive-negative state of consumers elements, such as emotions, mood, and attitudes. While affect generally referred to in research, they still have shown to be sufficiently efficient in explaining insufficiently describe the complete processes that occurs in the mind of; Dubé and Morin, examples of such emotions in sensory marketing research is how stimuli, such as emotions. Plutchik’s list is niched to emotions from consumption. More recently, it has become mainstream in research to measure attitude, as some scholars disagree that emotions can be represented in self-reports (Laros and Steenkamp, 2005). Moreover, moods have also been interchangeably used as emotions in marketing research (Sherman et al., 1997). Different modifications of the PAD-scale have been developed, such as the affect grid by Russell et al. (1989), but the same elements triumph in all revisions; the positive-negative and the weak-strong relationship.

Emotions as a concept have received considerable attention in sensory marketing research, as well as in retailing research (Vieira, 2013). Notable examples of such emotions in sensory marketing research is how stimuli, such as color or music can affect emotions that end in a purchase (Bellizzi and Hite, 1992; Dubé and Morin, 2001). Despite the fact that measurement techniques insufficiently describe the complete processes that occurs in the mind of consumer, they still have shown to be sufficiently efficient in explaining consumer behavior in retail store contexts (Krishna, 2012; Spence et al., 2014).

Because the concepts of emotion, mood and affect can at first be similarly perceived, they are often used synonymously in retailing and marketing research (Burns and Neisner, 2006). To clarify some ambiguities, affect is referred to in Burns and Neisner (2006) as an overarching concept comprising elements, such as emotions, mood, and attitudes. While affect generally describes the positive/negative state of consumers (Bagozzi et al., 1999), emotion, mood and attitude branch out and portray their own facets of affect. Mood for instance is diffusely perceived as not being predictive and is more difficult to directly influence (Frijda, 1993). It can, however, latently influence the individual for unknown reasons; accordingly, mood is not as frequently applied in investigating the impact of cues on consumers and its impact on mood in retail store atmospheres. Attitude, on the other hand, is occasionally defined as the cognitive mental process, judgements and mental states (Cohen
and Areni, 1991), while Burns and Neisner (2006) instead argue for defining attitude in terms of emotional mechanisms. The difference between attitude and emotions is the presence of arousal (Bagozzi et al., 1999). Although the discrepancy between the two is vague in research literature, they are often measured with similar instruments (Krampf et al., 2003). Emotions include the element arousal and accompanied by the tendency of evoking bodily and behavioral reactions, for instance blood pressure or time spent (Bagozzi et al., 1999), which theoretically overlap the S-O-R model and emotion in retail contexts (Donovan et al., 1994; Mehrabian and Russell, 1974; Vieira, 2013). However, for the purpose and research question of this thesis, emotions are chosen in terms of valence and arousal, which fit with how consumers behave in a retail store when subjected to sensory stimuli. With that said, I hold that valence and arousal are satisfactory in describing how consumers react to sensory cues in retail contexts.

The impact of emotions on behavior have shown to influence various attributes of consumer behaviors, such as enticing purchase, time spent and decisions (Turley and Milliman, 2000). While a great amount of literature inquires as to how emotions influence purchase behaviors, there is also some debate and uncertainty about how much they actually explain and mediate these behaviors (Ajzen and Fishbein, 1977; Russell et al., 1989; Russell, 2003), hence caution is advised in interpreting the findings.

### 2.3.2 Consumer purchase behavior

In marketing research, consumer behavior refers to many different definitions, one such being consumer purchase behavior (Baumgartner and Steenkamp, 1996; Joo Park et al., 2006; Krishna, 2013). Consumer behavior has evolved to include a myriad of perspectives, involving studies of individuals, groups and organizations when selecting, securing and using products, experiences, services and in meeting the satisfaction of needs (Hawkins and Mothersbaugh, 2009). In marketing, consumer behavior is often referred to as a process of activities. Such examples could be information/variety seeking, browsing, looking at objects and spent time (Bloch and Richins, 1983; Gardner, 1985; Vieira, 2013). Other perspectives investigate impulse purchase behavior (Kacen and Lee, 2002). In many cases, consumer purchase behavior in marketing is synonymous to shopping behavior and all conceivable human activities and behaviors that may occur in markets and retail (Areni and Kim, 1993).

Sensory marketing investigates the behavior of consumers when subjected to sensory cues. Scents can be employed to explore how consumers behave socially (Baron, 1997), approach behaviors that measure how many consumers approach a POP in focus (Bellizzi et al., 1983; Knasko, 1995), time spent in retail stores (Chebat et al., 2009), browsing behavior (Bloch and Richins, 1983), and money spent behavior (Crusco and Wetzel, 1984; Guéguen and
Jacob, 2010; Hirsch, 1995). There are sufficient studies conducted with environmental psychology as a foundation to state that emotion is a mediator to the observed behavior, similarly seen in Donovan et al. (1994) study where pleasantness was a predictor to willingness to spend more time and purchase intent.

It is rare that consumer purchase behavior is measured or studied without having some input, independent variables or predictors to the investigation. As retail stores strive for growth and revenue, consumer purchase behaviors are very important for managers to consider (Park et al., 1989). To facilitate these purchase behaviors, such as time spent, browsing and purchase, the retail store atmosphere should be constructed, both functionally and hedonistically (Ballantine et al., 2010). The indication is that consumers behave differently in different retail store atmospheres and that these settings can be equally important for consumer purchase behaviors as the actual products (Summers and Hebert, 2001). Some consumers want to leisure shop and explore goods in stores (Beatty and Ferrell, 1998; Cox et al., 2005). Occasionally, these exploratory behaviors result in an impulse purchase at a POP, in contrast to planned purchases (Sherman et al., 1997), which are decided prior to experiencing the atmosphere. As follows, the environment where consumers move, explore and touch products becomes all the more important for this leisure-type of behavior. Bloch and Richins (1983) define this type of behavior as browsing where consumers examine merchandise for recreational and informal purposes. Consumers can look for bargains visually, pick up goods, touch, explore and decide to make a purchase if they deem the goods as valuable (Beatty and Ferrell, 1998; Klatzky and Peck, 2012). Browsing behavior is hence closely related to time spent and touching (see Hultén, 2012) and is conceptually linked to purchase (Ballantine et al., 2015; Beatty and Ferrell, 1998).

To summarize, consumer purchase behaviors include various behavioral concepts, some of which are, time spent, browsing, which is also measured in time, and purchasing. This thesis employs and recognizes purchase behavior in retail contexts according to the aforementioned constructs.

2.4 Visual, auditory and olfactory sensory cues in a retail context

In this theoretical framework, I justify emphasizing three senses (visual, auditory and olfactory) as opposed to five senses by theoretical relevance and feasibility. A retail store atmosphere at the POP can easily be modified with visual, auditory and olfactory cues. For instance, the sense of taste is less relevant for implementation when considering a purchase of LED-bulbs than it is in the context of restaurants or events (e.g. Namkung and Jang, 2007; Piqueras-Fiszman et al., 2011; Schifferstein et al., 2011). Studies that concern
touch, frequently do so in stores that offer softer materials, such as fashion, clothing and beds (e.g. Babin et al., 2003; Ballantine et al., 2015; Workman, 2010). Thus, for the purpose of this thesis and its research questions I will examine three aspects of cues, namely, visual (vision), auditory (hear) and olfactory (smell). To understand these aspects in a retail context, I will briefly explain how they are utilized in research and their effects on consumer emotions and purchase behaviors. Each sensory effect needs to be taken account into when creating retail store atmospheres, hence it is important to understand how visual, auditory and olfactory cues affect consumers.

I will clarify and explain the three senses employed in this theoretical framework and contemporary sensory marketing research. Substantial sensory research has perspectives that derive or result from cognitive, emotional and behavioral themes.

The senses of sight, sound and smell will be presented in relation to how they individually impact consumer emotions and purchase behaviors, without taking into account when they are in interplay.

### 2.4.1 The sense of sight

Visual cues have long been portrayed as the most common way to convey a message. This is because the visual organ is constantly bombarded with stimuli throughout the day. In some instances, firms want to raise awareness and on other occasions they strive to unconsciously influence consumer emotions and behaviors. Consequently, visual cues are the ones that are most frequently considered in constructing and designing retail store atmospheres (see Turley and Milliman, 2000).

One type of visual information humans can perceive from objects is color. Color, also defined as hue, is widely studied in different branches of research. Some research demonstrates that color influences how humans perceive and evaluate retail stores. Bellizzi and Hite (1992), for instance, conducted an experiment where the color red was compared to the color blue. They conducted this comparison in shopping-related contexts and their results revealed that blue colors had a positive influence on consumer purchases and that consumers stayed longer in blue environments, both of which are purchase behaviors. Color has also shown to have an emotional effect, where different color mixtures can generate different feelings and values, subsequently influencing consumers' purchasing and choices (Bottomley and Doyle, 2006; Singh, 2006; Valdez and Mehrabian, 1994). However, research cannot ignore the strong cultural influence on how consumers perceive colors and their associated emotions. This must be considered prior to conducting such color studies (Madden et al., 2000).

Research demonstrates that packaging and product placement, for example, whether they are positioned to the right side of consumers when they are in
movement, can impact their preferences (Rettie and Brewer, 2000). Additionally, Reimann et al. (2010) discuss package design and suggest that visual cues from product packaging can affect retail aesthetics, subsequently enhancing purchase reaction times in stores. Correspondingly, it has been discussed in literature that firms that work with aesthetics and design are generally more successful than those that ignore design-aspects in offerings. Design can be used to position the product, create aesthetics and enhance consumer value (Berkowitz, 1987; Bloch, 1995; Hertenstein et al., 2001). Moreover, it is shown that a majority of store purchase decisions are made in-store at the point of purchase, which indicates that aesthetics and design can be determining visual cues in facilitating purchase behaviors (Hekkert, 2006; Rettie and Brewer, 2000).

In addition, lighting is an important visual cue that affects many other elements in retail contexts and has been shown to affect consumer behavior and evaluation (Custers et al., 2010; Heschong et al., 2002; Park and Farr, 2007). Light is crucial as the lighting level illuminates the retail store, services and products in-store. Artificial or natural light is therefore seldom ignored when conducting sensory research (Areni and Kim, 1994).

In regard to visual perception, research by Raghunir and Krishna (1999) investigated how consumers perceive consumption in relation to perceived volume. Container height is an indicating factor that misled consumers to believe that there was more or less quantity of a substance. This signifies that perceived volume, perceived consumption and actual consumption are related. Retail stores can utilize the notion of how visual cues can affect the visual sense in perceiving the surroundings or objects more differently than otherwise (e.g. Folkes and Matta, 2004).

The impact on emotions and purchase behaviors
To summarize the discussion of visual sensory cues in a retail context, sensory cues have an evident impact on purchase behaviors in terms of time spent, movement and actual purchasing. It should be noted that each cue has its own unique impact on emotions, which can be hard to compare as different studies employ different methods. However, it is evident that the sense of vision and visual cues in terms of color, light, shapes and aesthetics have influence over consumer emotions and purchase behaviors in a retail context (Areni and Kim, 1994; Bellizzi and Hite, 1992; Reimann et al., 2010).

2.4.2 The sense of sound
Sounds in servicescapes and retailing have previously been applied and explained in research as an auditory atmospheric component (Kotler, 1973). Other servicescapes studies have been conducted in industries such as restaurants, nightclubs, shopping malls and hospitals (Beverland et al., 2006; Guéguen et al., 2004; Milliman, 1986; Zentner et al., 2008). For the
construction and design of retail atmospheres, the sense of sound has become a common facet to consider in order to facilitate consumer emotions and purchase behaviors (Michel et al., 2017).

Some researchers suggest that retail environments are no longer a place for point of purchase, but a space in where brands and experiences are communicated to consumers with sounds. This notion suggests a place or space should be used to enhance the experience of the consumer thereby creating a strong brand (Fulberg, 2003). Thus, retailers need to carefully consider the assembly of auditory cues, such as background sounds or music for enhancing consumer experiences and brand image (Spangenberg et al., 2005).

The role of in-store music on shopping behavior was studied by Yalc and Spangenberg (1990), Dubé and Morin (2001) and Andersson et al. (2012). The studies confirmed the effects of music on affect and behavior and suggested positioning and categorizing music to suit the demographic target group. This is also demonstrated in a study comparing different music genres in a specific product scenery, more specifically, pop-music compared to classical music in a wine store showed that consumers purchased more expensive wine when classical music was playing (Areni and Kim, 1993). Music genres can also influence the assortment of wines sold (North et al., 1999), and the authors have shown how auditory cues consequently influence consumer purchase behaviors.

An extensive study by Michel et al. (2017) reviewed music in retail contexts where the authors conceptualized different linkages between presence and absence of music in-store and how it affects consumer emotions and purchase behaviors. They categorized emotions as affective dimensions and overall satisfaction with the environment, while purchase behaviors were classified as time spent, purchase intention, sales and patronage behavior.

On the one hand, failing to combine the right type of music in the right place or situation can create a mismatch (incongruence) in the shopping experience, which consequently can affect the consumer-brand relationship. A match (congruency), which is the right music in the right moment, must be understood when designing offerings in order to evoke positive consumer-brand experiences. The intensity of music cues, also referred to as volume, may influence the level of congruency (Beverland et al., 2006; North et al., 2004). On the other hand, Miller and Marks (1992) investigated auditory cues, as sound effects on mental imagery. In their study, image perceptions were generated by using sound effects, thus creating associative mental imagery similar to congruency. By using image-evoking sounds, for instance, in radio commercials, personal images are created, which subsequently induce emotions and positive attitudes towards brands (Miller and Marks, 1997). These results can have implications for retail stores with atmospheric background sounds.
Kellaris and Kent (1993) also showed that auditory cues, such as music, might be broken down into smaller parts than music genre. They measured pleasure, arousal and surprise against tempo, tonality and texture. They found that tempo correlated to pleasure and arousal and that tonality affected pleasure and surprise. This implies that further research needs to consider various aspects of music and background sounds besides genre or style of sound when creating offerings.

The impact on emotions and purchase behaviors

To summarize the discussion of how auditory cues impact consumers in a retail store context, the right auditory cues can have a positive effect on consumer emotions and purchase behaviors. The most common types of cues investigated within the retail context are ambient background sounds and music, which have both shown to possibly influence emotions in terms of valence and arousal (Kellaris and Kent, 1993) as well as purchase behavior in terms of time spent, purchase intention, sales and patronage behavior, as shown in Michel et al. (2017). The discussions also show that it is important to recognize which genre, tempo and style should be utilized with regards to the retail context and products sold.

2.4.3 The sense of smell

The practice of using scent as a sensory marketing tool in retailing has grown exponentially over time. Sensory research has diligently studied the impact of congruent scent on consumer cognition, emotion and purchase behavior (Rimkute et al., 2016). Based on research it is evident that pleasant scents improve memory of brand names, as well as affect risk-taking, variety seeking and curiosity (Morrin and Ratneshwar, 2000; Morrin and Ratneshwar, 2003; Orth and Bourrain, 2005).

Studies by Lwin and Morrin (2012) demonstrate that people who were influenced by scent while subjected to moving pictures, also retained better memory of the situation. The study demonstrates that when individuals are exposed to multi-sensory cues, they also have better memory recall. Krishna et al. (2010b) shifted focus from atmospheric scents in-store to product scents and discovered that product scents improve memory recall for product information. It was shown that scents in a retail atmosphere disperse the memory among many objects in-store, in comparison to product scents, which only emphasize the product. Davies et al. (2003) correspondingly emphasize scents as perfect for creating positive feelings in consumers without interfering with shopping behaviors. It is further shown that the dispersal of scents in retail atmospheres enhances consumer emotions and its intensity moderates the perception of time spent (Leenders et al., 2016). Thus, scents can be employed for enhancing both emotions and purchase behaviors.
This notion has also shown that the unconscious processing of scents evokes actual consumer behaviors (Guéguen and Petr, 2006; Holland et al., 2005). For example, the scent of citrus increases the perception of sanitation, the length of consumers' stay at point of purchase and the amount of purchasing.

Undeniably, scents also act as a subtle approach for attracting customers to specific areas in-store, hence becoming a useful tool for crowd control in retailing. Product congruency seems to be of importance when applying different scents in retail atmospheres (Ward et al., 2007). In line with the previous study, Mitchell et al. (1995) found that congruent scents affected consumer purchase behaviors in terms of time spent evaluating and investigating products. In terms of congruent scents, research additionally points out that gender-congruent scents do in fact affect customer purchase behavior in retail stores and enhances sales, when gender-congruent (Spangenberg et al., 2006).

Retailers applying scents in an otherwise odorless store need to take into account several important considerations. Firstly, it is demonstrated that an incongruent scent could cause negative affective responses. It is also important to reflect upon what type of scent is applied, and to which retail store context and situation. For example, applying pleasant scents in a bakery store is not as effective as applying it in unscented shops, as bakeries already have their own pleasant scents. Odorless stores that apply scents have been shown to have a competitive advantage, moreover they have the opportunity to establish new associations that can later be installed in other marketing channels (Parsons, 2009).

An extensive literature review by Rinkute et al. (2016), discusses the effects of scent on consumer behaviors. By conducting a systematic literature review they highlight that scents influence emotions, but that they partially mediate behaviors and that cognition could be the other variable in controlling behavior. Furthermore, the review found that scents trigger memories in consumers, which increase the likelihood of purchase. Moreover, other consumer responses with regards to purchase behaviors are, time examining products, willingness to pay, money and time spent. Emotional traits were also found to partly mediate these behaviors.

Other studies investigate human interactions with each other when being subjected to scent. For instance, Zemke and Shoemaker (2007) have demonstrated that scents can significantly affect the number of social interactions within a group of people. According to the authors, this can be applied in stores to increase consumer interactions.

The service sector employs scents in order to position firms for a competitive advantage and to create better experiences for consumers. This ought to be implemented in both products and services (Goldkuhl and Styvén, 2007).
The impact on emotions and purchase behaviors

To summarize the discussion of the impact of olfactory cues on consumers, these cues have been shown to influence consumer emotions and purchase behaviors. Money spent, time spent, willingness to pay and examining products are some purchase behaviors elicited by scent in a retail store context. There is also no doubt that scent influences emotions and are strongly connected to memory and congruency (Rimkute et al., 2016).

2.5 Multi-sensory cues in interplay in a retail context

To explain how sensory cues can work together to enhance, create and facilitate consumer emotions and purchase behaviors, it is necessary to define and understand multi-sensory interplay in a retail context. As mentioned, it is important to understand visual, auditory and olfactory cues in isolation but it is equally important to consider the interaction and interplay between them. A number of studies show that when adding or removing a sense or sensory cues, the experience becomes different (Krishna, 2013). Thus, researchers and practitioners ought to consider multi-sensory cues in interplay when modifying and designing a retail context. While it is impossible for a manager to go inside a consumer’s head in order to create a pleasing shopping experience, they can instead decide how multi-sensory cues when in interplay are presented to consumers.

Multi-sensory interplay, as a concept, refers to the interaction between two or more of the human senses in perceiving sensory cues. Multi-sensory interplay may concern all possible interactions and combinations (Marks, 2014), and gives us humans a broader awareness of the surrounding environment (Macpherson, 2010). Sensory marketing explains the psychological processes of how humans perceive these stimuli in interplay. For instance, the interaction is sometimes referred to as crossmodality between the senses (Crisinel et al., 2013). Multi-sensory cues in interplay is argued to be inevitable when it comes to our perceptiveness, meaning that humans as organisms gather all these stimuli from the environment at the same time, constantly (Gibson, 2014; Marks, 2014). However, marketers and researchers need to offer cues that stimulate all the senses in consumers, meaning they need to think of multi-sensory cues in interplay. Whether such cues exist in an environment determines how researchers and managers reason when creating atmospheres, sensors and the cues within. Thus, multi-sensory interplay can be facilitated by matching appropriate cues to the given atmosphere, for instance, by considering installing sensors that provide pleasant atmosphere-congruent cues (Hultén, 2011).

The complexity of how cues in an environment affect emotions and shopping behaviors of consumers is still in debate in academic literature.
(Ballantine et al., 2015). Ballantine et al. (2010) argue that it is near impossible to separate and investigate all cues in a retail environment, as it would lead to an incomprehensive number of possible cue combinations. So, determining the separate effects that each cue has on consumers is very difficult. Instead, the authors advocate that retail stores should be studied holistically, such as comparing two stores to each other. The complexity of measuring cues in retail store atmospheres has resulted in the majority of studies focusing mostly on two cues (Mari and Poggesi, 2013). For example, Mattila and Wirtz (2001, p. 273) show that it is not required to test all cues in an atmosphere, but it is sufficient to study two cues such as scent and music. They highlight the problematic situation in multi-sensory research and state, “Past studies have examined the effects of individual pleasant stimuli such as music, color or scent on consumer behavior, but have failed to examine how these stimuli might interact”. Additionally, a study by Spangen et al. (2005) demonstrates how scent and music can interact on consumer emotions, with regard to pleasure, arousal and dominance. Their findings show that the interplay between sound and scent contributes most to consumer emotions in shopping situations. However, the cues employed in their study were congruent to a particular theme, more specifically, a Christmas theme, without considering whether they were congruent to the retail context. These previous examples are some of many, demonstrating the focus on multi-sensory cues interplay between auditory and olfactory cues in retail contexts (McDonnell, 2007; Michon and Chebat, 2004; Morrison et al., 2011). Other combinations, such as visual-tactile is also present in retailing contexts, but focus more on the ability to make products available for touching and how it affects consumer perceptions and willingness to pay (e.g. Chylinski et al., 2015; Müller, 2013). Other combinations, such as visual-olfaction have been shown to influence attention, willingness to pay and purchase behaviors (Fiore et al., 2000; Seo et al., 2010). Studies that examine the interplay of more than two cues in a retail context are almost non-existent, which can be a major barricade for understanding how retail store atmospheres can be constructed to influence consumer emotions and purchase behaviors.

Although there are myriad different multi-sensory studies when it comes to other research domains, such as psychology and neurology, the number of studies drops immediately when delimited to marketing (Krisha, 2012), even more so in retail contexts (Mari and Poggesi, 2013). This is one of the motivations for the first sub-question, as the concept of multi-sensory interplay within retail context is, as of yet, eclectic and relatively unexplored.

Sensory marketing in retail contexts emphasizes the importance of engaging all the senses in order to contribute to a holistic experience (Hultén, 2011; Hultén, 2012; Krishna, 2012; Lindstrom, 2005; Raz et al., 2008). In their famous study, Holbrook and Hirschman (1982) discuss the importance of the five human senses and the mental processes of consumers in contrast to environmental inputs. The authors stress that it is more complex than only
trying to understand the behavioral and emotional responses of consumers, but rather it is also necessary to understand their fantasies, feelings and fun in order to deliver tailor-made experiences. This is the challenge that managers and researchers need to understand when creating such atmospheres (Hultén, 2011), especially within the domain of multi-sensory research. Multi-sensory research is rarely examined in real contexts with field experiments, which can skew how consumers actually perceive, feel and behave in a retail store context.

The impact on emotions and purchase behaviors
To summarize the discussion of multi-sensory cues in interplay in a retail store context, it has been shown to positively influence consumer emotions and purchase behaviors. Although not much has been investigated in retail contexts, the impact on consumer emotions and purchase behaviors has been shown to be enhanced, meaning that when senses are collaborating in unison, more information is provided and shopping experiences become stronger (Crisinel et al., 2013; Spence et al., 2013; Spence et al., 2014). Emotions in term of valence, arousal and purchase behavior in terms of purchase, time spent and approach, are some of the studied constructs (Hultén, 2012; Mattila and Wirtz, 2001; Spangenberg et al., 2005). Similar to single cues, multi-sensory cues in interplay have also been shown to positively enhance consumer emotion and behavior.

2.6 Congruency in sensory marketing
As mentioned, congruency is a crucial component in sensory marketing research. Additionally, this thesis employs the concept of congruency making it thus highly important for the main research question. In order to understand how congruent sensory cues, both in isolation and in interplay, affect consumer emotions and purchase behaviors, congruency will first be defined and explained.

While the word congruency can be found in mathematics (Horn and Sergeichuk, 2006), social studies (Cameron and Freeman, 1985) and nature science the core definition is described as the quality of correspondence between two or more objects.

Within sensory marketing the definition understands, “[...] cue congruence to be the degree of fit among characteristics of a stimulus” (Krishna et al., 2010a, p. 410). The definition portrays congruency to be the degree of fit. To elucidate, it may investigate how cues correspond or contrast to each other.

However, my understanding and interpretation of (in)congruence is in line with the example in Cohen and Basu (1987), which states that (in)congruency consists of two counterparts, for example the gamut of black and white, where darker-gray is congruent to black, and lighter-gray to white. Gibson (2014)
perspective of the medium, its structure and information, causes the perceiver to apprehend a meaning. This applied meaning of objects is shared amongst people in different cultures, where sensory preferences, congruency and attributes are learned and taught (Vannini et al., 2013). While humans biologically inherit some tendencies to misinterpret or favor some matchings of cues, psychological and neurological research have described this phenomenon as synesthesia and crossmodal correspondence. Some examples of these crossmodalities have shown that individuals can sense temperature only by listening to sounds (Velasco et al., 2013), how the materials and texture of spoons affect taste (Piqueras-Fiszman et al., 2012), and how particular colors correspond to certain haptic perceptions (Ludwig and Simner, 2013).

Other views on congruency and aesthetic pleasantness are also seen from an evolutionary psychology perspective (Hekkert, 2006). The author states that, “[…] ease of identification has survival value, we tend to prefer products that convey similar messages to all our senses” (Hekkert, 2006, p. 168). He emphasized that there is a dimension of pleasure when experiencing sensory congruence. Spence et al. (2014) agree and state that congruent multi-sensory environments are more pleasing and engaging than otherwise.

Mattila and Wirtz (2001) examined the congruency literature stream and concluded that suitable pairings of products generate purchase rate, preferences and positive consumer behaviors. Moreover, Krishna et al. (2010a) investigated how sensory congruence impacts haptic perception and product evaluation. The study proved that scents that match semantically to texture and temperature likewise influence perception and evaluation of products. Jacob et al. (2009) investigated instead music genre matched with a type of goods and showed that the congruence between them can affect consumer behavior.

Furthermore, the semantic congruency between sensory cues and an atmosphere has been demonstrated in a flower shop where more sales were made when romantic music was playing than when pop music or no music was playing. In the case of music, Lavack et al. (2008) examined the impact that congruency between music and brands has on attitude. Their study found that high-cognition ads were rated more positively when congruent. Unlike previous studies, Demoulin (2011) conducted field experiments in restaurants to see if atmosphere-congruent music affected evaluations of services. Their findings indicate that congruent music reduced the arousal of consumers and intensified pleasantness. This subsequently influenced consumers’ intention to purchase. Besides the importance of congruency in sensory research, intensity is equally crucial. Schifferstein and Verlegh (1996b) demonstrated this by examining taste and scent, and the congruency between them. The interplay is also influenced by the level of intensity between these two cues for it to be pleasant.
By discussing the different examples above, it can be claimed that congruency appears to influence consumer emotions and purchase behaviors. Is congruence then always better? Through their experiments, Moore et al. (2005) have shown that incongruence in an on-line atmosphere can be effective for generating attention and recall, whereas congruency had a more favorable effect on the attitude towards ads. Similarly, Dahlén et al. (2005) investigated incongruence in advertisement and showed that incongruent ads trigger lower ad likings and credibility, but cause higher processing of information. In contrast to the findings of Moorman et al. (2002), Dahlén et al. (2008) discover that consumers process and recall information from incongruent ads better. Nonetheless, Piqueras-Fiszman and Spence (2011) study shows marketing consequences of incongruence. When the sense of taste differs to the expectancy of color presented it was rated as more negative, hence the importance of identifying consumer expectancy in order to address the incongruence.

Needless to say, cue-congruency is one of the most important elements in multi-sensory studies. It is intangible and acts in all dimensions of marketing, affecting relationships, controlling the fit, not only between cues but also environments, cultures, expectancies, brands, images, ads and many other elements. The complexity of marketing cues, or noise as it is sometimes called, causes consumer ambiguity, therefore familiarity is often preferred and calming.

Thus, for the theoretical model the congruency is examined between visual, auditory and olfactory sensory cues in a retail atmosphere, which subsequently influence consumer emotions and purchase behaviors. As previously stated, sub-question 2 identifies which cues are congruent to each other and the inquired retail store context.

2.7 Theoretical synthesis

In the following section, theoretical concepts will be synthesized in relation to the research problem of the thesis.

The theoretical framework has so far discussed how various sensory cues positively influence consumer emotion and purchase behavior in retail contexts. Sensory cues, which are bound to include visual, auditory and olfactory cues, have each been shown to impact consumer emotions and purchase behaviors. However, how these effects vary between cues and how they interact in multi-sensory interplay is still untold, which is something this research aims to address. As discussed earlier, consumers are constantly perceptive, able to perceive the surrounding environment as multi-sensory (Gibson, 2014; Marks, 2014) which compels retailers to stimulate consumer senses by installing sensors (Hultén, 2011). Provided that managers are
knowledgeable and have clear strategies about what sensors are appropriate, these should be installed accordingly in the retail atmosphere.

Be aware that it is difficult to conduct or comprehend cues in total isolation, without them being in interaction with, each other, concepts, and contexts, such as consumer expectations, learning, experiences, cultures and places (Siegrist and Cousin, 2009; Wansink et al., 2005a). However, with experimental design it can be assumed that the exclusion of residual effects, it is possible to extract the effect of a single sensory cue. In regard to retail atmospheres, I agree with Shadish et al. (2002) and argue that these can be overlooked, provided that cues are identical and employed at the same setting, within a relative short time period. This means that cues can be combined, recombined, included or excluded from a particular combination of sensory cues.

Contrary to solitary cues, multi-sensory cues are, in this theoretical framework, modified to be congruent, which is illustrated in the model as circles intertwining and sharing resemblances. Although cue-congruency is insufficiently explained and examined in sensory marketing research, it is seen as a main ingredient for the success of multi-sensory atmospheres (Spence et al., 2014), which is something this thesis aims to establish qualitatively prior to measuring quantitative differences. The model illustrates that the more circles overlap, the more attributes becomes congruent, regardless of whether the sensory cue is simple, such as color or tempo, or more complex, such as music or aesthetics (Krishna, 2012). Here congruency is seen as a contributor to perceived pleasantness and stronger emotions, as well as behaviors. The model portrays that multi-sensory cues in interplay, when congruent have an impact on consumer emotions and purchase behaviors.

As discussed before, purchase behavior is referred to as time consumers spend inside an atmosphere or time browsing inside it, as well as actual purchasing. All of these are encompassed by the concept purchase behavior.

The theoretical synthesis embodies the research questions of this inquiry illustrated in the following overview of theoretical framework (figure 2.4).
The theoretical framework underscores these cues as congruent to each other and the retail context. This is a necessary ingredient for consumer pleasantness and purchase behavior (Demoulin, 2011; Mattila and Wirtz, 2001).

The model resembles the sensory marketing models in figure 2.1-2.3 (Hultén, 2015; Krishna, 2012; Spence et al., 2014). Additionally, the theoretical synthesis intimately contours the S-O-R model, where emotions mediate the effect between stimuli and purchase behavior (Mehrabian and Russell, 1974; Vieira, 2013). In contrast to their model, the theoretical framework takes isolation, multi-sensory cues in interplay and congruency into consideration. Moreover, consumer emotions and purchase behaviors have been identified to fit in retail contexts, such as valence, arousal, time spent, browsing and purchase (Bagozzi et al., 1999; Donovan et al., 1994; Turley and Milliman, 2000), and are employed in this present research.

While the theoretical framework in figure 2.4 illustrates that the relationship between sensory cues and consumer purchase behavior is mediated by emotions, the same principle applies when they are in interplay. Thus, the model shows differences between single sensory cues and those cues that are in interplay, as well as their effect on emotions and purchase behaviors, which is in line with the research questions and purpose of the thesis.
3. Methodology

The chapter begins with a discussion of the main arguments and my reflections about the chosen scientific approach and the overarching method. It is followed by a presentation of the research process including the thesis' research questions and their relation to the four conducted essays. Lastly, the validity, reliability, empirical-, ethical- and methodological- considerations are discussed.

3.1 Scientific approach

Due to the qualitative and quantitative nature of this research, its transformative and sequential approach, I undertake pragmatism as the philosophical position, as found in Creswell (2013).

Since this research design consists of several empirical studies which used different methods, it is possible that contradictory philosophies arise between the qualitative and quantitative research (Johnson et al., 2007). This is often the case when using both qualitative and quantitative inquires in a study. To overcome these issues, Johnson et al. (2007) argue that many sequential or mixed method researchers often employ pragmatism. They agree that pragmatism is an attractive choice for integrating viewpoints and different approaches. Discordances between quantitative and qualitative viewpoints are not as great as the bulk of literature depicts it to be. Howe (1988) explains:

*There are no doubt many important differences in the kinds of methods employed, but these differences are often blown out of proportion, to the point of positing two fundamentally divergent paradigms, two views of reality, and other such polar extremes (Howe, 1988, p. 15).*

Johnson et al. (2007) imply that pragmatism offers epistemological justification and logic, which is the reason I chose this philosophy for my research. John (2003, p. 11) elucidates this matter further, “[…] pragmatism
opens the door to multiple methods, different worldviews, and different assumptions, as well as different forms of data collection and analysis”. Tashakkori and Teddlie (2010) agree that pragmatism doesn’t oblige the researcher to choose between philosophical approaches as it embraces both. This stance is also supported by Howe (1988).

Benton and Craib (2011) explain pragmatism as a part of a cluster of instrumental approaches and notions of rationality. Instrumental rationality in social science is defined in their book as, “The true object of sociology, and of the social sciences generally, is, then, meaningful, rational, social action, action to which the actor gives a meaning, directed to other people, intended to achieve practical purposes in the world” (p. 89). Epistemological concerns are discussed by Husserl in Benton and Craib (2011), more specifically that the link between the conscious and the external world is somewhat in-between the two, where knowledge is created from the human sensory perception, but also in the imagination and language. Two major elements are sensory perceptions and typifications. As stated in their work, humans receive sensory cues through sensory organs, and without typification and recognition, the perception would be chaos with colors and cues melting together. Typifications and the consciousness allow individuals to categorize the differences between smell, color, and sound, subsequently generating different categories of objects, similarly discussed in Cohen and Basu (1987). These categories aid the individual to filter, shape, define and comprehend the external world. Within social sciences, people classify each other into categories of correspondence, behavior and knowledge that we otherwise take for granted. I agree that information and its meanings are subsequently sorted and labeled by the mind into different categories. This was discussed in the theoretical chapter, describing that only a fraction of the available information in a medium is gathered with the sensory organs, thus challenging the saying, ‘what you see is what you get’ (Macpherson, 2010; Marks, 2014; Gibson, 2014).

The ontology of pragmatism, sometimes referred to as the view of the world, is closely linked to critical realism, both of which share ontological perspectives (Cherryholmes, 1992). Pragmatism also has an underlying notion of instrumental rationality and was developed in the USA during the second half of the nineteenth century. Pharies in Benton and Craib (2011) states that our knowledge of objects are the relationships and meanings they have for our actions. In other words, when using an object, the practical relationship changes, as does our knowledge. Developing additional interpretations of the explanation, it simply elucidates that truth is, what works.
The ontology of pragmatism is extensively explained:

> There is no such thing as society, but if the people we are studying think there is and take it into account in their everyday actions, then we can take it as existing – it is real in its effects, and these effects are achieved through individual action. (Benton and Craib, 2011, p. 87)

Pragmatism and its epistemology, considers how knowledge is shared, and is defined as an ongoing knowledge process. Understanding how a computer works becomes increasingly complex the more that is learned about it. The same thing applies to people when doing different things in relation to other people. Contrasts and differences define the ongoing generation of knowledge. Moreover, knowledge interpretation is similar to social construction in that individuals negotiate the meanings of their world. In summary, different realities exist in different situations and contexts (Johnson et al., 2007).

What then does the pragmatism perspective offer me as a researcher? Johnson et al. (2007) continue the discussion of philosophy and emphasize the vast possibilities of adapting pragmatism. Pragmatism offers the possibility to interpret a truth from different perspectives and contexts. The researchers who use the pragmatism approach do not aim to find truth or reality, but rather to facilitate human problem solving. The authors highlight the word pragmatism and trace its origin to the Greek word, pragma, which is translated as action, and is then further developed into ‘practice’ or ‘practical’. The philosophy is as practical when using methods in a sense of solving problems and gives us the ability to cope with reality. Johnson et al. (2007) explain that pragmatism was introduced by Charles Sanders Peirce in his work, ‘How to make our ideas clear’, from 1878. The authors elaborate further that pragmatism does not try to offer an emancipatory platform, even though they agree with positivists and post-positivists issues regarding the objective external world. Pragmatism also emphasizes the explanations that best fit the question. However, the philosophy does not force the researcher to choose between positivism and interpretivism when employing methods, objectivism and epistemologies (Creswell, 2013).

Powell (2001) instead discusses the epistemology of pragmatism, as it stands in contrast to positivism and interpretivism. Positivism is governed by law-like deductive realities that can, through observation, be portrayed on paper, while interpretivism is instead governed by subjective reasoning and interpretation. Pragmatism uses both of these perspectives and does not waste energy to prove or disprove the reality, but rather to ‘facilitate human problem solving’. The authors mean: “[...] science should let go the notion, which has ruled philosophy since the time of the Greeks, that the office of knowledge is to uncover the antecedently real, rather than, as is the case with our practical
judgments, to gain the kind of understanding which is necessary to deal with problems as they arise” (Ibid, p. 884).

Tashakkori and Teddlie (2010) similarly highlight that positivism is value-free while interpretative research is value-bound. Pragmatism offers the use of positivism when conducting methods of gathering data and value generation when interpreting the results. Likewise (Howe, 1988) debates against the qualitative-quantitative incompatibility and states that these can be combined without any major epistemological issues.

3.2 Research design and approach

Sequential research design can be explained as different methods which are either qualitative or quantitative, and that are collected and analyzed chronologically (Bryman, 2006; Johnson et al., 2007; Robert and Timothy, 2011).

As this research consists of several research questions, I had to reflect upon how the sub-questions in the thesis should fit with each other and the main research question. To address the main question: How do congruent multi-sensory cues in interplay impact consumer emotions and purchase behaviors, I had to construct a multi-sensory retail store atmosphere that was pleasant enough as to entice consumers to stay longer, touch goods and purchase more. To do so, I had to first combine certain cues, which needed to be congruent to the retail context. To develop this fit (see Mattila and Wirtz, 2001; Spence et al., 2014), it was necessary to develop pleasant cues, with the right fit, and in the right chronological sequence, implying that experiments could not be conducted prior to finding out which sensory cues would be congruent and relevant to study. Moreover, I needed to test them singlehandedly in experiments before combining them together in interplay. Accordingly, the sequential research design was employed, it served my research by combining qualitative and quantitative research to develop measures. This is in line with Bryman’s (2006) scheme of justifications, which also corresponded to the order of my research sub-questions.

The first sub-question employed a literature review, which served to identify how congruency occurs in retail contexts and which combination of cues were unexplored. Then, sub-question two, identified the need for conceptualizing congruency in retailing and helped me to find several visual, auditory and olfactory context-congruent cues that consumers preferred. Sub-question three employed six of these congruent cues in three field experiments. Finally, sub-question four identified the three congruent sensory cues with effects on consumer’s emotions and purchase behavior and combined them into a multi-sensory atmosphere. These four sub-questions aided in answering the main research question.
The sequential method design begins with a qualitative part and is then
followed by a quantitative one, which is a variant of mixed methods
(Tashakkori and Teddlie, 2010). Nonetheless, the literature categorizes the
methodological structure in this thesis as a ‘exploratory sequential’ research
method (Creswell, 2013), meaning that my research employed qualitative
methods as a way of further guiding the process of confirming measures
quantitatively, as was in line with the research question and purpose. While I
argue that there are other possible methodological routes that could have been
taken, such as focusing purely on quantitative experiments, these would fail to
advance the conceptualization of cue-congruency in retail contexts. This was
required to supplement the experiments with congruent variables (for details,
see 4.3 and 4.4).

Inductive, abductive or deductive approaches, or reasoning, refer to the
process of conducting research and having a connection to scientific theory.
The inductive approach allows empirical data to shape patterns, subsequently
leading to theory. Instead, the deductive approach begins the process with
theory, which is examined with empirical data, while abduction shifts between
induction and deduction (Alvesson and Sköldberg, 1994; Johansson Lindfors,
1993). It must be noted that qualitative and quantitative research does not
always follow the research norm, such as qualitative being purely inductive.
Following the reasoning of Creswell (2013), sequential method research
design can be both inductive, deductive and can vary between these.

Although the first sub-question aimed to examine how multi-sensory
interplay impacts consumer emotion and purchase behavior in contemporary
research, it was conducted as a partly systematic literature review with
exclusion criteria, which can blur the lines between deductive and inductive
research (Hyde, 2000). The second sub-question employed qualitative focus
groups, albeit with deductive reasoned semi-structured constructed interviews.
Despite focus groups being of a qualitative nature, it can be argued too that
they are deductive (Hyde, 2000). Sub-questions three and four were answered
with experiments, hence being deductive in nature.

I argue that the approach of this thesis is deductive, meaning that the body
of theory drives the research (Creswell, 2013). Though some instances in the
research process may appear to be inductive, they are certainly not. To
exemplify, none of the individual essays are by themselves evidently
inductive, only deductive, but their place within the sequential method process
may appear as inductive or abductive, as to the sequential sub-questions. This
misconception risks pinpointing the sequential process as inductive, however,
the theoretical problem, research question and purpose are all deductive in
nature. Additionally, the theoretical framework, synthesis and discussions in
this thesis either show possible theoretical linkages or imply gaps that require
further inquiry. Whenever a theoretically driven sub-question has been
answered, it carries some information to the following question, which has its

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own deductive argumentation. This will be more closely explained in the forthcoming section, ‘research process’, and in figure 3.1.

3.3 Research process

Although some activities in the research process were parallel, the research strategy was rather sequential, similarly seen in the process of sequential mixed methods (Bryman, 2006, p. 98; Johnson et al., 2007) and the pragmatism perspective. To avoid confusing the mixture of methods, qualitative methods were conducted prior to the quantitative ones. Qualitative methods were used to clarify concepts, understand linkages and aid the identifications and operationalization of appropriate variables. I justify combining qualitative and quantitative research to develop measures, as being in line with Bryman’s (2006) scheme of justifications. My reflections regarding the sequential process between qualitative and quantitative research, functioned as the conceptualization of congruency in essay 2, which was later incorporated into the pretests of essay 3 and 4. Consequently, there are two dimensional contributions for each essay, one that answers the research question, which by itself is required for answering the main research question, and the other one as providing variables, such as determining which cues are congruent for inquiry. Details of which and how measures were developed and incorporated in the research process can be read in the forthcoming chapter 4. Although there will always be some issues of integration (see Howe, 1988) in sequential research methods, validity can be improved by separating methods, utilizing similar concepts in the inquiry, seeing how research questions relate to each other, and choosing appropriate research designs (Onwuegbuzie and Johnson, 2006).

As discussed above, the sequenced research process offers this research idea generation with focus groups (Morgan, 1996), which may assist the validation and operationalization for chosen sensory cues (Churchill Jr, 1979).

Each individual essay contributes to the summary of this thesis, which is, with its own research question and purpose, a contribution by itself. In addition to the research questions, purpose and chosen methods, a research model is produced to facilitate an overarching understanding of what is being examined.

The research process in figure 3.1, illustrates the sequential research process of this thesis. The individual contribution from each essay has been incorporated into the sequential approach, meaning that each empirical study of an essay has its own inputs and outputs that was chronologically employed. This will be more elaborated upon in chapter 4. To answer the fourth sub-question in the conclusions, the outcomes were compared between the empirical studies of essay 3 and 4. The research process took place during three years, 2014-16, where data was sequentially gathered, analyzed and
documented. Figure 3.1 shows how methods, research questions and essays are sequentially linked together.

![Diagram of research process](image)

Figure 3.1, Overview of research process

### 3.4 Methodological Considerations

#### 3.4.1 Validity, trustworthiness and reliability

While undertaking the viewpoint of pragmatism, I will discuss some concerns regarding the validity, trustworthiness and reliability issues for the present research. For more details of each essay, see chapter 4. With regard to the validity of this compilation thesis, it is crucial to separate each individual contribution of the four essays from the contribution of the research itself. The research being sequential, the four essays were respectively methodologically different in that the first one was a literature review, the second one used focus groups and the third and fourth ones used experiments. To ensure the transferability, trustworthiness, validity and reliability among these, each essay had its own strategies. How I addressed these concerns can be found in the methodology of each essay (see chapter 4).

The first essay addressed the concerns of validity and trustworthiness by following the strategies for enhancing the credibility of qualitative research, as well as the eight steps in Gall et al. (1996) and Noble and Smith (2015): establishing appropriate criteria, employing reliable journals, classification of articles and books, summarizing articles, sorting them in tables, reading and
interpreting literature, looking for contradictions, and corroborations of data between researchers and in seminars.

The second essay, which used a focus group discussion design, addressed different validity and trustworthiness issues. I employed semi-structured questions for the discussions, following the guidelines of Kardorff et al. (2004), and discussed the same concepts in all of the four focus groups. Other validity measures were addressed by seeing to it that all of the participants recognized and had visited the discussed retail store POP, moreover by separating them into different, but homogenous groups, which is argued to provide richer discussions and offer contrasts (Morgan, 1996, p. 144). One crucial element in focus group discussion design is the moderator and his/her role in facilitating rich and trustworthy discussions, without interfering or controlling participants’ ideas. To do so, according to Greenbaum (1999) I needed to activate shy participants, to change the course of the discussions when needed and to extend the discussions. The data were subsequently analyzed, following the steps of Kardorff et al. (2004) (for more details see 4.2).

The third and fourth essays, which had a field experimental design, had similar strategies for establishing validity and reliability. External and internal validity was addressed by trying to control as many variables as possible, despite the fact that they were field experiments. In contrast to laboratory experiments, I could not employ random sampling, and therefore emphasized other issues. For instance, the experiments occurred at approximately the same times of the day and weekdays. External influences were monitored, such as sales promotions or marketing that could influence purchasing behaviors. To accommodate for the time difference between when the first experiments started and when the last one was finished, an additional control group was gathered to compare the differences. Manipulation checks were employed together with collecting control variables to ensure the validity of independent and dependent variables. To establish appropriate treatment groups, both consumers and employees were involved to confirm the right intensity of sensory cues. Reliability was addressed with detailed descriptions of procedures, apparatus and statistical calculations. Other methodological concerns are argued in more detail in chapter 4.3 and 4.4.

As discussed earlier, the validity concerns regarding the sequential process have been partly debated as belonging to different research traditions. While there are issues with regards to integrating results in a sequential process and always will be (see Howe, 1988), it is possible to enhance the validity by separating the sequence of qualitative and quantitative essays, and using the same theoretical concepts. These issues are in line with the issues of transferability, described in Shenton (2004) who encourages caution when transferring findings, especially between qualitative findings, since they are highly contextual. I employed the sequential method, both in understanding theoretical concepts, but also in operationalizing variables employed in
experiments, which is in line with the scheme of justifications in Bryman (2006). Furthermore, to increase the transferability, the application of findings in other contexts, I did as Shenton (2004) suggests, by adopting appropriate, well recognized research methods, involving a limited amount of firms and researchers, considering the time between when the data was gathered and transferred, and lastly by providing thorough descriptions of the methodological process.

3.4.2 Other concerns of inquiry

Although some concerns, and how I addressed them will be illustrated in the next chapter, there are some overarching issues, trade-offs and limitations that need to be considered.

Firstly, one concern of this research are the controversial and diverse opinions about what and how attitudes and emotions should be measured (Ajzen and Fishbein, 1977; Russell et al., 1989; Russell, 2003). While I will justify some concerns regarding their measurement, validity can be further enhanced in examining other alternatives, such as human facial expression techniques, heartrate or vocal analysis. It would also be of interest for researchers to consider other self-reports on emotion and whether they correlate to valence and arousal as described in this thesis. An aspect of time could also be incorporated to the measurement of emotions. To exemplify, emotions can be measured prior, during and after being in the experimental area. Pinpointing the exact peak in emotional evaluation could further extend the expectations, experience and post-consumption theory, which could give further insight into how purchase behaviors occurs.

Secondly, as the quantitative part of this present thesis was conducted in a single retail context, it is difficult to generalize the findings of this thesis to other retail stores in other countries. This, because the findings have revealed extensive requirements in determining specific congruent cues at each specific point of purchase. This suggests that the methodology and the sequential process of this thesis in determining the type of congruent sensory cues, is crucial to address, as they would consequently determine the efficiency of their use in studying consumer emotions and purchase behaviors. To exemplify, it is equally important to find out which cues should be used, as it is in the process of determining these. This is because a retail store consists of an enormous variety of products, in-store departments and POPs. It is consequently difficult for retailers and researchers to properly apply a few types of congruent cues to fit all sections. However, to properly understand cues and cue congruency in a retail store context, focus groups were applied to qualitatively discuss these in the given POP. This offers the sequential method a way of developing appropriate measures (Bryman, 2006). However, contemporary literature does not offer alternative manners of establishing congruency than conducting pre-tests (Bosmans, 2006; Mattila and Wirtz,
2001; Mitchell et al., 1995) and is to date underdeveloped in methodology and theory.

Thirdly, the thesis has not studied how different combinations of sensory cues interact together on consumer emotions and behaviors. This research has not been able to inquire all possible interactions, due to restraints in time and resources, but future research could illuminate these uncharted interactions, as stated in Krishna (2012). Similar to how Ballantine et al. (2010) emphasize the holistic approach in understanding how consumers feel, evaluate and purchase in retail atmospheres, it is equally important to understand the small pieces of interplay in aiding creating a holistic experience.

Lastly, as field experiments are excellent in showing the applicability of the atmospheric effects in real situations, there are, however, some trade-offs in having external influences on emotions and purchase behaviors. To complement the findings of this thesis, laboratory experiments could further explain and confirm present findings by exclusion of confounding variables.

3.5 Empirical departure and considerations

With regard to my interest in conducting field research, I pursued a place where a sufficient amount of data could be collected. My experimental research design required the retail store atmosphere to be somewhat neutral and easily modified. Supermarkets were an option, however, they are limited to naturally occurring scents and congruency issues. After consideration, I chose use a home furnishing store. This consequently led to IKEA as a potential candidate for my purpose and interest.

3.5.1 Presentation

IKEA represents itself externally, as a group, company and a concept, providing a range of inexpensive and functional furnishing products while using corporate identity keywords such as quality, design, sustainability and value (IKEA, 2017a). Furthermore, it highlights that affordable prices are achieved through optimization in different value chains and supplier relationships. Moreover, they highlight three important growth-areas within the company that keep costs and prices low without sacrificing quality, which involve the development of proper knowledge, material and innovation. The company does not hesitate to spotlight their employees. According to IKEA, team spirit (IKEA, 2017b) very important, and they emphasize words such as togetherness, enthusiasm and fun.
3.5.2 Motivation

IKEA stores have suitable atmospheres in which to conduct multi-sensory research, as its shopping environment offers a variety of products and points of purchase. In addition to the appealing variation of atmospheres, the construction of the retail buildings and design are also critical. The stores are constructed with guided paths for consumers throughout the entire building. Thus, the consumers' movements are more predictable in a directed path than in a square, undirected space; hence, the flow of consumers offers great opportunities to conduct field-experiments and study consumers being subjected to sensory stimuli.

It is also more accessible to implement sensory cues in furniture shops since lights, lamps, material, design, textures, music, sounds and other cues are easily implemented. Cues are easily added and removed without revealing the aim of the experiment, which is crucial for validity. Therefore, IKEA, as a retail store, is ideal for sampling and gathering data.

A further valid reason why IKEA suits this research is the consistency of the retail design concept that is somewhat homogeneous regardless of country, which can be interesting for further research.

3.5.3 Procedure

My supervisor and I initiated contact with IKEA in mid-2014 and booked a meeting with two contacts, to request opportunities for conducting research in IKEA. In September 2014, a meeting took place with two commercial managers responsible for different areas within IKEA in Sweden. At the first meeting, everybody got acquainted and discussed the potential benefits for both parties. Later, my supervisor and I presented our research proposal to them, which was met with a positive response. Additionally, we received the contact information for the store manager whom we later interviewed and questioned for additional information.

At the next follow-up meeting discussions about opportunities, methods and implementation took place. It was agreed upon that our experimental area would be limited to the lighting department. In addition, this meeting was about how, when and who we should meet for progression.

3.5.4 Ethical considerations

On several occasions during my PhD studies I was asked about my view of sensory marketing and whether or not it is ethical considering the recurring concepts of stimuli, experiments, manipulation and purchasing. To clarify some misinterpretations regarding how I view my work and the reconsiderations made to ensure there was no misconduct, let me first discuss...
some possible misinterpretations, my viewpoints and lastly the process of seeking advice from ethical organizations.

Although it can be argued that in general there exists a dismal and accusatorial image of marketers luring consumers (Sher, 2011), generally this is not the case (Gummesson, 1994). Luring consumers into purchasing goods and products of poor quality or that do not meet consumer expectations, has repeatedly been shown to be an ineffective way of generating income (Gummesson, 1994).

While sensory marketing has received media attention and coverage, the tone has been skewed in such a way that they reader may assume that its application is aimed to unconsciously manipulating consumers to make purchases against their will, which is similar to the deontological perspective (Ferrell and Gresham, 1985). Such is not the case (see Hultén, 2015; Krishna, 2012; Spence et al., 2014). The psychological, deontological, philosophical or theological discussion of causation, free-will and consumer behavior have been previously discussed (Baumeister et al., 2008; Ferrell and Gresham, 1985). I will not go into the philosophical and theoretical conceptualizations regarding these topics, however, what I can offer is my view and how I view this research in relation to possible ethical criticisms.

A transaction between a consumer and a firm is a conscious decision, involving rational choice and price (Bettman et al., 1998). There are many possible moderating and mediating effects in the process of purchasing decisions, which lead consumers to actively and bodily decide to pick up a product. In this research, it can be argued that consumers took more time to reflect over their decision, which was induced by them feeling more comfortable in the retail store context (Chebat and Michon, 2003; Donovan et al., 1994). Regardless weather sensory stimuli in retail store atmospheres have shown to increase purchasing and sales (Turley and Milliman, 2000), a myriad of influences and reasons exist that impact each individual purchase decision. However, what retailers can steer is making the atmosphere as pleasing as possible so that the consumer will stay longer and gather more information about a product, thereby increasing the probability of a purchase being made.

My work studies measures, such as time spent, emotions, browsing behavior and purchasing. To understand whether the studied retail store context was pleasing and whether consumers felt an increase in emotions, an anonymous, self-administrated survey was conducted (see section 4.4 for details). Although initially consumers were unknowingly observed, they were later asked to fill out the survey and afterwards informed about the modified store atmosphere at the POP. To ensure that there was no questionable conduct, prior to the experiments both Vetenskapsrådet and Centrala etikprövningsnämnden in Sweden were contacted, neither of which found issues regarding the experiments that would require a further ethical investigation.
4. Thesis essays

This chapter presents and discusses the four essays, and their respective reflections, research designs, sampling, procedures and analyses, which offers insight into their individual contributions as well as their contributions to this research. I will first present essay 1, which was based on a literature review, followed by essay 2, a focus group discussion, and lastly essays 3 and 4 which dealt with field experiments.

4.1 Essay 1

4.1.1 Overview

Prior to conducting research, it is vital to have an overview of theoretical concepts and gaps in the field of research (Randolph, 2009). As much as sensory marketing research has gained traction over the last decade, it remains yet uncharted in the domain of multi-sensory interplay (Krishna, 2013). Subsequently there is room to further illustrate how multi-sensory interplay impacts emotions and consumer behaviors in various marketing contexts. Although this thesis overlooks the concept of cognition, it is included in the literature review as it is commonly used in synergy with emotion and behavior. Including cognition also provides a broader overview of multi-sensory interplay in a marketing context, which contributes to a richer research agenda.

The first essay\(^1\) aims to shed light on this uncharted territory and to give a better overview of multi-sensory interplay in marketing. The literature review contributes to this thesis with the identification of theoretical gaps in multi-sensory interplay, a research agenda and relevant combinations of sensory cues in retail contexts. Moreover, the review aids the assessment of the first

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\(^1\) Helmeffalk, M & Hultén, B (Forthcoming). Multi-sensory interplay in consumer marketing context: A review and research agenda. In peer-review process
sub-question, which indicates multi-sensory congruency as being important for the effects on cognition, emotion and behavior.

My reflection in regard to the research process of essay 1 includes two important considerations, the first one being the identification and confirmation of the importance of sensory congruency, which is still insufficiently researched, especially in retail contexts. For instance, there were no clear guidelines as to how the review could contribute to the forthcoming experiments, since congruency is highly contextual. My second consideration was how the senses can be combined to examine their impact on emotions and purchase behavior.

### 4.1.2 Background, design and motivation

I aspired to develop an understanding of multi-sensory interplay, but also to explore the impact it has on consumer emotions and purchase behaviors. Prior to deciding the proper methods with which to answer these questions, I probed the literature to explore existing knowledge, and whether the field of research had insight into my questions. To my surprise, very little previous research existed, similarly noted in Krishna (2013), particularly in retail contexts. To understand this, essay 1 analyzes and explores the significance of leading psychological, marketing and retailing concepts to understand which permutations were unexplored and how they affect consumers. Since the concept of multi-sensory interplay is eclectic and interdisciplinary, the review delimited its focus to marketing research and materialized an agenda for future research on its own. For the main research question of this research, concepts such as retail context, emotions, behaviors, congruency and multi-sensory interplay were of particular interest.

A literature review was therefore found to be a suitable means for addressing these concepts. Following the arguments of Randolph (2009) and Gall et al. (1996), the purpose of a literature review is to clarify, enhance, identify and/or generate new models or avenues for research. Regarding the rationale of employing a literature review, I aimed to clarify, identify and organize multi-sensory interplay, meaning I aimed to conduct studies involving more than one sense, to enter results into tables, and to sort them into the effects of consumer cognition, emotion and/or behavior.

To summarize, the essay 1 employed a qualitative literature review, following the guidelines set by Ogawa and Malen, seen in Gall et al. (1996). The central contributions for the first sub-question are found in the analysis in the review, discussions and research agenda. Tables were also constructed in order to give the reader an overview of the multi-sensory research that was conducted in retail, contexts where emotions and consumer behaviors were studied. The review has its own contributions while simultaneously answering the first sub-question of this thesis, which can be found in chapter 5.
4.1.3 Sampling and eligibility criteria

To gather and sort articles from within the marketing literature, the characteristics of the sample were mainly controlled by the three eligibility criteria. They worked as a filter for the wide array of studies in the domain of sensory marketing. The criteria followed a framework similar to the first sub-question, which included the aspect of multi-sensory interplay, as well as emotional and behavioral effects.

In accordance with Webster and Watson (2002, p. xxi) and Hart (1998) who underline that pinpointing relevant literature is the first step in a literature review, my co-author and I examined the bulk of academic articles in databases. The ranked journals that were of particular interest were the Journal of Marketing, Journal of Consumer Research, Journal of Retailing, Journal of Business Research, Psychology & Marketing, Journal of Consumer Behavior, among others. Initially, we also included psychological databases and articles that were later removed due to the fact that they did not fit into marketing contexts. Multi-sensory interplay research is eclectic, and includes a myriad of concepts and keywords that at first may not seem applicable. However, subsequent reading revealed that some studies, previously thought to be irrelevant, actually included properties of multi-sensory interplay. For instance, a study investigating how smoking influences sales in nightclubs, upon closer inspection revealed interaction effects or variables such as genre, olfaction and visual elements. As mentioned, it is difficult to include all existing research, but after investigating whether the concept of multi-sensory interplay in marketing was included, several eligibility criteria were developed.

The first eligibility criteria were sensory related words and synonyms, such as: visual, vision, sight, eye, optical, color, hear, audio, music, sound, auditory, smell, scent, essence, odor, taste, gustation, appetite, touch and haptic. In order to minimize reduce the number of articles, keywords were added such as marketing, interplay, servicescape, sale, retail, service, products, brand, branding and other marketing related concepts were added. The query resulted in 432 articles that were systematically organized into tables.

The second eligibility criteria used to categorize the studies was, multi-sensory, so studies that only included single sensory cues were eliminated. Studies involving two or more senses (cues) reduced the number from 432 to 135 articles.

The third and last criteria were studies in marketing contexts, everything from retailing to product design. The elimination resulted in a final number of 69 (n) articles. The reason for categorizing the literature into retailing, branding, product design and hospitality and food context, was that the sample
patterned these categories by themselves. For that reason, it is assumed that these sub-categories represent multi-sensory interplay in marketing contexts. Separating the marketing context into categories, also provided a richer discussion in the analysis and the research agenda. In addition, it provides an opportunity to discuss the retail context, which is of particular interest for my research.

4.1.4 Procedure and analysis

As seen in the eligibility and sampling, it can, to some extent, be argued that the literature review seemed systematic. However, a qualitative approach was employed that follows the guidelines of Gall et al. (1996), in their interpretation and summary of Ogawa and Malen’s (1991), and Randolph (2009) method.

The analysis was carried out in eight steps. The first four steps included, the data gathering process, the problem, the search for literature, and the classification of articles and books, and have been described in the previous sections and will not be presented here. Step five, as proposed by Gall et al. (1996), was created by summarizing articles and then inserting data into a table. These summaries provided and adequate amount of relevant information for further inquiry and made it easier to categorize articles into possible combinations between the senses. The theoretical framework of the essay was similar to the one used in this research, which studied consumer emotions and behaviors. Prior to the analysis came step six, an extensive process, requiring reading, comparing and memorizing concepts, as well as finding possible similarities and dissimilarities in the data. Patterns emerged and were identified when reading studies. These were then written in a document and summarized in relation to the aim of the essay. Step seven, the contradiction in data, worked as a validity measure where the data was checked to see if it was in some way contradictory or abnormal. Many of these validity steps were addressed by choosing ranked journals and confirming that they were eligible. No major contradictions were found. The last step, the use of colleagues or informants to corroborate findings, was also a validity measure and was done by quality checks in seminars, discussions and analyses amid the collaborating authors.

The analysis was separated into the different marketing contexts which discussed the literature and were later concluded in relation to the research question and the purpose of the essay. A research agenda was subsequently developed highlighting the need for additional research and how the field of multi-sensory interplay research can be further developed.

My reflection regarding the procedure of the literature review is that it provides a relevant contribution to multi-sensory research and that the research agenda is valuable to both my research and to the research field in general. I also noted during the process that the multi-sensory interplay
research in marketing is growing rapidly and that the work will surely need an update in a few years.

4.1.5 Summary
Multi-sensory interplay refers to the interactions between the senses. While humans perceive surroundings holistically with the senses, the same logic applies to products, services, and retail stores (Ballantine et al., 2010; Shams and Seitz, 2008; Svensson and Grönroos, 2008; Verhoef et al., 2009). There are various studies highlighting the importance of combining two or more senses (Achrol and Kotler, 2012; Hultén, 2011; Krishna, 2012; Krishna and Schwarz, 2014; Spence et al., 2014), but only a few have actually tried to encompass and explore multi-sensory interplay in marketing. Krishna (2013) agrees and states that further research on multi-sensory interplay is needed. Specifically, she emphasizes: “One of the main areas of research is the interaction between the senses, where there are unlimited opportunities for multi-sensory stimuli whose effects are not yet known” (ibid., p. 163).

Multi-sensory interplay is interdisciplinary, eclectic and has not been explored in relation to different marketing concepts, such as branding, hospitality, product design or retailing. The present review addressed this with the help of 69 articles and a research agenda. The findings identified several different sensory combinations across different marketing contexts. The review discussed how marketing contexts differ among branding, retailing, product design and hospitality in regards to their effects on consumer cognition, emotion and behavior. Multi-sensory interplay was found to have significant effects on consumers in all marketing contexts. Sensory congruency was identified as a crucial component in many studies and was argued to be closely related to the emotional perception of sensory cues.

A research agenda was developed based on the findings and the areas that needs further research. More specifically, intensity was a component in multi-sensory research in need of further research. Research is in need of new reliable methods to establish an optimal intensity of cues in experiments. Focal and background interplay are other domains which involve depth within multi-sensory research and need to be further conceptualized. Moreover, various territories are as yet insufficiently charted within the concept of congruency in sensory marketing, such as the examination and conceptualization of semantic-, thematic-, sensory-, product- and image-congruency. Lastly, research is discussed beyond the common five senses in multi-sensory marketing.
4.2 Essay 2

4.2.1 Overview

The literature review and research agenda in the first essay laid the foundation for the second essay. The findings obtained from essay 1 determined what sensory cues, in interplay, are unexplored in the domain of marketing and retailing research. Additionally, congruency between these and the retail store atmosphere was established. With regard to the findings of Lwin et al. (2010) and Mitchell et al. (1995), it is crucial to establish congruency between cues and the retail store atmosphere. Thus, essay 2 explored how consumers prefer a fit between visual, auditory and olfactory cues, in a retail context, synonymously referred to as a retail setting in the essay. Moreover, essay 2 contributed to answering the second sub-question, which explores what preferences consumers have regarding how congruent sensory cues should be in relation to products, service and store image in a retail store context. Answering this sub-question consequently provided the appropriate variables for inquiry for the forthcoming experiments.

It was necessary that the congruency was consistent during the course of all the experiments and I wanted to avoid the negative effects of incongruity as shown in Beverland et al. (2006). Focus groups were used to establish consumer preferences in order to determine what sensory cues fit with each other in the specific retail atmosphere. The preferences that emerged from the discussions provided me with input for establishing congruent sensory and atmospheric cues, which operationalized the measurements used for the experiments in essay 3. I needed to understand how particular cues were perceived from a consumer perspective and how these were in relation to various elements in-store in order to conceptualize congruency. The qualitative insights also facilitated ideas and further guided the development of the experiments in essays 3 and 4.

4.2.2 Background, design and motivation

Focus group discussions (FGDs) were employed to investigate congruency in a retail store atmosphere at IKEA in order to identify unexplored combinations of sensory cues in retail contexts. The interplay between visual, auditory and olfactory cues in retailing were found lacking and were used as input for discussions. Focus group discussions are widely used since they are argued to be time efficient, while providing a sufficient amount of empirical material (Byers and Wilcox, 1991), which is why they were chosen for essay 2. A

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common belief is that FGDs generate a superior quantity of ideas. Fern (1982), however, disproves this notion. The advantages of focus groups are comparability, less polarized data, flexibility and the fact that they offer a broader and more in depth understanding that would be difficult to achieve by other methods (Morgan, 1996). For these reasons, I employed focus groups instead of interviews and other qualitative research methods. FGDs also offered alternative insights when participants discussed different opinions, without me interfering.

In this regard, focus groups were used as a starting point in determining the properties of visual, auditory and olfactory cues and what cues could be used in later experiments; moreover, how these cues are congruent with each other and the IKEA retail store context. In order to discuss sensory cues and congruency, these were operationalized to a semi-structured scheme, with introductory, core and ending questions, following the guidelines of Kardorff et al. (2004) (see Appendix).

4.2.3 Population and sampling

A total sample of 24 (n) participants (12 male and 12 female) participated in the FGDs. I gathered the sample in Kalmar, investigating an IKEA retail store and its lighting department. The retail store atmosphere was identified as neutral, and referred to as functional/utilitarian rather than emotional/hedonic. The atmosphere covers a smaller section in the lighting department and its products.

In alignment with Morgan (1996) rule of thumb, four focus groups were employed with six participants in each group. Stratified purposeful sampling was used and the sample was divided into two main categories, which consisted of homogenous female and male groups. These were then arranged into subgroups, same age – same profession and different age – different profession. All the participants were asked if they were familiar with the store and the product setting that was to be discussed, and if so, they were chosen. My choice of stratifying the sample shared the reasoning of Knodel (1993, in Morgan, 1996) who advocated having multiple groups under each separate segment provides an “acceptable design” (p. 144). In other words, homogeneous groups provide richer discussions, within, however, a particular viewpoint. To expand the viewpoint, extra focus groups were employed, which included different gender, professions and ages. These provided not only group perspectives but also differences among the groups. There are multiple possible combinations of influences on how a person perceives congruency in-store, but within the scope of this research question, I argue that the sample was sufficient enough. For instance, age and profession can influence their thoughts and emotions when reasoning, which is important when discussing congruency preferences of consumers (Kiel and Layton, 1981; Raju, 1980; Yalch and Spangenberg, 1990). The participant's
professions ranged from architect, lawyer, and engineer to barber, project leader, student and teacher, which I reasoned to be fairly diverse.

The participant recruitment process emanated from the eligibility criteria and the stratified sampling requirements. The first two groups, ‘similar age – similar profession’ was recruited during weekdays, where they were asked to take part in a focus group where little information other than the main theme was given, in order not bias arguments beforehand. They were mainly approached spontaneously in various places that matched the criteria. Participants agreed upon being contacted for an arranged meeting. They were subsequently assorted into a male and a female focus discussion group. In addition, the sample in the second two groups, ‘different age – different profession’ were asked to recommend other people whom they thought would also match the criteria. They too, were given the same information.

4.2.4 Procedure and analysis

During a period of three months, four FGDs were held in locations such as conference rooms or workrooms at Linnaeus University. Each meeting was approximately 80 minutes and was video recorded, after getting oral consent from each of the participants.

In the first stage of the FGDs, I explained the strict confidentially of the discussions and ensured the anonymity of each participant. Moreover, each participant was assigned a number to be used in the transcriptions, in order to ensure their privacy. Afterwards, in an attempt to make each participant feel comfortable, I reserved some time for small talk and offered snacks and coffee to increase energy and the mood of participants. Then, each participant was given a collage of pictures taken of the beginning, middle and end of the lighting department in order to enhance their memory of the atmosphere being discussed.

Following the steps of Kardorff et al. (2004), I analyzed the focus groups by identifying categories. For this essay the analysis was conducted by reading the transcribed material from the video FGDs several times and trying to understand the context in which it was spoken. Whilst reading the transcribed material, arguments and ideas were contrasted, compared and independently interpreted. These were assembled into a guide of coding which was done in a separate document, by gathering chunks of transcribed material and carefully sorting it into discovered themes. This material was then summarized while keeping the essence of the text. I read the material several times in an effort to understand the linkages between concepts and arguments. To strengthen the face validity, the process included other researchers that looked at the coding and discussed similarities and differences in the categorization of data. This text was then conceptualized and synthesized into a model, which showed linkages and relationships between the discussed concepts.
It was very helpful to videotape the focus groups as it helped to identify who said what. During the process, I found discussions that overlapped conceptually and contributed to the strengthening of some arguments and themes. The four focus groups were sufficient enough to reach empirical saturation, and additionally produced various suggestions for congruent sensory cues in the specific retail store atmosphere.

4.2.5 Summary

The essay recognizes difficulties in understanding congruency in current marketing research. Despite being underlined as an important ingredient for consumer emotions and purchase behaviors (e.g. Hultén, 2015; Mattila and Wirtz, 2001; Mitchell et al., 1995; Morrin and Chebat, 2005; Spangenberg et al., 2006), congruency has avoided being conceptualized. This could become utterly vital for retailers when offering products and services in-store, (Baker et al., 1992; Baker et al., 2002; Bäckström and Johansson, 2006). The essay raises concerns of congruency in retail contexts, such as which sensory cues should match the specific retail store atmosphere, as well as their correspondence to the store image and products. To resolve these queries, the essay explores how and why consumers prefer sensory cues in a retail store. These questions are within the framework of sensory cues and congruency in a retail context, which denote congruent visual, auditory, and olfactory cues individually, and them when in multi-sensory interplay (Dubé and Morin, 2001; Spangenberg et al., 2005; Valdez and Mehrabian, 1994).

To address these issues, the essay employed a focus group research design, with a total of four groups and 24 (n) participants, who discussed how and why they prefer visual, auditory and olfactory cues in an IKEA retail setting. Following the procedures of Kardorff et al. (2004), three themes were identified and discussed. Findings were then conceptualized and a model was developed. The model depicts congruency as a mechanism or mediator between, on the one hand, product, service and store image, and on the other, retail atmosphere and sensory cues.

Utilitarian and functional components in the retail store were found to be essential and a prerequisite for congruent sensory cues. Thus, retailers should first strive to offer function and then consider fit. In addition to congruency, intensity was emphasized as being of influence on perception, such as the volume of music, strength of store image or scent. To summarize, consumers, compare and categorize various sensory cues in relation to products, the service offered by the firm and the store image.

Furthermore, the essay illustrates how retailers can modify retail atmospheres with regard to congruency and what consumers prefer in terms of visual, auditory, olfactory and multi-sensory cues. This have contributed to knowing which cues are congruent to each other, the store image, product and
to the specific retail atmosphere, which have provided input to the empirical studies of essay 3 and 4.

This essay extends our knowledge of congruency in a retail store context. While past research has emphasized the emotional and behavioral impact congruency has on consumers (e.g., Mattila and Wirtz, 2001; Morrin and Chebat, 2005; Spangenberg et al., 2006), this essay offers a model that explains the linkages of congruency in retail contexts. Further research might address moderating influences on congruency, such as culture (Hultén, 2015), self-image (Ballantine et al., 2015) or lifestyle, among others.

4.3 Essay 3

4.3.1 Overview

Following essay 2, three field experiments were conducted to investigate consumer emotions and purchase behavior, with a total of six treatment groups.

Three senses and cues in interplay that were particularly congruent to the specific retail store context, were selected from essay 2. Sensory cues were then operationalized and separated into six treatment groups, two of each of the senses: vision, hearing and smell. This separation offered this research a broader view on how different sensory stimuli impacts consumers in contrast to existing research that mostly focuses on two.

As it was difficult to isolate all sensory cues, the most prominent ones were chosen based on the findings in essay 2. Another crucial methodological consideration was whether or not the cues were congruent with each other and the atmosphere in essay 3. If not, it could jeopardize the forthcoming multisensory experiment. Thus, essay 3 aimed to investigate what cue, within each sense, was most effective in generating positive consumer emotion and purchase behavior. The three most efficient ones were subsequently combined and tested in a field experiment as encouraged by Gneezy (2017).

After having identified the most potent sensory cues with significant effects on consumer emotions and purchase behaviors, these were ultimately evaluated, analyzed and compared to each other, and can be found in the conclusion chapter. Next, to further the interplay treatment group, the three sensory cues with the most impact from essay 3, were combined together and implemented into the same experimental setting in the empirical study of essay 4.

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4.3.2 Background, design and motivation

Essay 3 investigated what congruent visual, auditory and olfactory sensory cues influence consumer emotions and purchase behaviors in a retail store atmosphere. To do this, essay 3 investigated six independent variables as sensory cues (*Aesthetics and lighting under visual cues; music and background sounds under auditory cues; conferred congruent scent and smelled congruent scent under olfactory cues*).

The experimental research design was chosen because the query required manipulation and comparison, both of which are cornerstones in experiments. There are, however, two types of experimental methods: laboratory experiments and field experiments. The benefits and disadvantages of employing laboratory experiments are that they can be abstract in real situations and consequently have high internal-, but low external validity. Moreover, Thye (2007, p. 84) explains that, “*Experimentation is the best known way to examine theoretical hypotheses, eliminate alternative explanations and provide clues to causal inference*”. The number of variables that is removed in order to pinpoint the specific variable may actually not reflect real situations (Howitt and Cramer, 2007). To clarify, my initial interest was also to investigate how sensory cues can be practically applied in real situations and to study outcomes by modifying retail atmospheres. Whether or not sensory cues had impact on consumers, these outcomes, in terms of emotion and purchase behavior, are common and relevant for practitioners and researchers to observe. These observations, where consumers are unaware they are being observed and their intentions are undetermined, are more unbiased than surveys (Chandon et al., 2005). Therefore, as Gneezy (2017) would suggest, a field experimental design was most suitable.

As it is hard to control random sampling in field experiments and hard to stratify the sample, convenience and non-random sampling were used (Thye, 2007). The advantage of such is that quasi experiments are easier to set up, more cost-efficient and there is less interference on the external validity. The internal validity was mitigated through performing manipulation checks and gathering the control sample several times during the experiments in order to assess seasonal influences.

4.3.3 Sample and data gathering

The empirical study in essay 3 was conducted in the LED-section of the lighting department in an IKEA store in Kalmar, Sweden. A convenience sample of a total of 1,092 (n) observations were gathered by hired observers and myself. The measured control variables were gender, age and group belonging. For more details, see essay 3 in Appendix.

The experimental setting was in the LED-section of the lighting department in IKEA. More specifically, the retail store context covered an
invisible area next to the consumer path (see appendix 1 for details). The setting and its atmosphere were utilitarian and functionally oriented, which was confirmed in the findings of essay 2. Moreover, consumer purchase behavior was measured when consumers entered the invisible experimental area. Data was gathered during five months, mostly between 10:00 am and 5:00 pm, on Mondays to Saturdays. For consistency's sake data was compared in order to determine whether there were differences between weekdays and weekends. There were non-significant differences in the data between weekdays and weekends in terms of consumer purchase behaviors and emotions. As the experiments were conducted over the course of five months, we needed to examine whether there was any seasonal interference, such as people buying more LED-lights in different seasons and weather conditions. To investigate this, we gathered an additional control group at the end of all the experiments to investigate whether there were any control group differences. The post-control group validated the first one by not being significantly different, thus improving the external reliability. Moreover, in order to exclude promotional influences, such as temporary offerings or promotions, IKEA's homepage and advertisements were monitored and employees were asked on a weekly basis whether there were any such circumstances. During the data-gathering period there were no interfering promotions that could be found.

Three experiments were conducted that consisted of two manipulated treatment groups each (Aesthetics and lighting in the visual experiment; music and background sounds in the auditory experiment; conferred congruent scent and smelled congruent scent in the olfactory experiment). After a sufficient amount of data was collected for each of the treatment groups, it was disassembled and removed, then the subsequent one was assembled at the exact same POP. More details are provided in the forthcoming section.

4.3.4 Measurements, apparatus and procedures
To investigate consumer emotion and purchase behavior, I trained observers how to measure items as well as how to conduct the gathering of data in the real setting through coaching. To confirm the validity of data gathering, measurement checks were performed between the observer's data and my own to see if abnormalities could be found. In short, there were no significant differences.

Purchase behaviors were measured in terms of the time shoppers spent inside the retail POP (seconds) when subjected to sensory stimuli. Moreover, the observers measured the time they touched surrounding objects (seconds) and whether they bought any products inside (dichotomous) the treatment group. Time elapsed was measured with Smartphone applications. Purchases were measured when consumers took a product from the observed POP. While this did not actually confirm a purchase, it was assumed that consumers did
not leave the products elsewhere (appendix 1). I avoided measuring purchase behavior with surveys since answering intent can positively bias purchase behavior (Chandon et al., 2005; Morwitz et al., 1993; Zwane et al., 2011).

Emotions were measured with a frequently employed Likert-like scale as discussed in Norman (2010). More specifically, consumers were asked to answer questions measuring two aspects of emotion, valence levels (7-point) and arousal levels (7-point), similar to the affect scale of Russell et al. (1989). These scales were motivated with the argument that single-item scales are suitable in situations that require faster responses, since the consumers were 'rushed' in the directed path and more likely to answer shorter surveys (Wanous et al., 1997). Arousal was quantified, in alignment with Holbrook and Gardner (1993), by asking consumers their impression of the LED-section on a scale from 1 to 7, 1 being sleepy, (very calm), 4 being neutral and 7 being exciting (energetic). For valence, 1 was strong displeasure, (uncomfortable), 4 was neutral and 7 was very pleasant. Instead of using many different questions per synonymous adjectives, these were grouped together in order to give the consumer a clearer picture of the concept valence and arousal, although being single-item.

There was no interaction between observer and participant during the observations, which enhances the internal validity which aligns with suggestions by Thye (2007). Immediately after observers registered the observation, shoppers were approached and informed about the experiments and asked to fill out a survey, including the manipulation check (appendix 3).

For each sensory cue, different apparatus and materials were used. The experiments used as much material from IKEA as possible in order to blend in and avoid an unnatural contrast in the atmosphere. Note that all the suggestions for cues in this procedure were extracted from the focus group discussions in essay 2. Although I could not exclude all the sounds and scents in the control group, sounds were minimized by disconnecting the existing speakers in the retail setting. Scents were examined and perceived as being almost non-existent and visuals in the LED-section were perceived as sterile and non-aesthetic.

To know which cues to employ in the retail atmosphere, focus groups discussed and considered visual, auditory and olfactory cues they deemed to be congruent with the retail store atmosphere, and those were employed as a pretest in the experiments. Participants in the four FGDs, representing consumers, semantically paired the retail store context and LED-lamps to themes, such as coziness, environmental friendliness and home. From these themes they decided on visual cue variables, such as windows and curtains, which were reasoned to symbolize homes. The color red was proposed to represent themes such as family, warmness or coziness. As a result, red curtains were used in the experiment and the light in the second treatment group setup was rose-colored. Music and background sounds, such as slow-tempo jazz and various home sounds, including the sound of a fireplace, were
suggested as auditory cue variables. Scents, however, were discussed in terms of freshness and flowers. Two scents were found congruent to the atmosphere, of which one was only discussed to be congruent while the other one was discussed and smelled. The smelled scent was determined by smelling actual different scents and filling out a small survey, where they categorize the congruence between the scent and the empirical setting. These sensory cues were later installed in the atmosphere.

For the installed apparatuses (see appendix 1) for the aesthetic treatment group in experiment 1, curtains from IKEA were cut and designed to fit into the experiment. They were hung over the second shelf with the help of employees. Additional signs and plants were installed inside the experimental setting. These were placed above the products, clearly visible to the consumers. For the lighting treatment group in experiment 1, a multi-colored light bulb, (RGB) 60 Watt (800 Lumen) was installed in the same location as curtains were located and illuminated the setting and products below. Colors were edited and manipulated via Bluetooth with a smartphone application.

For music and background sounds in experiment 2, a 13-watt wireless speaker was hidden amongst the merchandise and was controlled by a smartphone. Jazz was playing in the music treatment group and relaxing sounds were playing in the background sounds treatment group. For every treatment group I conducted a manipulation check to enhance the validity of the study. However, consumers found it sometimes hard to remember what type of song or scent they experienced when asked retrospectively.

For both scent treatment groups in experiment 3, a scent diffuser was installed inside the experimental setting, aimed to and with properties set to cover the experimental area. To confirm intensity, the level of scents was established by asking random customers and in-store employees. Two scent cartridges were employed for each experiment, which were established in pretests in essay 2.

4.3.5 Summary
The essay reveals that sensory cues positively influence shopper emotions and purchase behaviors (Michon et al., 2005; Turley and Milliman, 2000). The essay emphasizes that congruency between sensory cues and retail store atmospheres, is important for consumers (Cheng et al., 2009; Garaus et al., 2014; North et al., 2015). Previous research, however, has failed to investigate how congruent multi-sensory cues, such as visual, auditory and olfactory cues, influence shoppers’ emotions and purchase behaviors. This essay studies sensory cues in an utilitarian and visually dominant retail setting and examines the relationship between congruent visual, auditory and olfactory sensory cues, consumer emotions and purchase behaviors.

Six different variables were examined, visual cues as aesthetics and lighting, olfactory cues as actual congruent scents and speculated congruent
scents, and lastly auditory cues, as music and background sound. These sensory cues were investigated with experiments to examine their effects on consumer emotions and purchase behaviors in a retail store atmosphere.

Findings showed that congruent sensory cues, more specifically, auditory and olfactory cues, had a positive impact on consumer emotions and purchase behaviors, similarly to what research suggest (Areni, 2003; Baker et al., 1994; Spangenberg et al., 2006). On the contrary, visual cues did not exert any significant positive, nor negative impact on consumers. As the specific retail store atmosphere was visually oriented, visual cues, despite being congruent and having the right intensity, had no impact on emotions and purchase behaviors. This result signifies that congruent sensory cues that complement a setting with a sense are those that have most impact on consumer emotions and behaviors.

Essay 3 contributes to a number of theoretical and managerial implications. Firstly, this essay advances the perspective of sensory cues in retail contexts (Donovan and Rossiter, 1982; Mehrabian and Russell, 1974; Spence et al., 2014; Turley and Milliman, 2000), by showing how different type of cues can impact consumers. While prior literature has highlighted congruency as important (Mattila and Wirtz, 2001; Morrin and Chebat, 2005; Knasko, 1995), this research contributes a new perspective on the matter; it is not sufficient for sensory cues to be congruent with each other and the setting, but rather they need to stimulate the senses that are under-stimulated, thereby facilitating a holistic and multi-sensory atmosphere, as in line with Spence et al. (2014), and Raju (1980).

4.4 Essay 4

4.4.1 Overview, background and design

The contribution of essay 4, demonstrates how multi-sensory cues in interplay from a particular set of visual, auditory and olfactory cues impact consumer behavior and emotion. Since the experiment was conducted in the exact setting as the one in essay 3, these results offered comparisons between essay 3 and 4, which contribute to answering the fourth sub-question.

The reason for choosing only three cues in interplay was that there is always a possibility of triggering sensory overload with negative effects (Spence et al., 2014). Therefore, the challenge was deciding which cues should be added in order to be pleasantly perceived. Choosing only the most proficient sensory cues from the findings in essay 3 kept the number of cues to

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4 Helmfalk, M (Forthcoming). The impact of multi-sensory cues in a retail atmosphere on purchasing: Browsing behaviour as a mediator. In peer-review process
a minimum, which reduced the risk of a cluttered environment and sensory overload.

The background, motivation and research design was virtually the same as in essay 3. In terms of method, the only difference was that the treatment group, namely the manipulated group, consists of three visual cues, grouped as one treatment group. These represented multi-sensory cues in interplay in a retail store atmosphere. Since there was already research that studied the impact of multi-sensory cues on time spent in a retail context, I had to come up with a new theoretical contribution. Therefore, I examined the concept of browsing behavior, which is underdeveloped in literature, with a mean value of time spent and time spent touching. While discussing browsing behavior, time spent is also shown in the essay, which contributes to answering sub-question 4.

### 4.4.2 Sample and data gathering

Accordingly, there were many similarities between the empirical study in essay 3 and essay 4. For example, sampling and data gathering were virtually the same in essay 4 as in 3, except that it used the combination of the three most potent variables of sensory cues from the previous study. This subsequently ended in convenience sample of a total of 823 (n), 408 (n) in the treatment group and 415 (n) in the control group. The same control group was used in essay 4 as in essay 3, that is to say exactly the same variables and POP as were used in the previous empirical study. Descriptive statistics and frequency rates are presented in the essay after the appendix. The data gathering went on for six weeks for the control group and six weeks for the manipulated group.

### 4.4.3 Measurements, apparatus and procedures

The observational scheme and emotions in essay 4 were measured exactly as they were in essay 3 and will hence not be repeated. The only difference is that browsing behavior was investigated, which is a mean value of time spent and time spent touching at the POP. However, for the thesis, essay 4 contributed sufficient results (emotions, time spent and purchasing) for me to compare with essay 3, while contributing new perspectives on browsing behavior. The analysis and statistical procedures studied the mediating effects of multi-sensory cues in interplay on emotions and browsing behavior with the SPSS-plugin “PROCESS” of Hayes (2013) (for details, see essay 4).

The difference between variables and these experiments were that light, music and congruent smelled scent were regarded as one treatment group. Together these were considered as a multi-sensory treatment group and installed in the treatment group setting simultaneously. The installation of sensors inside the POP was exactly the same as in essay 3. The findings in the
empirical studies of essays 1, 2 and 3 led to the establishment of congruency between cues in essay 4. The procedures and manipulation checks were identical as before.

4.4.4 Summary
The essay examines the relationship between multi-sensory cues in a setting and emotions, browsing and purchasing. Despite the literature has shown single visual, auditory and olfactory sensory cues to influence various consumer emotions and purchase behaviors (Beverland et al., 2006; Bosmans, 2006; Goldkuhl and Styvén, 2007; North et al., 2015; Reimann et al., 2010; Vieira, 2010), these are undoubtedly perceived as ‘multi-sensory’ (Spence et al., 2014). With this said, it becomes important for retailers to understand how sensory cues are in line with the products, services, store image and atmospheres (Helmefalk, 2016). As it has been evidenced that multi-sensory cues in retail settings can enhance consumer touch and purchase behavior (Hultén, 2012), no research as of yet has studied how multi-sensory cues in retail store atmospheres influence browsing behavior as a purchase behavior and its subsequent mediating effect on actual purchasing. Browsing behavior, is defined as when consumers examine merchandise for recreational or informal purposes (Bloch and Richins, 1983), which is similar to touch and time spent (Hultén, 2012). Browsing behavior has been conceptualized and suggested to positively influence purchasing (Ballantine et al., 2015; Beatty and Ferrell, 1998), but has not yet been empirically confirmed. Moreover, as emotions have been shown to influence other similar behaviors (Krishna, 2012; Turley and Milliman, 2000; Vida et al., 2007), it becomes important to examine whether emotion mediates the relationship between multi-sensory cues in retail store atmospheres and browsing.

To further develop browsing behavior as a concept and its role in being a purchase behavior, it is important to highlight two crucial linkages. Firstly, the linkage from multi-sensory cues to browsing via emotion, and secondly, the linkage from multi-sensory cues in atmospheres to purchasing via browsing.

To examine these relationships, an experiment was conducted, followed by two mediating analyses. An utilitarian oriented and sterile retail setting was modified with visual, auditory and olfactory cues, which together constituted a multi-sensory setting. A field experiment was employed, measuring the components of emotions, browsing behavior and purchasing.

Findings showed that multi-sensory cues in an atmosphere had a positive influence on consumer emotions, confirming past literature (Donovan and Rossiter, 1982; Yalch and Spangenberg, 2000). However, they did not mediate the relationship between multi-sensory cues in an atmosphere and browsing behavior. Moreover, browsing behavior had an evident mediating effect on the relationship between multi-sensory cues and purchasing. This research has both confirmed theoretical linkages in previous literature (Ballantine et al.,
and has opened up new research avenues in regard to multi-sensory cues in designing retail store atmospheres and the concept of browsing behavior.
5. Conclusions

The following chapter discusses the findings and conclusions of this research, firstly by answering the main research question and by developing a conceptual model. Four sub-questions are then answered, followed by implications for theory and practice. Lastly, limitations and suggestions for further research are highlighted.

5.1 Conclusions and model

The four sub-questions assist in answering the main research question by (1) reviewing the impact of multi-sensory interplay on consumer emotions and behavior, (2) explaining how consumers prefer congruency in a retail store context, (3) examining what type of congruent sensory cues impact consumer emotions and purchase behavior, (4) and lastly, examining the impact of multi-sensory congruent cues in interplay on consumer emotions and purchase behavior in a modified retail atmosphere.

5.1.1 Main conclusion

As stated in the introduction, the main research question is: How do congruent multi-sensory cues in interplay, impact consumer emotions and purchase behaviors? The main conclusion is that multi-sensory cues in interplay in retail atmospheres have a positive impact on consumer emotions and purchase behaviors. This research showed that multi-sensory cues in interplay with setting-congruent cues emerged as reliable predictors for the influence on consumer arousal, valence, time spent, touch, browsing and purchase.

Multi-sensory cues in interplay have shown to have greater effect on emotions and purchase behaviors than single ones do. Furthermore, among the congruent sensory cues added in the atmosphere, auditory and olfactory ones had the most evident effects on consumer emotions and purchase behaviors. As these were non-visual in an already visually dominated atmosphere, it is
evident that sensory cues, which are non-visual, are the ones that are most crucial to assess. Evolving the notion of adding cues that are perceived as missing, can be compared to the conception of multi-sensory interplay. To exemplify, when a perceived missing sensory cue is supplemented, it contributes to the multi-sensory brand experience (Hultén, 2011) and the holistic image, equivalently touched upon in literature (Ballantine et al., 2010; Ballantine et al., 2015). The concept of involving additional senses and cues is argued to correspond with the theory of optimal stimulation level (Raju, 1980; Steenkamp and Baumgartner, 1992), which can assist in explaining why adding cues, such as auditory and olfactory ones, has the impact that it does. Therefore, filling out sensory voids in the atmosphere can contribute to creating a congruent and holistic retail store context, and thereby attracting shoppers and increasing the probability of purchases being made. Contrary to the theory of optimal stimulation level, my conclusion ensures that overusing the same category of stimuli does not show any negative impact, however, neither does it show significant improvement. Several concurrent theories discuss that shopping experiences can become stronger by involving additional senses into a service, product or offering (Hultén, 2011; Hultén, 2012; Krishna, 2012; Lindstrom, 2005; Raz et al., 2008), which I deem to be confirmed by this research.

Based on the main conclusion of this research, I argue that it is critical to understand that the effects of sensory cues do not function optimally on emotion and purchase behavior without congruency. For instance, including non-congruent pleasant cues in an odorless store does not result in better outcomes (see Parsons, 2009).

Additionally, as discussed in the essay 2, in order for a retail store to be pleasant, retailers ought to consider sensory cues holistically and in relation to their products, retail atmosphere and store image. My interpretations are that retailers should employ and loop the selected sensory cues between the product and store image, until the appropriate level of congruency is achieved.

The main conclusion in this research is not fully in line with the S-O-R model (Donovan et al., 1994; Mehrabian and Russell, 1974), as valence and arousal have not been significantly shown to mediate the cue-behavior relationship. To clarify, emotions have shown to be influenced by single sensory cues as well as multi-sensory ones in interplay. However, valence and arousal, in term of emotions, have shown not to mediate purchase behavior, which is partly found in Rimkute et al. (2016) when it comes to sensory cues. Still, these outcomes can be of importance for recognizing the positive effects cues can have on emotions, despite not mediating purchase behavior. Emotions can instead, as in past research, be argued to mediate other marketing theories, such as brand experience, brand loyalty or brand image (Brakus et al., 2009; Fulberg, 2003; Yoon and Park, 2012). The lack of an evident mediating effect between emotions and purchase behavior can be argued to be for various reasons, one of them being the need of measuring
emotions in real time while shopping or the employment of other methods. Nevertheless, auditory and olfactory congruent cues have impact, foremost on valence, also supported in Vieira (2013). It appears that cue-atmosphere congruency is not sufficient enough for stronger valence, as shown in the condition for visual cues, but requires them to complement the atmosphere in the retail context, such as adding music in an otherwise silent store.

Finally, the main conclusion portrays the link from sensory cues and emotions on consumer purchase behavior. Consumer purchase behavior, in terms of time spent, browsing and purchase are evidently affected by multi-sensory cues in interplay. Essays 3 and 4, both confirm mediating effects among the components of purchase behaviors, which I reason is important for retailers to consider when measuring consumer behaviors. To illustrate, time spent and browsing, both had mediating effects on purchasing. Additionally, essay 3 and essay 4 evidenced that the more time consumers spend at the POP, the more prone they are to making a purchase. The same effects applied for browsing behavior.

5.1.2 Multi-sensory congruent cues in interplay: a conceptual model

Based on the main conclusion, a conceptual model was developed that identified the leading concepts and their relationships (figure 5.1). The conceptual model is an extension of the theoretical framework in figure 2.4, and is a framework for developing congruent multi-sensory cues in interplay in retail store atmospheres.

From the main conclusion it is possible to state that involving more senses in an atmosphere of a retail context has greater impact on consumer emotions and purchase behavior than when only utilizing a single sense. To illustrate, as evidenced in essay 3, additional visual cues seem not to have any significant effect on shoppers, as the retail store atmosphere was already visually dominating. Additionally, the conclusions from essay 4 indicate that when multi-sensory cues are in interplay, they become the strongest contributor to consumer emotion and purchase behavior. Thus, the conceptual model shows three equally large circles symbolizing the right balance between visual, auditory and olfactory cues. These should be in interplay and congruent to each other, such as certain scents being perceived as fitting better or being better associated to certain type of music. Once reaching this state, sensory cues should consequently have an impact on consumer emotions and purchase behaviors. The relationships between the circles also signify that stimulating more senses enhances the experience and emotions in terms of valence and arousal and that consumers tend to stay longer, browse more and successively purchase more frequently in multi-sensory modified atmospheres in a retail context.
These sensory cues should not only be congruent with each other, but also with the retail store atmosphere, store image and products, which are illustrated outside the circles. The conclusions in essay 2 showed this by signifying how consumers perceived products, services and store image as a starting point when determining congruent sensory cues in relation to the retail store atmosphere. Accordingly, I suggest that it is important that retailers ensure that other elements inside a retail store do not interfere with the outcome of the congruency between sensory cues, store image, products and retail setting. The relationship between multi-sensory cues in interplay and its congruency is illustrated in figure 5.1 as well as how it subsequently impacts consumers. Moreover, the model indicates that it is difficult to develop one ultimate solution and in-store modification that encompasses all product categories with equal efficiency. This implies that a retail store should avoid using the same music or same scents for the whole store to avoid possible mismatching.

The final part of the conceptual model shows how multi-sensory cues in interplay influence consumer responses in terms of emotions and purchase behaviors. As previously mentioned, none of the essays rendered any mediating effects from emotions on purchase behavior, hence the causal relationship portrays both emotions and purchase behaviors as influenced by multi-sensory cues in interplay, but not as sequentially illustrated in the theoretical model (figure 2.4 in essay 2.7). Despite this, the link between emotions and purchase behavior cannot be completely neglected, as previous research has confirmed this link and my research has shown both emotions and purchase behavior to be positively influenced by multi-sensory cues in
interplay. Having not shown sufficient enough with evidence to eliminate the 
link between emotion and purchase behavior, I still chose to recognize the 
linkage with caution. To demonstrate this, an arrow is drawn between 
emotions and purchase behavior. Although multi-sensory interplay has shown 
to have an evident impact on purchase behavior, more specifically on, *time spent and browsing behavior*; both concepts functioned subsequently as a 
mediator for increasing the odds of making a *purchase*.

As said, the conceptual model indicates that emotions do not necessarily 
need to be influenced in order to facilitate purchase behaviors. It is sufficient 
to modify sensory cues to be congruent and to involve senses that are un-used 
or under-stimulated in the atmosphere. Addressing these senses will influence 
both the emotions and *purchase behaviors* of consumers. Additionally, in this 
research it has been shown that how consumers feel in terms of *valence* and 
*arousal* do not intermediate purchase behaviors.

Altogether, the proposed conceptual model illustrates congruent multi-
sensory cues in interplay and their relation to *store image* and *products* in a 
*retail store atmosphere*. Subsequently it also illustrates how multi-sensory 
cues when congruent, such as visual, auditory and olfactory cues, can, through 
interplay, have positive effects on consumer emotions and purchase behaviors.

### 5.1.3 Multi-sensory interplay

The first research sub-question set out to answer: "*How does multi-sensory 
interplay impact consumer emotion and behavior, according to contemporary 
research?*" As noted in Krishna (2013), the emotional and behavioral effects 
of sensory cues are well-evidenced in the domains of consumer psychology 
and sensory marketing. However, these have not been reviewed in relation to 
the eclectic nature of multi-sensory interplay in research. What is known about 
multi-sensory interplay is largely based upon empirical studies in psychology 
that investigate cross-modal maps and perceptions (e.g. Crisinel et al., 2012; 
Crisinel et al., 2013; Seigneurie et al., 2010; Spence, 2012). Thus, to further 
develop an understanding of how these concepts have been applied in 
contemporary research, the first research sub-question reviewed, described 
and developed a research agenda.

Essay 1 discussed and analyzed different combinations of multi-sensory 
interplay in various marketing contexts, such as retailing, product design, 
branding and the food and hospitality industry. When it comes to multi-
sensory interplay, the types of cues differ in relation to chosen context and 
industry. For instance, taste cues were, unsurprisingly, predominantly studied 
in food and hospitality contexts. Moreover, multi-sensory interplay in retailing 
contexts often investigates the relationships between sound and olfaction and 
between vision and sound. In summary, marketing contexts guide the type of 
cues. The review revealed that the multi-sensory interplay of three senses in
retailing contexts are lacking, thus illustrating a research gap for this present research.

Moreover, the review underlines a lack of evidence on the impact of multi-sensory cues in interplay on actual consumer emotions and purchase behaviors in real situations, this being one of the reasons for conducting field experiments in essays 3 and 4.

Additionally, sensory congruency is concluded as a central feature for many studies concerning multi-sensory interplay (Mattila and Wirtz, 2001; McDonnell, 2007; Morrison et al., 2011; Spangenberg et al., 2005). Although some studies did not directly discuss congruency or fit, they all shared similarities in regard to cues, the fit between each other and the effect they have on consumer cognitions, emotions and behaviors. Findings indicate that the direction of cognitive, emotional and behavioral effects is not symmetrical and plain, which is also discussed in Chebat and Michon (2003), “For retailers, whether emotions precede cognition or vice versa, the question may appear trivial. Yet, one does not go without the other” (p.537). Additionally, pleasantness was commonly associated with cue-congruency, which successively either enhances or impacts consumer behaviors in various marketing contexts. Some components of emotion and behavior, were found to be valence, arousal, purchasing, time spent and movement, which contributed variables and insight for the rest the research and research process.

The review emphasized cue-congruency as being important for multi-sensory interplay without actually having any clear instructions on how these should be paired and which cues are preferred by consumers when being congruent. Additionally, the developed research agenda also highlight the current lack of knowledge of cue-congruency in relation to concepts, such as store image or type of products, which is examined in the essay 2.

5.1.4 Congruency

The second sub-question: “What preferences do consumers have regarding how congruent sensory cues should be in relation to products, service and store image in a retail store context?”, employs the notion of congruency from the findings in essay 1. Like in the literature (e.g. Hultén, 2015; Mattila and Wirtz, 2001; Mitchell et al., 1995; Morrin and Chebat, 2005; Spangenberg et al., 2006), this research concludes that congruency is a crucial ingredient in designing multi-sensory atmospheres.

A conclusion is that products, service and store image are perceived by consumers as a starting point when determining congruency in an atmosphere. Prior to determining which sensory cues they preferred, these were looped between the products, services and store image. As a result, consumers preferred sensory cues that were congruent with each other, the products offered and the retail atmosphere. Furthermore, it can be argued, that retail stores that offer a variety of products should pay attention to the congruency in
each department. This suggests that cues in different departments should be modified in relation to the product category and store image. Paradoxical as it may seem, a harmony between unity and diversity is suggested. Interestingly, this can become problematic, as all atmospheres should be congruent to the store image, but still different enough to fit the product category.

Participants emphasized a common theme, fit to atmosphere and product. Visual, auditory and olfactory cues resembled the semantic concept of home. More specifically, consumers suggested visual cues as curtains, the color red and soft lighting. It was suggested that auditory cues be cozy, warm and of slow tempo. Slow tempo jazz was suggested for music, and the sound of a fireplace and sea sounds were suggested for background sounds. It was suggested that olfactory cues be herbal, flowery and fresh, which was thought to fit the retail store context.

The concept of multi-sensory cues in interplay was more or less neglected, as consumers reasoned single cues between products, services and store image. With this said, consumers did not know how cues should fit together, but rather related them to a theme, concept or store image that they consider as a fit. This logic confirms and reinforces the notion of holistic perceptions of environments (Ballantine et al., 2015; Demoulin, 2011).

Similar to Ballantine et al. (2010), essay 2 underlines that it is important to understand consumers’ preferences when modifying retail atmospheres, and that congruency is a prerequisite for consumer likings (Demoulin, 2011; Hekkert, 2006). Adjusting cues should be in line with consumers’ expectations and preferences. In essay 2, a congruency model was developed consisting of three congruency components: products, services and store image as one component, store setting (atmosphere) as the second, and sensory cues as the last one. The triad linkage model illustrates congruency as a mediator between these components and illustrates how congruency should be considered in order for consumers to like it, subsequently to behave accordingly.

5.1.5 Congruent sensory cues
The third sub-question: “What congruent visual, auditory and olfactory sensory cues impact consumer emotions and purchase behaviors in a retail store atmosphere?”, was studied in essay 3. It concludes that sensory cues that are perceived as complementary in the atmosphere, meaning those that were added to an already visual dominated atmosphere, have the greatest impact on consumers. Previous literature has raised issues of sensory overload (Ketron et al., 2016; Orth and Crouch, 2014; Raju, 1980), but has avoided explaining the perception of cues that are lacking. By investigating six different congruent cues, two for the visual, auditory and olfactory senses, essay 3 indicated that adding cues that stimulate other senses than the visual one, could essentially provide an ampler experience in relation to the offering, as more senses are involved, hence providing more information for processing (Macpherson,
Thus, it can be argued that congruent sensory cues encompass senses that were (un)consciously under stimulated, thereby complementing them. This conclusion reinforces the theory of optimal stimulation level (Raju, 1980; Steenkamp and Baumgartner, 1992).

Moreover, it was concluded that among the investigated visual, auditory and olfactory cues, three variables were found to have a significant positive influence on consumer emotions and purchase behaviors. Background sounds, music and smelled congruent scents were shown to contribute significant and positive effects on emotions and behaviors, which in line with previous literature, and contributes to the comparison of them while in the same retail atmosphere (Jain and Bagdare, 2011; Parsons, 2009).

In regard to the impact visual cues had on emotions, neither aesthetics nor lighting had an impact on valence or arousal. Auditory cues, such as music and background sounds, had significant effects on valence, but not on arousal. The same results were shown for the olfactory condition, where arousal was not affected by cues, while valence was.

The same cues that affected emotions also had an impact on time spent. Thus, it is concluded that music, ambient sound, and congruent scent, all had a significant positive impact on the amount of time consumers spent inside a retail store. Essay 3 showed that time spent significantly influenced the odds of purchase, which contributes to illustrating the complete linkage from cues, time spent, lastly to conducted purchase. Accordingly, it indicates that retailers can influence sales and consumer purchasing by modifying the retail store atmosphere with congruent multi-sensory cues.

With small measures retail stores can impact consumers by modifying the retail atmosphere with appropriate congruent sensory cues. In order to contribute to both sub-question 3 and supplement a groundwork for sub-question 4, one sensory cue from each sense were employed. More specifically, music, smelled congruent scent and aesthetics were grouped together as a variable. The combination of these founded multi-sensory cues in interplay in a retail store atmosphere.

5.1.6 Multi-sensory cues in interplay

The final sub-question: “How do congruent multi-sensory cues in interplay impact consumer emotions and purchase behaviors when compared to visual, auditory and olfactory cues?” concerns the comparison between the findings in essays 3 and 4. Although there is evidence that shows interaction between cues and their effects, little research has been conducted on the effects of three or more congruent cues in interplay (e.g. Morrison et al., 2011; Schifferstein et al., 2013; Spence and Gallace, 2011).

A conclusion is that multi-sensory cues in interplay have a positive impact on consumer emotions and purchase behaviors. In essay 3, among the single congruent sensory cues, the auditory and olfactory ones had greatest impact on
emotion and purchase behaviors. However, the effects of multi-sensory cues in interplay on emotions and purchase behaviors had significantly greater outcomes than any single congruent ones. To explain these effects, browsing behavior, which is also a purchase behavior, is a representation of a mean value of touch and time spent (essay 4), and is closely correlated to time spent studied in essay 3. Both time spent and browsing behavior are measured in time, and are purchase behaviors. Observing the amount of time consumers spend in a retail store atmosphere revealed that consumers spend an average of 140 seconds in the atmosphere with multi-sensory cues in interplay (essay 4). In contrast, the highest measured single sensory cue experiment had a mean value of 117 seconds (essay 3). To put these values in perspective, the atmosphere without any sensory cue modifications had a mean value of 72 seconds. These numbers indicate the increased impact of multi-sensory cues in interplay, which was double the time consumers spent at the POP. The link between time spent and purchase shows that the longer consumers stay, the more they are disposed (odds ratio) to make a purchase. It can also be interpreted as for each second the consumer stays at the POP, chances increase that a purchase will occur. These findings support the work of Hultén (2015), Hultén (2012), Spence et al. (2014), Donovan et al. (1994) and Krishna (2012), all of whom describe the positive effects of multi-sensory cues in retail stores. The presented research additionally concludes that despite the fact that some congruent sensory cues are better than none, when they are in multi-sensory interplay they are superior when it comes to time spent and purchase.

In regard to emotions, both congruent cues and multi-sensory cues in interplay had a positive impact on emotions. Multi-sensory cues in interplay in an atmosphere had an average of 4.91 (Likert) in valence, while 4.31 was the highest result for single cues. It is thus concluded that multi-sensory cues in interplay have stronger impact on emotions than single ones do. Similar to the findings in question three, emotions did not mediate the effects between cues and purchase behavior.

By showing that multi-sensory cues in interplay have greater effect on consumer purchase behaviors and emotions, the conceptual model (figure 5.1) illustrates the linkage between multi-sensory cues in interplay and consumer responses in a retail store context.
5.2 Theoretical implications

To illustrate and highlight how the combined conclusions in this research contribute to the existing field of research, I will summarize, discuss and argue the theoretical implications of this research.

The presented research adds to a growing body of literature on multisensory research, which has been scarce up to this point (Krishna, 2013) and shows that congruent multi-sensory cues in interplay exert a great impact on consumer emotions, time spent, browsing and purchasing. The research, furthermore confirms and contributes to multi-sensory atmospheric literature as stated in Spence et al. (2014, p. 483), “Considering the difficulty associated with trying to study multi-sensory atmospherics and the relative paucity of research in this area, further research is clearly going to be needed”.

While little to no research has yet shown how multi-sensory cues in interplay impact emotions and purchase behaviors with more than two sensory cues and senses, this has been addressed by showing the impact that multi-sensory cues in interplay have on consumers, by comparing six sensory cues. More specifically, two each for the following senses: visual, auditory and olfactory. Furthermore, the conceptual model (figure 5.1) contributes with knowledge about how multi-sensory cues in interplay affect consumers and how congruency functions in a retail context. I reason that the conceptual model in itself is a contribution to consumer behavior, sensory marketing and retailing literature where these linkages have been empirically shown.

Taking into consideration the difficulty and scarcity of conducting multisensory research in field experiments, the current research highlights an emotional-behavior gap. It is not evident that what consumers feel actually has an impact on how they act in a real point of purchase. As many studies measure emotions and purchase behaviors (intent) through self-administrate surveys (Jang and Namkung, 2009), it is possible that these intent-behaviors are biased, thus correlating with how consumers state they feel. Instead, my research shows a more complex outcome where consumers have an increase in valence, which does not necessarily explain how they behave when observed. Rimkute et al. (2016) strengthen this notion by showing that emotions have only partly shown to mediate behaviors in regard to olfactory cues. This is also somewhat related to Ajzen and Fishbein (1977) study which states “[…] a person’s attitude toward an object influences the overall pattern of his responses to the object, but that it need not predict any given action” (p. 888). Thus, researchers need to be aware of only utilizing self-administrated surveys when examining congruent sensory cues, to avoid drawing hasty conclusions.

One other implication is the notion of adding similar types of cues in an atmosphere, such as visual cues in a visual dominated retail atmosphere. It is shown to correspond to the theory of optimal stimulation level (Raju, 1980; Steenkamp and Baumgartner, 1992), which explains why certain cues appear as stronger or weaker in certain situations. To illustrate this, my research gives
evidence that overusing one particular sense and its cues, does not show any negative impact, just no improvement.

Just as the literature shows that experiences, in terms of emotions and purchase behaviors can be enhanced by adding more senses into a service or product, (Hultén, 2011; 2012; Krishna, 2012; Lindstrom, 2005; Raz et al., 2008), similarly, my work contributes to theory by confirming this notion with empirical proof. I argue that this thesis bridges some theoretical viewpoints in multi-sensory marketing and provides the opportunity for further development and inquiry in this area.

Furthermore, the research proposes a conceptual model and novel view on congruency (essay 2) and its mediating relationship between sensory cues, retail settings, and store image. While studies have highlighted congruency as being important for pleasantness and consumer attitudes (Mattila and Wirtz, 2001; Mitchell et al., 1995; Spangenberg et al., 2005; Spangenberg et al., 2006), I argue that this research has also contributed new knowledge on how these linkages function and why consumers prefer them as being important in a retail context.

### 5.3 Managerial implications

To demonstrate how retailers practically can utilize the findings of this research, there are several courses of action for managers to consider when designing a retail atmosphere.

Firstly, my research demonstrates that consumers favor an atmosphere that involves scent, ambient background sounds and music rather than only visual cues. These cues are argued in this research to supplement an already visual retail store, hence having an overall stronger effect on consumer emotions, time spent and browsing behaviors. Thus, managers are advised to add congruent cues, which have shown to exert a stronger effect than cues used individually in a retail store atmosphere. Utilitarian retail stores that are otherwise visually dominated (see Childers et al., 2002), such as by showing prices and products are hence encouraged to be modified as more multi-sensory in accordance with store image, the actual atmosphere and products, as shown in this research.

Secondly, both visually dominated physical stores and online stores (Hultén, 2015) often compete with the same functional traits, such as function and price. As consumers prefer to examine products in a multi-sensory manner (Peck and Childers, 2003; Peck and Childers, 2006) and since my research confirmed that consumer likewise prefer the atmosphere to be multi-sensory, physical store that neglect to evolve the visually oriented atmospheres into ones that are more multi-sensory risk being outcompeted by online retail stores. Thus in order to remain competitive, I advise managers to take advantage of the fact that physical retail atmospheres have a greater
opportunity to stimulate all the human senses. Similarly, as consumers prefer to evaluate products in a multi-sensory setting, managers should also comply by offering congruent multi-sensory cues in a retail store atmosphere.

Thirdly, essays 2 and 3 of this research show that retailers can, with minor modifications, although with precision, design existing retail atmospheres to increase both consumer emotions and purchase behaviors. This requires retailers to do extensive research on which cues should be added or eliminated in order to be congruent to the store image, retail atmosphere and product. This research shows that retailers can actually increase the time consumers spend between 32-51% (music and scent) by only implementing a few complementary sensory cues at the POP. Furthermore, both time spent and browsing behavior had an impact on increasing the odds of making a purchase, which should be of interest for retailers. Thus, these experiments demonstrate that modifying retail stores does not have to be costly. The only costs are essentially the time invested and methodological research in understanding what consumers deem as congruent and pleasant in regard to sensory cues, store image, products and the specific retail POP, which leads us to the next implication.

Lastly, it is not enough just to implement sensory cues without considering whether they are congruent with other cues, store image and products in the atmosphere. The conclusions show the relevance for retailers to understand the underlying rationale behind how atmospheres should be constructed to be emotionally pleasing. This indicates that managers must go beyond trusting their gut feeling when constructing these atmospheres. Essay 3 showed that what consumers actually consider as congruent and pleasant in thought, does not actually represent perceived sensory congruency and its positive effects. More specifically, scents that were only speculated to be congruent, without actually being smelled, did not show any positive influence on emotions and purchase behaviors. However, the scent that was speculated to be congruent and then determined by actual smell in pretests showed an evident effect on emotions and purchase behaviors.

### 5.4 Ethical implications

In regards to the ethical issue in sensory marketing research, it must be noted that there are issues that still need to be addressed. My reflection upon the ethical consideration in this research is that marketers and researchers should avoid hiding information, or obstructing the intent of the marketing strategy as noted in Sher (2011), but this deliberation can sometimes be a fine line. I raise the question of whether or not researchers should inform consumers about the intent when in the process, and if so, how to avoid disturbing the purchasing processes and the experience? If the debate is to be moved forward, I strongly recommend that new and clear guidelines be developed for sensory marketing
research in retail contexts, which would facilitate the development of sensory marketing research.

These guidelines would be of relevance for studying the effects of sensory cues on real consumers in real retail store contexts. Moreover, a discussion of conscious versus un-conscious consumer behaviors is of relevance when conducting field experiments. For instance, I had to determine the intensity of a scent. According to researchers and practitioners, for the scent to evoke positive emotions, it was suggested that it be faint. However, the scent should still be noticeable when concentrating. Following these instructions, I managed to get significant results. I hold that this notion can be a rule of thumb for other sensory marketing studies.

It is crucial for retailers to understand that modifying retail atmospheres can be perceived as a manipulative strategy by some individuals. My arguments for defending these choices ethically have partly been discussed in the method chapter, and my advice for practitioners is to put emphasis on constructing products and services that they ethically and morally can stand for, as the aim of the retail store atmosphere is to highlight them. The findings of congruent multi-sensory cues in interplay as a tool, should be carefully implemented with regard to moral intent, context and situation, and not as a tool for misleading consumers.

5.5 Future research avenues

During the research process, several theoretical concerns were identified. Some of them will be discussed and presented here as being important for the development of future sensory marketing research.

The first essay offers various future research avenues in regards to multi-sensory interplay. For instance, the intensity of sensory cues in a retail context is still immature and requires considerable development. To explain, research has not been able to show how deprivation of certain sensory cues influences consumers in their shopping processes and purchase behaviors. Similar to the concept of sensory deprivation, sensory overload is also underdeveloped (Krishna, 2012). For instance, it would be of interest to inquire whether it is possible to suppress particular types of cues, not necessarily unpleasant ones, in order to enhance consumer emotions and purchase behaviors. This would be of importance for the theoretical development of multi-sensory interplay and sensory cues in retail store contexts. These avenues would additionally provide knowledge on how to identify the optimal level of stimulation. Consequently, it would require researchers and practitioners to reconsider existing atmosphere designs in order to optimize the positive effects on consumer emotions and purchase behaviors.

In regards to the development of multi-sensory cues and their effects in retail contexts (essay 3), this research shows that cues that contributed positive
impact were the ones that were sensory complementary or sensory different. Future research would need to investigate which cues are perceived as missing in a retail atmosphere and develop methods for determining this. To this day, research does not have any methodological solutions for these issues and it would be of great interest to the whole research community. In solving these issues, a new way of conducting research would be paved for sensory marketing and retailing researchers.

Additional research is required to understand congruency as a concept more closely. Does it exist an optimal level or an inverted u-shape of atmosphere-cue congruency, when elements are more or less similar and fit in a retail context? At which congruency level does it start to have a negative impact on emotions and purchase behavior? Note that intensity, such as sensory overload is not referred to in this case, only the congruency between the atmosphere and sensory cues. Essay 2 has shown that consumers reason congruency between sensory cues, products, services, store image and a retail atmosphere. To determine which cues should be employed, they refer to themes or concepts that are used as a starting point for making decisions. The importance of these themes is still little discussed in sensory marketing and is more closely linked to store or brand image and their associative aspects. This is sometimes referred to as the semantic congruency of sensory cues, which was also emphasized in essay 1. There is much left to research within the concept of semantic congruency within sensory marketing, sensory cues and its role in retail store contexts. Semantic congruency is very much linked to brands and brand/store image (Biel, 1992; Dobni and Zinkhan, 1990), more specifically, how consumers perceive a store image and its associative meanings and symbols. Such as marketers aim to foster associations between desired meanings and the store image, understanding semantic congruency and its role in determining sensory cues can assist sensory marketing and branding research. Dobni and Zinkhan (1990, p. 116) explain the components of brand image to be of symbolic and associative nature, almost as a network of symbols, more specifically: “the components of brand image in terms of a means-end chain, identifying an implication network which reflects memory linkages as the fundamental component of brand image”. In line with essay 2 and Chen and Spence (2010), I argue that the linkage between two such associations, can have more or less of a fit, and hence can have a particular level of semantic congruency. Further research in this area would be of great help in developing sensory marketing and aid research on how to create retail store atmospheres that are emotionally pleasing.

The conceptual model (figure 5.1) provides sensory marketing research with input to further investigate different linkages in the model, such as how culture, identity and brand image moderate the relationship between multi-sensory cues in interplay and consumer response. As previously discussed, it is difficult to generalize the notion of multi-sensory cues in interplay to all retail stores and all cultures. To additionally study and develop congruent
multi-sensory cues in interplay as a concept, I would suggest to examining their effects in two stages. Firstly, researchers would need to apply the same cues used in this research in the same product POP, at the same retailer, but in another culture. This would illuminate whether or not culture moderates the outcomes of multi-sensory cues in interplay. If so, it would be of further interest to employ the same method in this research process for determining congruent cues and then to compare whether they have a greater impact on consumers’ emotions and purchase behaviors than when using the ones in this thesis. Secondly, to further advance the notion of congruent multi-sensory cues in interplay, it would also be interesting to employ the conceptual model (figure 5.1) to other contexts, industries and products.

Finally, other future research avenues are recommended to penetrate how consumers perceive congruent multi-sensory cues in interplay in on-line atmospheres for brands and service contexts. This is of contemporary relevance for research and practice, as on-line shopping is becoming increasingly relevant for retailers in order to stay competitive, and could give rise for new research avenues in sensory marketing research.
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Appendices

1. Experiments - Sampling and location

Manipulated variables and apparatus
A = Aesthetics & Lighting, B = Speaker: Music & Background sounds, C = Scent diffuser: Scent 1 & Scent 2

Usual locations for observers
Usual consumer paths
Shelves
Main path
Experimental area

Note: This figure is only for illustrative purposes and does not reflect actual measures or ratios
2. Focus groups - Interview guide

<table>
<thead>
<tr>
<th>Topic</th>
<th>Question</th>
</tr>
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| Introductory| - How often do you shop at BRAND? When? Why?  
- What do you buy and how much do you usually spend?  
- What do you think makes you approach and touch a product? |
| Transition  | - How do you perceive the existing retail setting? (Pictures)  
- Where do you think your general preference for products, service, brands and design come from? Why?  
- How important is the setting in which you buy products? Why?  
- How do you prefer your retail setting in order for you to like it? Explain! |
| Core questions | Vision  
- How do you think the products should be presented in order for you to like them or the presentation?  
- What is visually important for you in approaching a certain retail setting?  
- How do you think this setting (pictures) should be lighted in order for you to like it? Intensity? Colour?  
- Is design important? Why? If so, how would you design the setting?  
- What more do you think is visually important in this retail setting, for you to want to approach it? |
|             | Sound  
- What sounds do you perceive/remembering being there?  
- How do you react to sounds in retail settings?  
- How do you want the sound? Music? Other sounds? No sounds?  
- How loud do you want sounds to be in the retail setting? |
|             | Scent  
- How do you remember the smell in the retail setting?  
- How do you react to scents?  
- How do you want it to smell there ideally? |
|             | Congruency  
- How important is the link/fit/congruency between what you can see, hear and smell in the retail setting? Why?  
- What themes do you think could fit into the retail setting? Examples? |
| Closure     | - Do you have any additional questions or things you want to discuss?  
- Would you be interested in participating in an additional focus group in the future? |
3. Experiments - Observation and survey scheme

Observations

*Independent*
- **Age:** 0-6, 7-17, 18-24, 25-44, 45-64, 65+
- **Gender:** Male, Female
- **Alone:** +1, +2 or 3+

*Dependent*
- **Looked at the POP:** Yes, /, No
- **Time spent at the POP:**
- **Time spent touching at the POP:**
- **Bought something at the POP:** Yes, /, No

Survey

*Arousal:*
How arousing and exciting did you find the section (Point to the area), on a scale from 1 to 7, where 1 is sleepy, very calm, 4 is neutral and 7 is exciting and energetic?

*Valence:*
What pleasure did you feel in the section (Point to the area), where 1 is strong displeasure, uncomfortable, 4 is neutral and 7 is very pleasant?

*Manipulation check:*
Did you notice, feel, sense (the curtains, light, color, illumination, music, background sounds, scents) in the section over there.