

# Visual and auditory remembrance in retail environments

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# Abstract

Investigating the impact of auditory stimuli on the shopping experience at the store Monki in Stockholm City. This study builds upon previous research investigating visual and auditory stimuli remembrance. Using "deep hanging out," Monki's layout is mapped out and the sounds measured. A field study is conducted and participants find challenges in remembering auditory stimuli compared to visual, showing that the participants had a much harder time remembering sounds from their store visit than the visual aspects. The finding can help to understand how different stimuli work in stores, guiding future designs.

## 1. Introduction

Within the dynamic landscape of a shopping environment, customers encounter a lot of different stimuli. While we often pay most of our attention to visual elements, auditory stimuli are equally as expansive. This study delves into the sounds in a specific store, Monki, and how customers notice and remember them. The aim of this study is to get an understanding of how customers experience and recall these auditory stimuli.

## 2. Background

### 2.1 Previous study

The study originated from a previous study *Salient sights and sounds: Comparing visual and auditory stimuli remembrance* by L.

McHugh, X. Xu, C.W. Wu. This study [1] investigated what visual and auditory stimuli people remembered when visiting a store. The purpose of these studies is to understand what salient sounds customers recognize when entering a store and how these sounds affect the experience of the store visit. The previous study was made in a retail store called Muji, known for Japanese clothing and housewares. Unfortunately this store has since been permanently closed, and therefore we had to choose another retail location which was chosen by looking at a certain set of criteria, more on that in part 3.1 *Finding location*. Besides from the location, our field study was done as a replica of the previous study, to gain further insights into what the previous study showed. Results from the previous study suggested that participants were more likely to remember visual stimuli rather than auditory stimuli, although music was determined to have a positive impact on the shopping experience [2].

### 2.2 Retail environments

The purpose of retail environments and their designs is the enabling of shopping experiences that are remembered as pleasant and facilitate a return and, or continuation of that experience. A study conducted by [3] defined the 3 aspects of environmental dimensions of the servicescapes. Ambient consciousness, which consists of factors such as temperature, smell, noise, etc. Space/Functions, which consists of factors such as furniture, layout, and other equipment. Signs and symbols, which

consist of factors such as artifacts signage, decor etc.

These 3 aspects are described as making up the environmental dimension of the retail environment. The actual experience of the customer is however described as a holistic environment. [3] describes that the environmental dimension affects and correlates with the holistic environment, however it is not a 1 to 1 correlation. According to a study *The sound of silence: Why music in supermarkets is just a distraction* by Hynes and Manson they found that changes in the customers' environment can affect their experiences even if they do not remember or actively notice the change in the environment [4].

They also found that even if customers were not aware of music playing in stores and had no recollection of it it could still impact their experience. A model that further attempts to model the remembered experience of shoppers [5] who propose 4 aspects to structure what determines remembered experience, the customer's overall attraction to the store; the structure of the memory; affective aspects perceived during the memory; and sense of belonging to a social group.

### **2.3 Soundscapes**

There's evidence that there are a large number of factors within soundscapes that can have a great effect on the perception of people experiencing them, a study *Analysis of the perception and representation of sonic public spaces* done by S. Marry and J. Defrance propose that one significant factor

to how individuals experience auditory stimuli is how that experience is connected to visuals [6]. Individuals' connection between perceived visuals and sounds can have a strong effect on how both of these stimuli are experienced, remembered and perceived.

Another aspect of this connection is the detrimental effect that visual attention can have on audio based perception and vice versa. Individuals' attention and ability to perceive their environment correctly is limited and can be seriously reduced when they are focused on visual stimuli and vice versa [12]. This dictates furthermore that it is important for the sake of this study to try to identify not only sounds but also what produced those sounds and what visuals can be associated with them [7]. When trying to evaluate the experiences of sound it is therefore important to connect them both to visuals as well as to what type of sound it can be classified as. One taxonomy [8] of classification divides sound into the following 7 classes:

Sounds of animals, Sounds of humans, Sounds of things, Music, Natural sounds, Channels, environment and background, as well as Source ambiguous sounds (see figure 1).

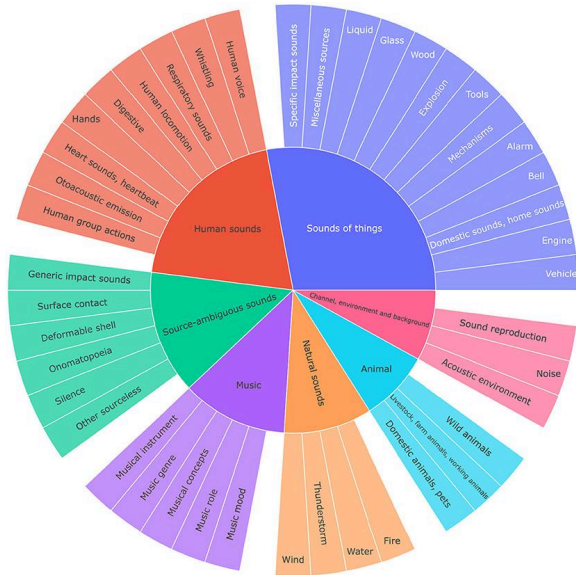


Figure 1, Gemmeke et al (2017) classification of sounds [8]

## 2.4 Deep hanging out

The concept of “deep hanging out” was coined by Clifford Geertz in 1998 to explain an ethnographic research method where the researcher integrates oneself in one immersed group, experience or environment in an informal manner in order to gather data [9]. According to B.C. Browne and R. McBride the method helps researchers gain insights within the environment being studied as well as getting first hand experiences similar to those within the hard-to-reach environments [10].

## 2.5 Retail as a soundscape

Retails specifically as a soundscape poses multiple challenges of design and analysis of them, mainly amongst them is that the purpose of their design is not so simple as to simply be for the purpose of being “pleasant” . The purpose of them is instead to enable a more efficient shopping experience and return for more shopping. This can create conflict as the most pleasant

experience is not necessarily the most efficient. Kontukoski (2018) further describes that different aspects of soundscapes can be perceived differently by different individuals [11]. In this study music was for example perceived both negatively, positively and with apathy. Some classes of sounds are more commonly seen as unpleasant such as a variety of sounds produced by objects or noticeably loud background noises.

Another observation was how certain sounds when perceived would become a focus of the study participants instead of the given tasks of shopping, the case in this study was bird noises in a section that grabbed participants attention. Such aspects can be pleasant as described in the article but can also be seen as disturbing the efficiency of the shopping experience. Hynes and Manson further postulate that even aspects that individuals are not completely aware of such as background music can serve as a distraction and hindrance to customers [4].

## 3. Method

### 3.1 Finding location

When looking for the perfect location we need to make clear what our criterias are. After a meeting together we created these criterias for our location.

**Central location.** Needed to be in a place where our interviewees easily can get to to have a higher chance of potential participants to take part in our experiment.

**Appropriate size.** The store cannot be too small where there the sound profile is the same in the entirety of the store. The store cannot either be too big as this would be too extensive to map out and conduct field studies on for the scope of the project.

**Variating sound profile.** We wanted a store that offered a variating sound profile that would make the store interesting to explore. We concluded that a variating sound profile would most probably come from different selections of products.

In selecting the ideal location for our sound profile analysis we started out with choosing in what perimeter our interviewees would most likely be willing to go. We then decided that T-Centralen i Stockholm, where all subways go by in the middle of Stockholm would be a good place to look. We then took a full day to go through all stores nearby that fit our criterias. There were a few places that could have worked as a possible location for the experiment but one store that stood out was Monki, a clothing store located in Stockholm City, Drottninggatan 54.

The store has diverse interior decor and provides unique acoustic environments in different sections, enriching our study. Monki's varied soundscapes, comprising background music and ambient sounds, contributed to a comprehensive analysis. Our supervisor Kjetil Falkenberg prompted us to pick a store that had varied stimuli for sight and sound throughout the store and

also picking one that was an appropriate size. This input together with our own impression and criterias Monki was our obvious pick. Overall, Monki's combination of space, diverse decor, and varied soundscapes made it the optimal choice for our sound profile analysis.

### **3.2 Deep hanging out**

After coming to the decision of an appropriate store to conduct our study, we started off by doing one deep hanging out session in the store. We walked around the store's different sections, took note of visual and auditory sensations and began to sketch out a map which later developed into the map you see in figure 2.

At the first deep hanging out session, we also took pictures around the store to remember its layout for drawing of the map. We took note of how we believed the store was intended to be experienced by its customers, and what elements (lights, speakers, drapes etc) had been distributed around the store to gain the customers attention to certain sections or features. During both the first and the second visit (one conducted around 13:00 on a weekday, while one conducted around the same time on a Saturday) we made acoustic measurements in a few key points of the store with a decibel meter smartphone application that were documented.

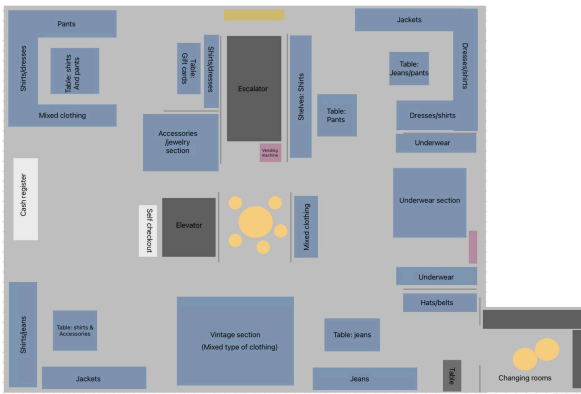


Figure 2, map of Monki store.

### 3.3 Field study

A total of 8 participants of different age, gender and social situations took part in the study, sampled based on convenience. In order to not influence their perception or attention during their store visit, the aim and focus of the study was not disclosed before their visit or the following interview. The participants were only given brief instructions before they entered the store in order to simulate an authentic shopping experience. They were told to spend approximately 10 minutes in the store and attempt to identify at least two items they would consider buying for themselves or someone close to them. They were not encouraged to actually buy anything or, for example, try anything on.

### 3.4 Interviews

After letting our participant spend time in our chosen store they were interviewed at a nearby café in order to remove them from the location in question. This was done to mitigate risks of them looking into the store to remember certain things when asked

about their experience. During this semi-structured interview, open-ended questions about the participant's experience in the store were asked, as well as questions about what they remembered connected to their visual and auditory perception. A few establishing questions regarding their previous shopping experience as well as their mood were also asked.

### 3.5 Data analysis

The results from both the Deep Hanging Out as well as the Field Study were then analyzed by, among other things, categorizing the recognized sounds according to the previously mentioned taxonomy [8]. This was then displayed in tables and diagrams to get an overview of the results. This data was then analyzed and summarized to be able to draw further conclusions.

## 4. Results

### 4.1 Deep hanging out

During the deep hanging out visits, we noted firstly that the chosen store has many visually interesting components that our participants might notice. The store has a pink/peach color scheme that includes walls, floors, mirrors and interior. The store is divided in sections with various clothing/accessory items that are divided by either curtains or clothing racks. On both occasions the store played generic pop music in speakers that were placed around the store in the ceiling approximately 3 meters up. The music did a fairly good job of concealing sounds such as the escalators, sounds from other customers and other

unwanted noise. Although, some sounds were noticed besides the music, as seen in figure 3.

The sounds noted during the two deep hanging out sessions (disregarding any duplicates across the group members), categorized according to previously discussed taxonomy [8], were as follows:

Sounds of things	Sounds of people
Clothing hangers Key chain clinking Dressing room curtains Cash registers beeping Receipt printing A cell phone ringing Suitcase rolling	Footsteps Customers talking Staff talking Coughing
Background	Music
Sounds of escalator Humming from fridge	Music playing from store speakers
Source ambiguous	Faint beeping

Figure 3: Table of noted sounds during Deep Hanging Out sessions.

When measuring the noise level in different parts of the store, we noted no significant difference no matter the location of where one stood in the store or if it was a weekday/weekend. From all our measurements, the noise level was around 57-61 decibels, which could temporarily increase if there was someone talking loudly nearby. There were no areas in the store that were more crowded than other places during those times we visited. Worth noting is that the store was quite empty and quiet during our visits, hence the low sound levels.

## 4.2 Field study

We had 8 participants who visited the store and were later interviewed.

### 4.2.1 Visual remembrance

People were more likely to remember noticeable and outstanding decor as opposed to other visual things in the store. There was a large variety of visual things participants could remember and identify. All of these were not explored during the study since participants had an overwhelmingly easier time with visual remembrance, to the point that further questions would not significantly change the indications of the results due to the large difference.

As seen in figure 2, the store has a rather square shape and in each one of the four corners there are different varieties of big lamps. When participants were asked about where in the store they spent the most time, multiple people mentioned either one of these four corners. Example of one of these lamps can be seen in figure 4.



Figure 4, example of one of the corners with the big lamps.



## 4.2.2 Auditory remembrance

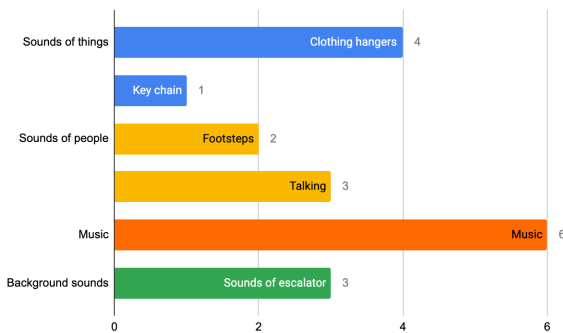


Figure 5: Diagram of the mentioned sounds the participants remembered, categorized according to our chosen taxonomy [8].

Participants, on the large, struggled to identify or remember sounds that they had heard. In total, 18 specific sounds were mentioned during the interviews and the distribution of these can be seen in the diagram in figure 5. None of these were mentioned without us specifically asking about what sounds they remembered from their visit, but were mentioned during specific questions regarding sounds they could recollect from the store.

The by far most common thing that participants could remember was the music playing in the store (this could however be participants guessing from their previous experience of music usually playing in stores). The following sounds participants were most likely to recall were sounds of people and sounds of things, while quite few participants were able to recall sounds produced by other shoppers which include both sounds of people and sounds of things. This could be contributed from the fact that the stores had quite low attendance when this study was performed and therefore these aspects of the soundscape were less

noticeable. Two participants couldn't remember hearing any particular sound at all, and did not recall hearing any music even when specifically asked. The participants who did report hearing music could not easily describe the music's character or if they recognized the songs.

## 5. Discussion

### 5.1 Methodology

From the results gathered, we can see that there were factors which worsened the quality of the field studies that were conducted. Firstly, when the location first was scouted there was more activity in the store which affected the soundscape, likely because it was during the christmas shopping period. When the field studies were later conducted it was after christmas, first week of January, and there was significantly less activity. This made the overall sounds of things/sounds of people decrease considerably. Furthermore, due to field studies being done over the holidays there were difficulties in finding participants willing to be a part of the study. This resulted in us having less participants than expected and hoped for. It would be interesting to conduct the same testing but in a busier time with more customers present to see if the perception of sound would be more prominent and if the visuals would be as distracting in this case.

### 5.2 Impact of Methods on Results

The timing of the field studies and the store's very visual-centric design were some methodological choices that influenced the outcome. Monki's grand visual elements



may have overwhelmed participants, directing their attention predominantly towards the visual aspects. This in combination with the quiet and empty store during the post-holiday period could have contributed to participants focusing much less on auditory stimuli.

### **5.3 Implications of Results**

The participants were much more likely to perceive visual aspects of the store as opposed to the soundscape. This follows the results of the previous study that was conducted on this subject [1] and are seemingly even more pronounced within this study. This likely stems from the store's design being very visually intense and also including a lot of decor which aided in dampening sounds like curtains and other soft sound absorbent fabrics. The low visitor volume can definitely be a contributing factor to this as well. Furthermore the overall remembrance of sounds are limited except for sounds that cause a clear distraction and are unpleasant or especially noticeable.

Something that could have provided observations with more depth is if the participants were asked beforehand to be

more attentive to what they saw or heard. This would have most probably prompted them to be more conscious of their stimuli and could have given us more specific answers. This however takes away from the unbiased, true and honest experience of all stimuli which is what we are after. The temporal aspect of audio, requiring manual control, may impact participants' perception compared to the constant nature of visual stimuli. More advanced and intricate sound profile has to challenge the constant input of sight, so in that aspect be pretty distinct and obvious. This however can very easily lead to the irritating and distracting sound scape that you would want to avoid.

There is therefore a very fine line and a difficult task to create a more interesting and giving sound experience. These findings however can contribute to valuable insights for future store designs to keep in mind. Recognizing the importance of balancing visual and auditory stimuli for a comprehensive shopping experience. It would be interesting to continue this work by practically putting it into use and working together with a store, to apply the analysis on soundscapes into practical ideas and improvements for auditory stimuli.

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