

*Using scent and music in a waiting room to positively influence  
patients' healthcare experience*

*– A field experiment in a plastic surgery practice –*



**Master Thesis**

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## **Preface**

Four years have passed; four years of studying in the Netherlands – an exciting and often exhausting time. At this point in time I know that all the effort was worth it. I learned a lot: it started with the learning of another foreign language and getting to know the Dutch culture, and it continued over the years with getting to know everything – or at least a lot – about communication and all the related relevant subjects. Now I am writing the preface of my master thesis. The end of my study at the University of Twente is near.

I started working on this thesis in April 2012. First of all I want to thank my tutor Anna Fenko for being open to my ideas since our first meeting. I also want to thank her along with my second tutor, Joyce Karreman, for always taking the time to think about my project and for answering all my questions. *Thanks for encouraging me to get the most out of this research!*

Furthermore, I want to thank Dr. med. A. Yousef for being interested in my project and offering me his practice environment to conduct my experiment. *Thanks for having confidence in me and believing in my project!* I also want to thank Dr. med. A. Yousef's personnel for assisting me with the data collection. Of course, I also thank all patients who participated in my experiment.

I also want to thank my family and friends for having understanding in stressful periods of my study and for motivating me. Last, I want to thank my parents for affording my study in the Netherlands and for being open to my plans of life. *Thanks for always being doubtful about my plans but having confidence in me!*

Enjoy reading.

Caroline Loock

## **Abstract**

“The number of people choosing to have plastic surgery has soared in recent years”

(American Society of Plastic Surgeons, 2011). Because of this growing number and the heterogeneity of this patient group, plastic surgery is an interesting field of research which has almost been neglected until today.

This research project investigates the possibilities of sensory marketing to improve the healthcare experience of plastic surgeons’ patients. The research question is: *How can scent and music be used in a waiting room of a plastic surgeon to positively influence the healthcare experience of patients?*

More specifically, the research project aims to find out how two selected environmental features (scent and music) can be used for both: to lower patients’ level of anxiety while waiting, and to improve patients’ perception in regards to the waiting environment and the perceived waiting time duration. To test these, a field experiment within the practice environment of a German plastic surgeon was conducted. For the selection of stimuli two pre-tests have been conducted before the main experiment started. Based on the results of these two pre-tests, lavender scent and instrumental music with nature sounds were used for the preparation of the experimental conditions in the waiting room. These two have been evaluated as the most pleasant and the most relaxing drivers in the conducted pre-tests that compared different music styles and different scents with each other. For the field experiment a survey with questionnaires was developed to collect first hand data.

Results showed a significant interaction effect of lavender scent and instrumental music with nature sounds on patients’ level of anxiety. Both reduced anxiety, but only if these were used separately. If used together they did not reduce anxiety. These results were interpreted and explained with the help of Berlyne’s arousal theory (Berlyne, 1960).

No significant effects of scent and/or music on evaluation of waiting environment and perceived waiting time duration were found.

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## **1. Introduction**

This first chapter introduces the subject of the research project and establishes the research relevance and goals. Additionally, an overview of the report is given.

### **1.1 Subject of the research project and its relevance and purpose**

Generally speaking, the subject of this research project is the healthcare experience of plastic surgeons' patients and the possibilities of sensory marketing to improve it.

Plastic surgery includes both, necessary surgery of functional problems, and also cosmetic surgery of aesthetical problems. In the today's world there are a growing number of people who have chosen to get cosmetic surgeries. By definition, cosmetic surgery (which is also known as aesthetical surgery) is a surgery that is not medically necessary, but primarily carried out to enhance appearance (Nahai, 2009). Plastic surgery serves as an umbrella term that encompasses surgeries with the primary aim of restoration of appearance and function (e.g. reconstruction after traumatic defects, congenital anomalies, and ablative surgery for malignancy) as well as surgery of hands-, breast-, and aesthetic surgery. (Grover & Sanders, 1998).

In this research the term plastic surgery is used to encompass surgeries of functional concerns basically with hands (for example rheumatic diseases, trigger fingers and the carpal tunnel syndrome) and aesthetical surgeries concerning facial- and breast surgeries. In some cases surgeries are both functional and aesthetical surgeries. When having a breast tumor a surgery aims to remove such tumor (a functional concern) and reconstruct the appearance of the breast afterwards (an aesthetical concern). In most cases a primary aim is distinguishable. In the mentioned example the primary aim is to remove the tumor. If no tumor needed to be removed, no aesthetical surgery would have been necessary.

The reason why this field of medicine is chosen is based on the patient group which is introduced more detailed later in the report. Patients of plastic surgeons comprise a very

specific and heterogeneous target group. It is a very specific group which has almost been neglected in research until now. Therefore it is interesting and reasonable to conduct research about how to improve these patients' healthcare experience. More specifically, this project explores the possibilities of sensory marketing to relax these patients and make them feel as comfortable as possible during their waiting time before meeting the surgeon. Sensory marketing provides possibilities to positively affect people's feelings and the perception. Environmental research, which is presented in more detail in a following chapter, provides evidence to the influence of architectural, interior design and ambient elements on both our experience and behavior in many different settings, for example in healthcare environments.

The scientific relevance of this research project relies in the assessment of the possibilities of sensory marketing to improve patients' healthcare experiences. The distinctive feature of this research project is that it focuses on a very specific and neglected patient group from a growing field of medicine. Additionally the project focuses on the differences between people within this heterogeneous target group. Referring to sensory marketing the focus is on two ambient features (scent and music) which are introduced in a following chapter. The main effects as well as the interaction effects of these two environmental features used in a waiting room were measured. Furthermore the research project also has a practical relevance. The results may help plastic surgeons to improve the healthcare experience of patients and reach more satisfied patients who recommend their practices and work to others.

## **1. 2 Context of the research project**

To conduct a study that investigates the possibilities of sensory marketing in the field of plastic surgery, a plastic surgeon and its practice are needed to get in contact with the target group. The target group consists of patients of plastic surgeons. Referring to the different types of concerns (functional concerns versus aesthetical concerns), that have previously been mentioned, a plastic surgeon who covers functional and aesthetical concerns is needed. This is



to measure possible differences between these two categories of patients on-site . It is also important that the surgeon does not share rooms with other medical practitioners. The surgeon needs to have his own waiting room available to make sure that there are only appropriate participants present and to provide the two environmental features (scent and music) in this room.

A plastic surgeon who meets all these criteria is Dr. med. syr. A. Yousef. He is a very experienced surgeon who works in the field of plastic surgery since 1986 (Dr. med. syr. Yousef, 2012). From the year 2007 until today he works in his own practice which is localized in the Elizabeth Hospital in Recklinghausen (Germany). In regards to his patients, these represent two main categories. People who suffer from functional problems with their hands (hand surgery), and people with aesthetical concerns (basically breast and face surgery). Furthermore Dr. Yousef's practice has a large waiting room in which it is possible to perform different experimental conditions according to how these are needed. In addition there constantly are a large number of persons in the room that belong to the target group. These people are possible to reach three days of the week in the afternoons during consultation hours. The other days and the mornings are solely used for surgeries.

Dr. Yousef is very interested in improving the healthcare experience of his patients. In the past he contacted a marketing specialist to redesign his practice and advertising materials. Due to the fact that scent and music have never been used in his waiting room, he was interested in learning more about the possibilities of sensory marketing and these two environmental features. Therefore he was willing to provide his practice, particularly the waiting room, to perform data collection. Moreover, his employees also were willing to support the researcher when necessary (e.g. handing out questionnaires to the patients at the front desk).

### 1.3 Overview of the report

The first part of this report introduces the subject of the research project, its purpose, as well as its scientific and practical relevance. In the following chapter the theoretical background is presented. At first, *marketing* and the field of *sensory marketing* are defined. Then, the descriptions of the central term *environmental feature* and the category of *ambient features* chosen for this project follow. Furthermore, an acknowledgment from previous research projects investigating the effects of the ambient features scent and music is summarized. Afterwards, the section that focuses on the interaction effects of environmental features follows. The second chapter introduces all the variables that are important within this project, including specific characteristics of the target group and the variables that are assumed to determine the healthcare experience of patients. Also an overview of all main variables is given in terms of a model.

Chapter three describes the research methodology. In here the research questions and hypotheses are presented. Furthermore the conducted pre-tests and field experiment, as well as the used materials are described. Additionally, relevant legal and ethical considerations are presented.

Last, in chapter four the results are presented and in chapter five a discussion about the results is formulated. Also, some limitations of the research project are mentioned and suggestions for future research are given. Finally, in chapter six, conclusions were drawn by providing an answer to the formulated research question and by giving suggestions to the surgeon.

## **2. Theoretical background**

This chapter presents background information about all variables that play an important role in this research project. It starts with definitions of marketing and sensory marketing. Then an introduction of the different physical environment features follows. Important is to note that in this research project the focus is on ambient features. Moreover, the two chosen features (scent and music) and what is already known about them in literature are presented.

Additionally, those variables that are assumed to determine the healthcare experience of patients and the specifics of the chosen patient group are considered. At the end of the chapter an overview of all main variables is given in terms of a model and the research question is presented.

### **2.1 Sensory marketing and physical environment features**

Referring to the American Marketing Association (2012) marketing is defined as a general organizational function which includes several processes for creating, communicating, and delivering value to customers and also for managing customer relationships in such a way that the organization and its stakeholders benefit. Sensory marketing, which is subject of this research project, describes all marketing techniques that try to influence consumers' feelings and behaviors by using their five senses (sight, hearing, taste, smell and touch). In contrast to classic marketing, which is based on the idea that customers are rational, sensory marketing includes the experiences and emotions of consumers in the process (Valenti & Riviere, 2008).

In regards to store atmospherics much research has presumed on the mediating effect of emotions and the mood of consumers on their cognition and behavior (Chebat & Michon, 2003). Most of these research projects are based on the work of Mehrabian and Russell (1974). They developed a model that is known as the stimulus-organism-response (S-O-R) framework in which mood is a mediating variable between environmental cues and behavior. The starting point of their model is the idea that environmental cues such as scents, sounds,

lighting and other stimuli lead to a particular behavior. Mehrabian and Russell (1974) made a distinction between two contrasting forms of behavior: approach and avoidance behavior.

Approach behavior is the desire to stay, to explore and to affiliate; for example when talking about consumers in a store environment. The opposite is avoidance behavior.

Because not all people react in the same way to specific environmental cues, there need to be some mediating variables. Mehrabian and Russell (1974) stated that the effects of environmental cues on behavior are mediated by personal variables and emotions that are evoked by environmental cues. Personal variables refer to particular personal characteristics of an individual. Emotions are conceptualized as the combination of underlying factors: pleasure, dominance and arousal.

Derived from this model sensory marketing can be used to influence consumers' feelings and perception to specific products and services. This research aims to investigate the possibilities of sensory marketing to improve patients' healthcare experience by influencing their senses within a medical practice environment. Again, referring to Mehrabian and Russell (1974), one variable which mediates the effect of environmental cues on behavior is arousal. In this context it needs to be mentioned that there is a distinction between positive and negative arousal. Within this research project positive arousal refers to positive excitement about something, for instance sexual arousal. In contrast negative arousal refers to, for example, nervousness and anxiety. When talking about positive arousal the aim of sensory marketing might be to increase it. In this research, it is focused on reducing negative arousal, more specifically on reducing anxiety.

In literature one can find different dimensions of physical environment features, which influence people. Bitner (1992) mentions three dimensions. The first dimension includes *ambient conditions* such as temperature, air quality, noise and music. *Space/Function* is the second dimension, which includes for example furnishing and equipment. The third dimension includes *signs, symbols and artifacts*. According to Bitner (1992) these refer, for

example, to style of décor and personal artifacts. Harris, Ross, McBride and Curtis (2002) also divided the broad physical comfort category into different categories. They defined four categories: *ambient features*, *architectural features*, *interior design features* and *maintenance/housekeeping*.

In this research the focus is on ambient features. Bitner (1992) defines ambient features as background conditions of the environment as for example scent, lighting, temperature, music and noise. They all affect the five senses (sight, hearing, taste, smell and touch). Even if these factors often are imperceptible, they may have strong effects on people. According to Bitner (1992) it is important to gain knowledge about the effects that occur on employees in a healthcare environment caused by ambient features, because employees spend a great amount of time in it. It is also interesting to examine what kind of effects these ambient features have on consumers, or in other words the patients in these environment.

### **2.1.1 Scent as an environmental feature**

One interesting environmental feature to focus on is scent. Bradford and Desrochers (2009) stated: “Smell is a wide-open and fertile ground for marketers. According to the Sense of Smell Institute the average human being is able to recognize approximately 10,000 different odors” (p.141).

Several studies that have focused on scent are presented to demonstrate the strength of this environmental ambient feature and to justify its usage within the experiment.

A number of studies demonstrated that scent is able to evoke positive as well as negative affect in human beings. Ehrlichman & Halpern (1988) for example found out that women exposed to a pleasant scent produced a significantly greater percentage of happy memories than did women in an unpleasant or neutral scent condition.

Several experimental studies documented that specific scents have positive effects on people’s behavior as well as on their cognition and emotions. Lavender scent was found to

have a relaxing effect on people and therefore increased the length of stay of customers in a restaurant. In contrast, lemon did not increase it (Gueguen & Petr, 2006). Kirk-Smith and Booth (1987) explored that people exposed to pleasant scent rated peoples' attractiveness in photographs higher than they did in a control condition in which no scent was diffused. Hirsch (1995) conducted a study in which a slot-machine area was scented during one week. The amount of money gambled in the slot-machine area in the week when the area was scented was compared to the amount of money gambled in the same slot-machine area before and after it was scented. The amount of money was greater when the area was scented.

Research also focused on brain activation in the processing of scents. Linked to several studies that indicate that women outperform men in the identification of scents, Bengtsson, Berglund, Gulyas, Cohen & Savic (2001) concluded that there are no differences in the passive perception of scents between men and women. Their data "suggests that the passive perception without a deliberate judgment of the odorants is processed by similar circuits in males and females [...]" (p.2033).

Knasko (1992) found out that pleasant scent positively affects mood (lavender scent) and decreases perceived health symptoms (lemon scent). In addition, the results of this study showed that unpleasant scent (dimethyl sulfide) negatively affects mood.

Besides the effects of scent in general, various studies investigated the effects of specific types of scent. According to Field, Diego, Hernandez-Reif, Cisneros, Feijo, Vera, and Gil (2004) lavender scent improves people's mood making them feeling more relaxed. The scent of peppermint and cinnamon serve as stimulants of the central nervous system. The study of Raudenbush, Grayhem, Sears and Wilson (2009) showed that both cinnamon and peppermint scent led to decreased frustration, decreased temporal demand and increased alertness during a driving task. Furthermore peppermint scent reduced anxiety and fatigue. Vanilla scent showed to have positive effects on young fashion shoppers' emotions and satisfaction in a retail setting (Morrison, Gan, Dubelaar & Oppewal, 2011).

Another study of Spangenberg, Grohmann and Sprott (2005) showed that it is important that the used scent fits the components of the environment in which it is used. Otherwise the scent may fail to have the desired effect. In the study of Spangenberg et al. (2005) the evaluation of a Christmas scent in a store was more positive when there was also Christmas music present in this store. The presence of Christmas-scent when there was Non-Christmas music present in the store led to more negative evaluations.

Referring to healthcare environments, the study of Lehrner, Eckersberger, Walla, Pötsch, and Deecke (2000) showed that patients indicate less pre-treatment anxiety, improved mood and increased calmness when orange scent had been diffused in a waiting room of a dental practice. But the effects of orange scent were only significant for women, no significant effects for men were found. Generally speaking, research on the effects of scent in healthcare environments is limited. This research project therefore includes scent as one ambient feature to focus on.

### **2.1.2 Music as an environmental feature**

Another interesting environmental feature to focus on is music. Zentner, Grandjean and Schere (2008) stated that music is present in every culture. Music plays a prominent role in people's everyday lives and, music listening is the most prevalent of all leisure activities. Listening to music overtook reading a book, watching TV or going to the movies (Grandjean and Schere, 2008).

The acknowledged studies presented below deliver insights into what is already known in literature about music and its effects. Basically the presented research projects can be divided into two groups: there are research projects that investigated the physiological consequences that music might cause. Reducing blood pressure with the help of music is one example of such a research project. Other projects investigated the psychological

consequences that music might cause. Influencing feelings of pleasure and the subjective evaluation of something are example of such projects.

One example of a research project that investigated physiological consequences that music might cause is the work of Foster and Gable (1906). The study of Foster and Gable (1906) indicated that listening to music tends to affect speed and shallowness of patients' breathing, but the regularity of breathing was not affected.

Moreover a number of studies investigated the effects of classical music in healthcare environments. Lubetzky, Mimouni, Dollberg, Reifen, Ashbel, and Mandel (2009) found that the exposure to music of Mozart significantly lowers resting energy expenditure (REE) in healthy premature infants and that this might explain the improved weight gain of these infants. Other researchers that investigated the effects of Mozart music were Rauscher, Shaw and Ky (1995). Their study showed that listening to Mozart music for ten minutes improved spatial-temporal intelligence and therefore also the performance on spatial-temporal tasks. Spatial-temporal tasks were defined as tasks that require mental perception and visualization of spatial patterns rotating over time in the absence of a physical model. Hughes (2001) compared the effects of Mozart music with the effects of other classical music. This study showed that the music of Mozart continued to score significantly higher on reduction of seizure activity than the music of Hayden, Chopin, Bach, Liszt, Wagner and Beethoven. Referring to several studies about the music of Mozart Hughes (2001) defined the term *Mozart Effect* as "an enhancement of performance or a change in neurophysiological activity associated with listening to Mozart music" (p.396).

Additionally to the enhancement of performance referring to classical music, several studies have examined the effectiveness of music in general (presence of music vs. no presence of music) on stress and pain reduction in different healthcare settings. One example is the study of Browning (2000) that focused on women during labor and giving birth. In this study pregnant women selected preferred music and were instructed about focused listening.



The women listened to music daily and during labor. After giving birth they were interviewed about their use of music as a coping strategy during labor. The results showed that all women used the music to find distraction from the pain during labor. Another example is the study of Korhan, Khorshid & Uyar (2010) that has been conducted amongst patients that need a mechanical ventilatory support. It shows that music reduces blood pressure and provides an effective method of reducing potentially harmful physiological responses arising from anxiety (Korhan, Khorshid & Uyar, 2010).

Explicitly focusing on relaxing music (e.g. calm and soothing music) a study showed that this type of music influences a person's physiological responses as well as emotional feelings (Wong, Lopez-Nahas & Molassiotis, 2001). In this study patients who were ventilator-dependent received either a 30-minutes uninterrupted rest first and then 30-minutes exposed to music or 30 minutes of music first and then the uninterrupted rest. A significant effect was found after thirty minutes; music showed to be more effective in decreasing blood pressure and anxiety than a 30-minutes uninterrupted rest period.

Another research project investigating the effects of music on anxiety is the work of Ikonomidou, Rehnstrom and Naesh (2004). They focused on patients experiencing surgical anxiety and concluded that music and a period of peaceful rest before and after surgery reduce their anxiety. Furthermore Lee, Chao, Yiin, Chiang and Chao (2011) found that headphone and broadcast music are both effective for reducing patients' anxiety in waiting rooms before a surgery.

Another research project that investigated the psychological consequences that music might cause is the work of Thorgaard, Henriksen, Pedersbaek, and Thomsen (2004). They conducted a study about the effects of music (presence of music vs. no presence of music) on the perceived pleasantness of the sounds in a cardiac laboratory. The results showed that a significantly higher number of patients that were undergoing coronary procedures evaluated the sound as pleasant or very pleasant when music was present than when there was no music.

Ferguson, Singh and Cunningham-Snell (1997) also researched on the effects of music (presence of music vs. no presence of music) in a healthcare environment, more specifically on the effects of music while blood donation. This study demonstrates that playing music may have either detrimental or beneficial effects on environmental appraisals. If the effects are beneficial or detrimental depends on patient characteristics. For patients who previously donated blood only up to two times, music had detrimental effects on environmental appraisals. For patients who donated blood three times before, music had beneficial effects on environmental appraisals.

Other studies investigating the effects of music (presence of music vs. no presence of music) in healthcare environments focused on employees. The results of the study of Lai and Li (2011) provide evidence for nurses to use soothing music as a research-based nursing intervention for stress-reduction.

Besides using music in a healthcare environment there are also research projects that investigated the effects of music in other situations. A lot of research is done in the context of shopping environments. One example is the work of Spangenberg and Yalch (1988), which showed that music may also influence people's time perception. When music in a shopping environment was unfamiliar, people believed they had spent more time in this environment than they actually did. Another example is the work of North, Hargreaves and Mc Kendrick (1999) which showed that music may also have an effect on product choice. In their study, French music led to French wine outselling German ones, and also vice versa, German music led to the opposite effect on sales of French wine.

Coming back to the use of music in healthcare environments, which is of interest in the context of this research project, over the last decades music has become an important part of several medical settings. Besides simple listening to music, *music therapy* has become very popular. Referring to Esch, Guarna, Bianchi, Zhu, and Stefano (2004) the term *music therapy* encompasses song writing, discussion of lyrics and performing of music. "In the so-called

*receptive music therapy*, patients listen to a piece of music that elicits memories and associations, which can thereupon be lived-through in a new, protected, or simply pleasant way. In the *active music therapy*, patients improvise on instruments of their choice and thus create a new way of communicating their inner feelings, emotions, and unspoken words” (p.10).

To conclude, music therapy and simple listening to music in healthcare settings as well as in other settings and under several conditions provide a broad range of possibilities for improving physiological as well as psychological states.

### **2.1.3 Combinations of environmental features**

Besides using different environmental features separately, a number of research projects investigated the effects of different environmental features used in combination and identified interaction effects.

In regards to the ambient features used in this project (scent and music) the previously mentioned study of Spangenberg et al. (2005) demonstrate an interaction effect of these two features. As mentioned before, the evaluation of a Christmas scent that was used in a store was more positive when there was Christmas music present than when it was not. Additionally the presence of Non-Christmas music in the store led to more negative evaluations of the Christmas scent.

Another example is the already mentioned study of Morrison et al. (2011) which found a significant interaction effect of music and vanilla scent on young fashion shoppers’ feelings of pleasure and time spent in a store environment.

The study of Mattila and Wirtz (2001) also investigated the effects of different types of scent and music tempo. They made a distinction between high and low arousal scents and high and low arousal music. The results showed significant main effects of scent and music on shoppers’ evaluation and behavior and a significant interaction effect of scent and music

on arousal. Customers responded more positively if the arousing qualities of the music and the type of scent were congruent.

Morrin and Chebat (2005) found another interaction effect of scent and music. They used citrus scent and low-tempo music in a mall and varied these over time. The results showed that the amounts of dollars spend were the lowest when both scent and music were present in the mall setting.

Even if there has not been found a large number of interaction effects of scent and music yet, there has been found a number of interaction effects of other environmental features. One example is the study of Babin, Hardesty and Suter (2003) which found a significant interaction effect of color and lighting in a scenario-based retail setting. The results of this study show that blue interior in contrast to orange interior generally leads to more positive ratings in excitement, affect, perceived fairness, and purchase intention. But, when combined with a soft lighting orange interior, it led to higher ratings in excitement.

Another example is the study of Baker and Levy (1992) which found a significant interaction effect of ambient features (music and lighting) and social cues (number and friendliness of employees) on pleasure. The effect of the ambient environment on pleasure was significant in the low social cues condition, but not in the high social cues condition. They also found a significant main effect of social cues on arousal. In turn, pleasure and arousal showed a positive relationship with consumers' willingness to buy.

Stone (2003) found a significant interaction effect of environmental color and environmental view on the desire to view or to be viewed. In this study participants had to sit in an either red or blue environment. Some of the participants had a picture with a natural view in the environment, some did not. Furthermore participants had to do an either high or low demand task. No significant interaction of task, environmental color and environmental view were found. Nevertheless, as already mentioned, the interaction effect of environmental color and environmental view was significant, but only in the low demand task condition. In

the blue environment participants had a significantly greater desire to view or to be viewed when there was a picture present in the room then when it was not. In contrast in the red environment participants had a significantly greater desire to view or to be viewed when there was no picture present in the room then when it was present.

The previously presented studies are just a few examples of all the research projects that investigated interaction effects of environmental features. These have been presented to justify that it is reasonable to investigate in possible interaction effects of scent and music used in the waiting environment of a medical practice.

## **2.2 Crossover to the research project**

As the previous section indicates, there has already been done considerable number of research on the different effects of scent and music used separately, but there is only very limited knowledge about the interaction effects of these two environmental features, especially used in healthcare environments.

Furthermore there is limited research done focusing either on this specific group of patients within healthcare environments, or on differences within this group. These specific characteristics of the patient group and the differences within this group which might influence the effects of scent and music on patients' perception of waiting time duration, their evaluation of the waiting environment and their level of anxiety are presented in the following paragraphs. In addition the variables that are assumed to determine the healthcare experience of patients are introduced.

### **2.2.1 Differences within the target group**

There are basically two groups of patients that visit a plastic surgeon: patients with an aesthetical concern and patients with a functional concern.

An aesthetical concern might be the appearance of a woman's breast after pregnancy or the appearance of somebody's nose. Although people with an aesthetical concern are usually able to live a physically healthy life, these aesthetical concerns should not be underestimated. Aesthetical problems may cause serious psychological pain. Research does provide some preliminary signs that several indicators of mental health problems are more frequent in patients that are interested in cosmetic surgery than in the population in general (Sarwer et al., 2004). People who suffer, for example, from a very large breast often refuse to go swimming with friends and refuse doing sports in general. They dislike going shopping, refuse to have a partner and therefore may get depressed and lonely over time. This is just one example scenario of how people may suffer from an aesthetical problem, but it demonstrates that visiting a plastic surgeon may have a huge relevance for people, although they are able to live a physically healthy life. For these people visiting a plastic surgeon might have a crucial impact on their life. This, of course, might also apply to people with functional concerns, but in another way.

Patients with a functional concern judge the success of a surgical procedure in terms of curing a bodily dysfunction. In contrast, patients with an aesthetical concern evaluate a plastic surgery in terms of relief of their distress (Harris, 1981). Also Deaton and Langman (1986) stated that there exists some kind of a parallel between patients of plastic surgeons and patients of psychologists. Both go to a doctor because of emotional distress, but are treated in different ways. Plastic surgeons perform surgery to help their patients; psychologists try to reach the same goals with psychotherapy.

Regarding this background, this research project is based on the assumption that patients with an aesthetical concern have higher levels of emotional distress than people with

a functional concern and therefore feel more anxious when visiting a plastic surgeon. It is assumed that it is easier for people to decide if they have a functional problem, define it and talk about it with family, friends and a surgeon, than it is for people with an aesthetical concern. These people often feel ashamed to talk about their concerns. Furthermore the subjective evaluation of an aesthetical concern differs from one person to another. This makes it even harder to talk about it with others. Based on the assumption that there are differences within this group of patients referring to their state of emotional distress and anxiety when visiting a plastic surgeon, there might also be differences in how patients perceive and react to scent and music used in the waiting environment. Patients with an aesthetical concern might be very anxious and enjoy the presence of a relaxing and pleasant scent and/or relaxing and pleasant music. Patients with a functional concern might be less anxious and less emotionally involved. They might therefore, for example, be more impatient when waiting for the appointment with the surgeon and perceive the presence of a pleasant and relaxing music and/or scent as annoying. The *type of concern* of a patient (aesthetical concern versus functional concern) is therefore included in the research project as a first variable that might influence the effects of sensory marketing within healthcare environments.

Of course, there are aesthetical and functional concerns that are more or less severe. Furthermore patients generally differ in the subjective perception of a concern, especially when talking about aesthetical concerns. A big breast for example might form a serious problem and cause psychological pain in a woman; in contrast other women might wish to have such a big breast. Therefore the subjective felt severity of the concern is also included in the measures. This *severity of the concern* might also influence a patient's state of emotional distress when visiting a plastic surgeon. It is assumed that having a very severe concern might lead to higher levels of anxiety than having a less severe concern. Again, patients might consequently react differently to ambient features such as music or scent while waiting. Patients with a very severe concern might be very anxious and enjoy the presence of a

relaxing and pleasant scent and/or relaxing and pleasant music. Patients with a less severe concern might be less anxious and less emotionally involved. They might therefore, for example, be more impatient when waiting for the appointment with the surgeon and perceive the presence of a pleasant and relaxing music and/or scent as annoying.

As a third variable that might influence the effects of scent and music in the waiting room of a plastic surgeon's practice and for the same reason as the previously introduced variables, it will be registered if a patient visits the practice for the first time or not. Referring to research in the field of tourism, Lehto, O'Leary and Morrison (2004) stated that prior experience and knowledge associated with a location can partially offset consumer risk- and uncertainty reduction needs of consumers. Assigned to healthcare environments it is assumed that patients that have already visited a plastic surgeon's practice environment several times, might feel less anxious than first-time visitors. For the same reason as mentioned before, they might differently perceive and react to scent and music used in the waiting room.

### **2.2.2 Definition of healthcare experience**

Patients often spend considerable amount of time waiting for the doctor; often they spend more time waiting for the doctor than the actual appointment lasts. This is why the waiting experience plays an important role regarding the overall healthcare experience of patients.

Purpose of this project is to get to know if and in what way scent and music can be used in a plastic surgeon's waiting room to improve the healthcare experience of plastic surgeon's patients.

This project focused on three variables that are assumed to have an impact on the healthcare experience. These variables which are introduced in the following are: the *perceived waiting time duration*, the *evaluation of the waiting environment*, and the *level of anxiety* that patients feel while waiting.



Pruyn and Schmidts (1998) stated that “waiting for service is a pervasive and often unavoidable experience for customers and appears to be a strong determinant of overall satisfaction with the service and customer loyalty” (p.321). Within this project it is assumed that patients will have a positive healthcare experience if they perceive the waiting time duration as short or acceptable, positively evaluate the environment in which they have to wait and do not feel too anxious before meeting the surgeon. Of course, when talking about the overall healthcare experience, the actual expertise of the surgeon, the quality of the consultation and treatment and other variables surely play an important role, but are not considered in this project. This project basically focused on the experiences in the waiting room shortly before the appointment with the surgeon.

As previously mentioned, one variable that is to be measured is anxiety. There is already vast research on pre-operative anxiety. According to Haun, Mainous and Looney (2001) patients who are awaiting a surgery are generally anxious. “Preoperative anxiety is characterized by subjective, consciously perceived feelings of apprehension and tension accompanied by autonomic nervous system (ANS) arousal, which leads to an increase in blood pressure, heart rate, and respiratory rate” (Haun et al., 2001). In addition, anxiety can have negative effects on a person’s cognitive abilities and cause mentally and physically discomfort (Vaughn, Wichowski & Bosworth, 2007).

The waiting time before a surgery might even be more traumatic than the surgery itself. Patients are usually asked to be at hospital at least one or two hours before the surgery. This is the time when anxiety usually rises because the surgical environment intensifies it (Haun et al., 2001).

Significant research has been done focusing on pre-operative anxiety. But it does not always need a surgery to make people feel anxious. People might also feel anxious when waiting for other occasions. School kids for example might feel anxious when waiting for a test, an applicant when waiting for his interview, and a pregnant woman might feel anxious

shortly before giving birth. Waiting for an appointment with a plastic surgeon, presenting the body nakedly and talking openly about own problems, feelings and desires might also make people feel anxious. For this reason the waiting experience before an appointment with the surgeon should be improved by reducing patient's anxiety.

Again talking about pre-operative anxiety, research has shown that patients do not want excessive medication to reduce their anxiety. They rather want to listen to music or to read (Hyde, Bryden & Asbury, 1998). According to Thorgaard, Ertmann, Hansen, Noerregaard, Hansen and Spanggaard (2005) music involves the patients' minds with something soothing and familiar. It allows patients to relax and escape into another world and focus their awareness on the music. Besides the just mentioned relaxing effects of music, previous chapters (see Chapter 2.1.1 and 2.1.2) demonstrated that it is reasonable to use music but also scent when trying to reduce patients' level of anxiety and therefore improve their healthcare experience. The presented studies show that specific scents might have relaxing effects on people (Gueguen & Petr, 2006; Field et al., 2004; Lehrner et al., 2000), improve mood and decrease arousal (Knasko, 1992; Lehrner et al., 2000), improve satisfaction (Morrison et al., 2011) and reduce anxiety (Lehrner et al., 2000). (All these studies have been discussed more detailed in Chapter 2.1.1 and 2.1.2).

Previously presented studies show that music might reduce anxiety (Korhan, Khorshid & Uyar, 2010), as well as scent. Additionally it shows that especially music also affects people's time perception. Referring to Pruyn and Smidts (1998) the objective waiting time basically influences peoples' satisfaction on a cognitive route. It influences peoples' satisfaction via the perceived waiting time and the long/short judgment of the wait. Therefore influencing peoples' perception of the waiting time duration might help to reach more satisfied patients and therefore improve their healthcare experience. One example of a research project that shows that music has an effect on peoples' time perception is the already mentioned work of Spangenberg and Yalch (1988). They showed that when there was

unfamiliar music present in a shopping environment, people believed they had spent more time in this environment than they actually did.

The third variable which was considered within this research project is the evaluation of the waiting environment. Pruyn and Smidts (1998) stated that the “adverse effects of waiting can be soothed more effectively by improving the attractiveness of the waiting environment” (p.321). Based on this knowledge it is reasonable to try to improve the evaluation of the waiting environment and therefore improve the healthcare experience of patients. Research showed positive effects of music on the evaluation of environmental appraisals. An example is the previously mentioned work of Ferguson, Singh and Cunningham-Snell (1997). They conducted a field experiment within a healthcare environment and researched on the effects of music while blood donation. The results of their study demonstrate that music may have either detrimental or beneficial effects on environmental appraisals. Regarding patients who donated blood three times before, music had beneficial effects on environmental appraisals. Regarding patients who previously donated blood only up to two times, music had detrimental effects on environmental appraisals.

In summary, for the purpose of improving patients’ healthcare experience and based on the knowledge from literature about the strength of specific scents and music, scent and music should be tested whether and in what way these can be used in a waiting room of a plastic surgeon to reduce the perceived waiting time duration, to positively influence the evaluation of the waiting environment and to reduce patients’ level of anxiety while waiting.

## 2.3 Overview of main variables

Figure 1 gives an overview of all main variables that have been introduced in the previous sections of this chapter. The model includes the two independent variables *scent* and *music* and the dependent variables *evaluation of waiting environment*, *perceived waiting time duration* and *anxiety while waiting*. In addition three variables that might work as moderators (*type of patient*, *type of concern* and *severity of concern*) are integrated in the model.

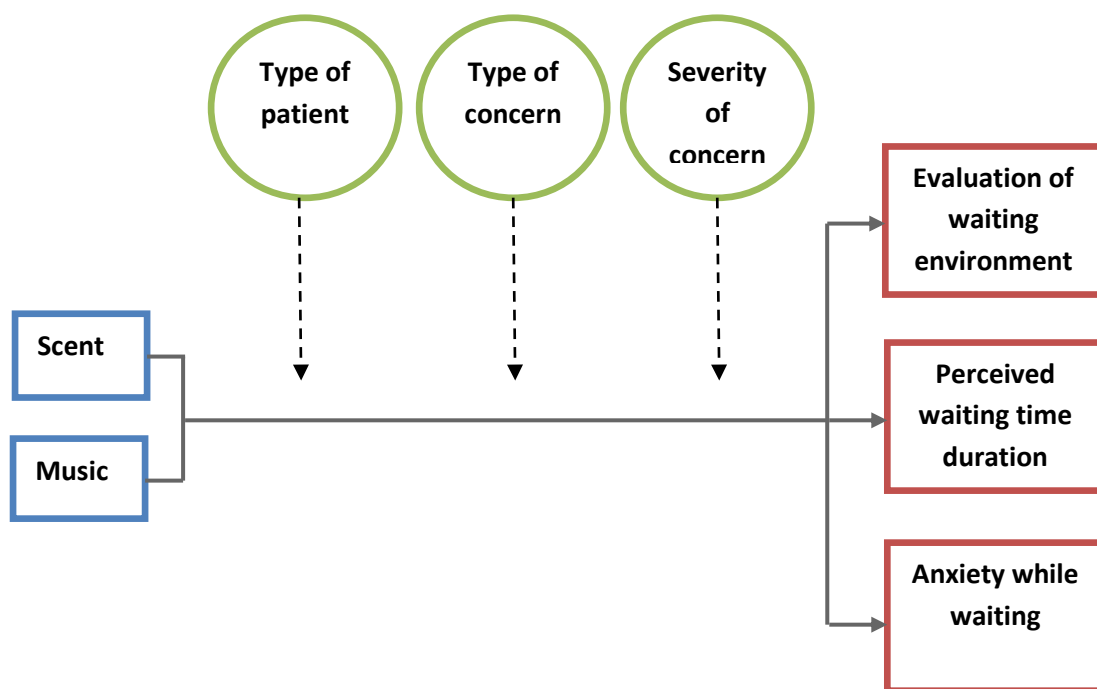


Fig. 1: Overview of main variables

## 2.4 Research question

Based on the knowledge about sensory marketing and the possibility of using environmental stimuli such as scent and music to influence peoples' emotions, perception and behavior, following research question was formulated:

*How can scent and music be used in a waiting room of a plastic surgeon to positively influence the healthcare experience of patients?*

To answer this main question a number of subordinated questions have been formulated:

*1. What is the effect of a pleasant and relaxing scent in the waiting room on patients' level of anxiety, their evaluation of the waiting environment and their perception of waiting time duration?*

*2. What is the effect of pleasant and relaxing music in the waiting room on patients' level of anxiety, their evaluation of the waiting environment and their perception of waiting time duration?*

*3. What are the effects of a pleasant and relaxing scent and pleasant and relaxing music in the waiting room on patients' level of anxiety, their evaluation of the waiting environment and their perception of waiting time duration?*

### **3. Research methodology**

The following chapter presents the research methodology. At first the hypotheses are presented. Then the pre-tests and the field experiment that have been conducted to answer the research questions are described. In the context of the pre-tests, participants and recruitment, the procedure of data collection, used materials, the analysis of data and its results are mentioned. In regards to the conducted field experiment, the purpose and concept of the experiment is mentioned as well as the used materials, the participants and the procedure of data collection.

#### **3.1 Hypotheses**

The research project investigates the possibilities of sensory marketing in the field of healthcare environments. More specifically it investigates the effects of two ambient features (scent and music) on a very specific target group (patients of a plastic surgeon). Based on what is already known about scent and music in literature, following hypotheses have been formulated to be tested.

**H1:** The presence of pleasant and relaxing scent in the waiting room (H1a) reduces patients' level of anxiety, (H1b) improves the evaluation of the waiting environment and (H1c) reduces the perceived waiting time duration.

**H2:** The presence of pleasant and relaxing music in the waiting room (H2a) reduces patients' level of anxiety, (H2b) improves the evaluation of the waiting environment and (H2c) reduces the perceived waiting time duration.

**H3:** The presence of pleasant and relaxing scent and pleasant and relaxing music in the waiting room (H3a) reduces patients' level of anxiety, (H3b) improves the evaluation of the waiting environment and (H3c) reduces the perceived waiting time duration.

**H4:** (H4a) The type of concern, (H4b) the severity of the concern and (H4c) the type of patient moderate the effects of scent and music in the waiting room.

With testing these hypotheses it should be clarified if it is advisable to use scent and music in the waiting room to improve patients' healthcare experience. More specifically, it should be tested if it is advisable to use scent or music or both of them in combination. Furthermore, it should be found out if distinctions need to be made within this patient group when trying to optimize the healthcare experience of them.

### **3.2 Pre-tests: What music and what scent should be used?**

The experiments have been planned to test if a relaxing and pleasant scent and relaxing and pleasant music positively influence the waiting experience of patients. Before the experiment started, two pre-tests were conducted to get to know what music style and what kind of scent are perceived as relaxing and pleasant. Based on these results, a decision was made about what scent and what music should be used for the experiment.

#### **3.2.1 Pre-test: Music**

Three different styles of music that were assumed to be perceived as relaxing and pleasant have been included in the pre-test: classical music, calm modern music and instrumental music with nature sounds. Each music style has been represented by four different songs. Classical music was amongst other songs represented by Hendel's "Water Music" and Beethoven's "For Elise". The song "Set fire to the rain" by Adele is one of the songs that

acted for calm modern music. The third music style was represented by four different instrumental songs of unknown artists. The songs included for example sounds of wind, water or animals. With the help of a questionnaire it was found out what style of music is perceived as most pleasant and most relaxing.

The questionnaire was sent to participants ( $N = 21$ ) by e-mail introducing the researcher and research project and giving some instructions. At first participants had to indicate their gender and age. The second part of the questionnaire contained twelve links. The participants had to click on a link to listen to a song. For each song two questions were asked: “How pleasant did you perceive the song?” and “How relaxing did you perceive the song?” Participants answered on 5-point Likert-scales from “Not at all pleasant” to “Very pleasant” and from “Not at all relaxing” to “Very relaxing”. The two questions and the two Likert-scales were identical for all twelve songs. Participants were instructed to listen to a song for at least 50 seconds before evaluating it and starting the next song. Furthermore they have been instructed to concentrate on the music and to not focus on the music videos (that were automatically going with the songs) to make sure that the music and not the videos were evaluated. The sequence in which the songs were provided differed on each questionnaire. (A German and an English version of the pre-test questionnaire can be found in Appendix A).

In total 21 randomly selected persons took part in the pre-test. There were six men and 15 women, who were all in the age between 20 and 63 years. The average age was 30.57 years.

A repeated measures analysis of variance (ANOVA) was conducted to compare the effect of the three different music styles on pleasantness. A significant effect of music style on pleasantness was found ( $F(2, 19) = 3.67, p < .05$ ). Pairwise comparisons of the three groups indicate a significant difference in the scores of pleasantness for classical music ( $M = 3.14, SD = 0.99$ ) and instrumental music with nature sounds ( $M = 3.69, SD = 0.88$ ),  $t(20) = -2.74, p$



$< .05$ . Comparisons between calm modern music and the two other music styles showed no statistical significant difference.

Another repeated measures ANOVA was conducted to compare the effect of the three different music styles on relaxation. A significant effect of music style on relaxation was found ( $F(2, 19) = 21.72, p < .001$ ). Pairwise comparisons of the three groups indicate a significant difference in the scores of relaxation for instrumental music with nature sounds ( $M = 4.00, SD = 0.87$ ) and classical music ( $M = 2.70, SD = 0.73$ ),  $t(20) = 6.51, p < .001$ . Also a significant difference was found in the scores of relaxation for instrumental music with nature sounds ( $M = 4.00, SD = 0.87$ ) and calm modern music ( $M = 2.77, SD = 0.82$ ),  $t(20) = 4.33, p < .001$ . No statistical significant difference was found in the scores of relaxation between classical music and calm modern music.

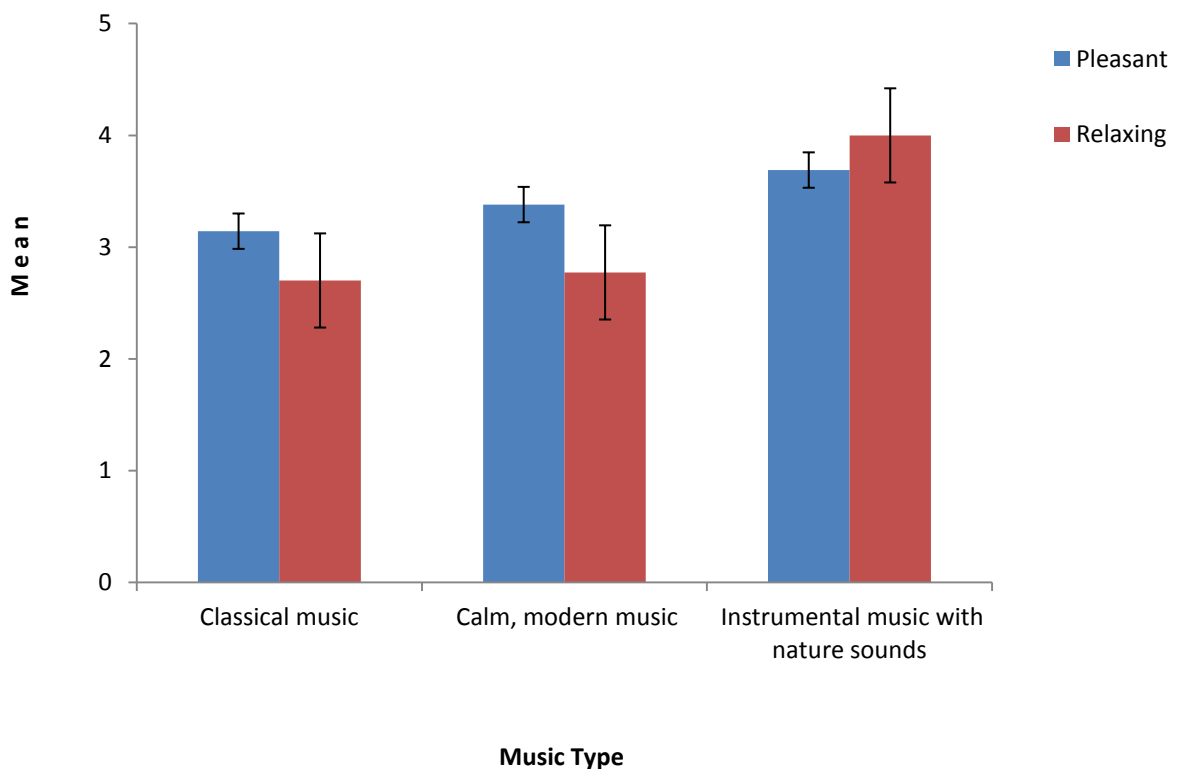


Fig. 2: Mean values of pleasantness and relaxation amongst different music styles

Figure 2 presents the mean scores of the three different music styles referring to pleasantness and relaxation. Because instrumental music with nature sounds scores statistical significantly higher referring to pleasantness and relaxation, it was decided to use this music style for the experiment. The precise music collection that had been used for the field experiment is presented later in the report.

### **3.2.2 Pre-test: Scent**

Referring to the second ambient feature that was worked with (scent), eight different scents have been included in the pre-test. Scents that proved to have relaxing effects in earlier research projects (e.g. vanilla and lavender), but also scents that proved to have other effects have been used (e.g. mint). To include scents from different categories other types of scents have also been included (e.g. flowery and fruity scents). In total the following eight scents have been evaluated in the pre-test: Vanilla, lavender, mint, lemon grass, rose, magnolia, orange and mango. With the help of a questionnaire it was found out what type of scent is perceived as most pleasant and most relaxing. (The used materials are presented in Appendix B).

The questionnaire was personally given to participants ( $N = 21$ ). The questionnaire started with an introductory text that contained some information about the researcher and the research project. The text also gave some instructions about the procedure of the test. Before the actual pre-test started the researcher again explained the most important information verbally. At first participants had to fill in their gender and age. Then the main part of the test started. Participants had to smell on a bottle that contained scent oil and answer two questions about this scent. These questions were: “How pleasant did you perceive the scent?” and “How relaxing did you perceive the scent?” Participants answered on 5-point Likert-scales from “Not at all pleasant” to “Very pleasant” and from “Not at all relaxing” to “Very relaxing”. Then they were instructed to take a smell on the own skin to neutralize the smell in their nose.

After participants had answered both questions about the first scent the researcher told them the name of the scent and instructed them to write it down. The name of the scent was provided after the evaluation to make sure that the participants' answers were not based on previous knowledge and prejudices. This procedure continued until all eight scents had been evaluated. In each session with a participant scents were randomly chosen, therefore scents were provided in a different sequence for each participant. (A German and an English version of the pre-test questionnaire can be found in Appendix C).

In total 21 randomly selected persons took part in pre-test. There were six men and 15 women, who were all in the age between 20 and 80 years. The average age was 41.33 years.

A repeated measures ANOVA was conducted to compare the effect of the eight different scents on pleasantness. No statistical significant effect of type of scent on pleasantness was found ( $F(7, 14) = 2.47, ns$ ). All scents were approximately the same in pleasantness.

Another repeated measures ANOVA was conducted to compare the effect of the eight different scents on relaxation. A significant effect of type of scent on relaxation was found ( $F(7, 14) = 3.90, p < .05$ ). Comparisons of the eight groups indicate a significant difference in the scores of relaxation between vanilla ( $M = 3.24, SD = 1.30$ ) and mango ( $M = 2.10, SD = 1.18$ ),  $t(20) = 3.29, p < .05$ . Also significant differences in the scores of relaxation were found between lavender ( $M = 3.71, SD = 1.10$ ) and lemon ( $M = 3.00, SD = 1.00$ ),  $t(20) = 2.37, p < .05$ ; lavender and magnolia ( $M = 2.90, SD = 1.38$ ),  $t(20) = 2.12, p < .05$ ; lavender and orange ( $M = 2.62, SD = 1.16$ ),  $t(20) = 3.12, p < .05$ ; and lavender and mango ( $M = 2.10, SD = 1.18$ ),  $t(20) = 4.84, p < .001$ . In contrast to lavender and vanilla, which scored significantly higher on relaxation than other scents, mango scored statistically lower than most of the other scents. Because low values of relaxation are not useful for the experiment, the significant differences between mango and other scents are not further presented in this report. No statistical significant differences were found in the scores of the other pairs.

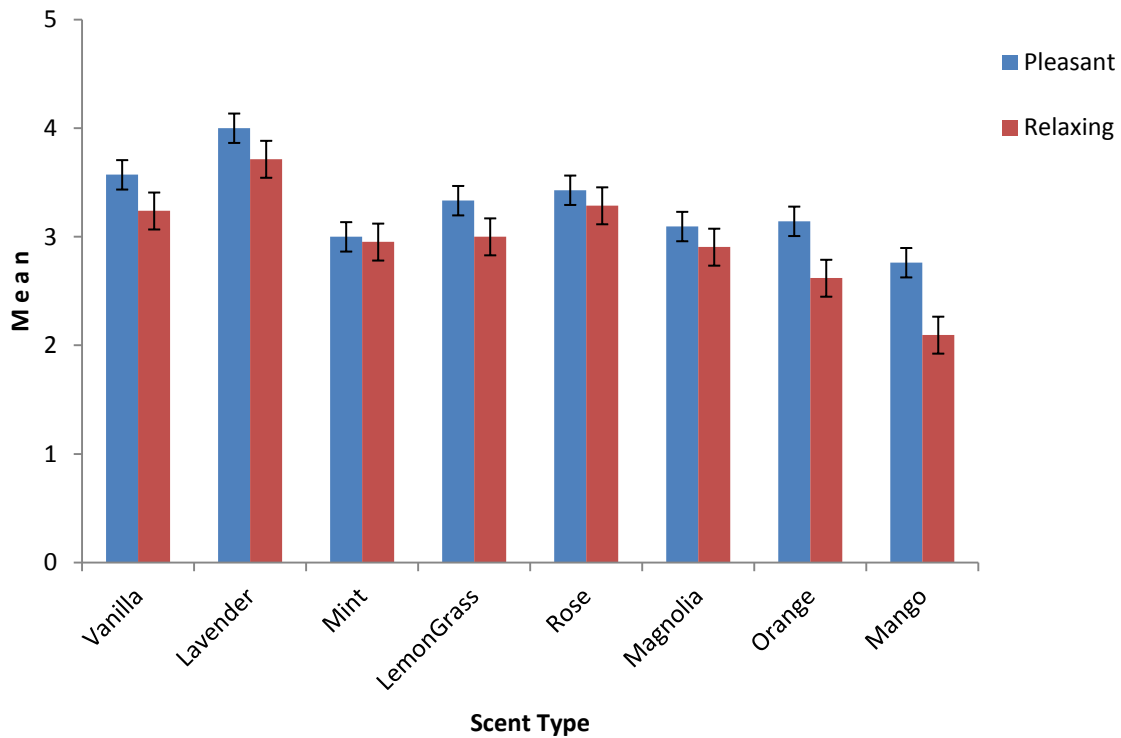


Fig. 3: Mean values of pleasantness and relaxation amongst different scent types

Figure 3 presents the mean scores of the eight different scent types referring to pleasantness and relaxation. Because lavender scores highest on both (pleasantness and relaxation) and at least referring to relaxation significantly higher than most of the other scents, it was decided to use lavender scent for the main part of the study.

### 3.3 Field experiment in a waiting room

The main study of the research project was conducted with the help of a field experiment. As mentioned before (see Chapter 1.3) a German plastic surgeon offered to provide his practice environment to prepare the needed experimental conditions with scent and music in the waiting room, and to collect data by addressing his patients. The following paragraphs introduce the purpose and concept of the experiment, present the questionnaire that has been used and describe the participants and procedure of data collection.

### 3.3.1 Purpose and concept of the experiment

Purpose of the field experiment was to measure the effects of scent and music on the variables of interest (*level of anxiety, evaluation of waiting environment, perceived waiting time duration*) as well separately as possible interaction effects. Based on the results of the two pre-tests it was decided to use lavender scent and instrumental music with nature sounds to prepare the needed experimental conditions in the waiting room.

The field experiment included four experimental conditions. For each condition at least twenty-five patients were needed. In total at least one-hundred patients needed to be addressed. In the first condition, which was used as a control condition, neither scent nor music was present in the waiting room. In the second condition lavender scent but no music was present in the waiting room. In the third condition lavender scent but no music was present in the waiting room. In the third condition lavender scent and instrumental music with nature sounds were both present in the waiting room. In the fourth condition instrumental music with nature sounds, but no scent was present in the waiting room.

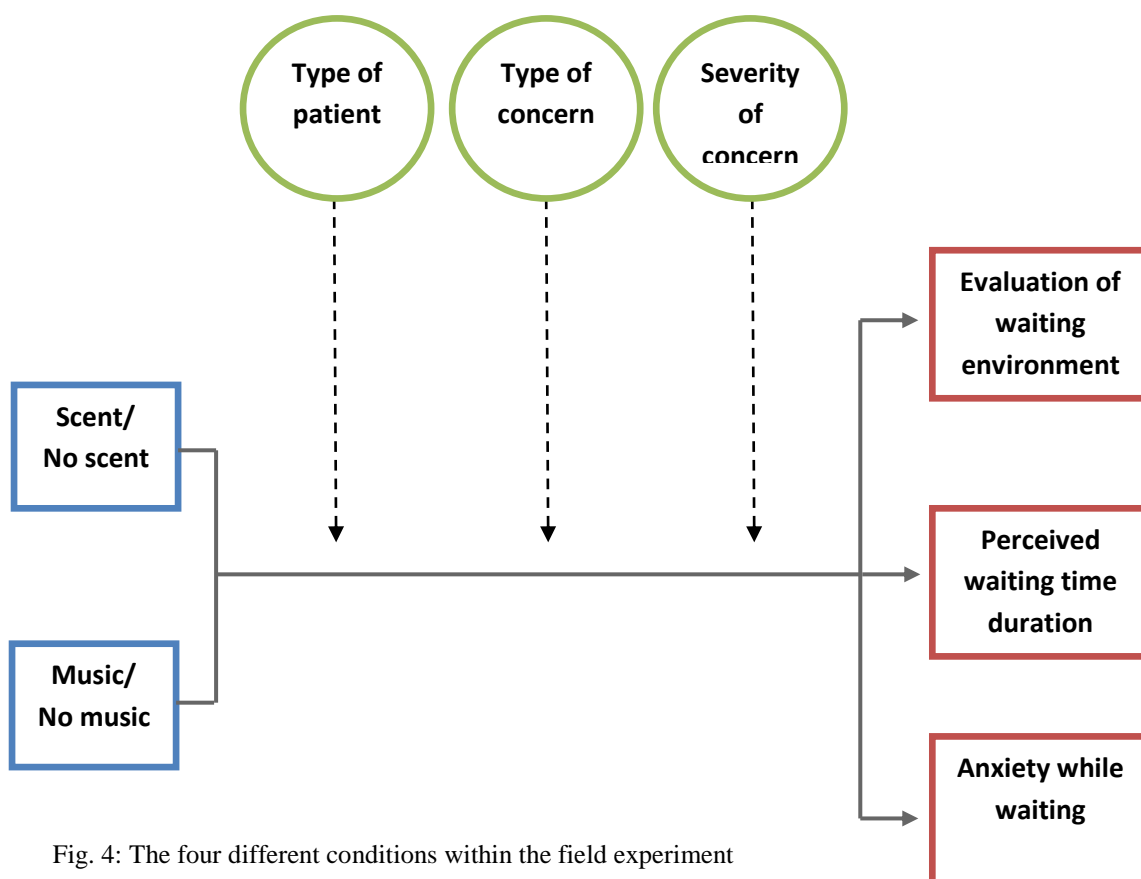


Fig. 4: The four different conditions within the field experiment

In all conditions *level of anxiety*, *evaluation of the waiting environment*, and *perceived waiting time duration* have been measured with the help of a questionnaire. In addition the previously introduced variables *type of patient*, *type of concern*, and *severity of concern* have also been included in the questionnaire. The questionnaire is described more detailed in the following. (The waiting room and the used materials can be seen in Appendix D).

### **3.3.2 The questionnaire**

The questionnaire that was used for the field experiment started with a text introducing the researcher and the project and giving some instructions about how to answer the questions correctly. Patients were told that the questions refer to patient satisfaction in waiting rooms. It was not mentioned that scent and music play a role. Patients were also informed that the research was conducted within the framework of a master thesis of a student from University of Twente and in cooperation with Dr. med. A. Yousef. To make it more reliable the logo of the university was put on each page of the questionnaire.

The introductory text also served as pastime to make sure that patients perceived the scent and/or music (depending on the experimental condition) for at least a short time before they started to answer the relevant questions. For the same reason the questionnaire started with those questions about which scent and music did not play a role.

At first patients were asked about their gender and age. Then they had to indicate if they were first-time visitors or not. The following two questions asked about the type of the concern and the severity of the concern. As for the type of concern patients had to choose between “rather aesthetical concern” and “rather functional concern”. As for the severity of the concern patients had to answer on a five-point Likert scale from “Not at all serious” to “Very serious”.

The following part contained items to measure anxiety. On a five-point Likert scale patients had to indicate whether the presented statements apply to them. Statements sentenced

for example “I am nervous” and “I am calm”. Eight statements have been used which all came from existing scales. Scales that have been partially used are the “Clinical Anxiety Scale” (Snaith, Baugh, Clayden, Husain & Sipple, 1982) and the German version of the “State-Trait Anxiety Inventory” (Laux, Glanzmann, Schaffner & Spielberger, 1981). Furthermore an existing German version of the “Hospital Anxiety and Depression Scale” (Ketterer, 2008), which was originally developed by Zigmond & Snaith (1983) has also been used.

The next four items in the questionnaire measured the evaluation of the waiting environment. Once again, patients had to indicate on a five-point Likert scale to what extent the statements apply. The used statements came also from an existing scale, called “Physical Environment Quality” which has been used before by Vorhees, Bourdeau, Brocato & Cronin (2009).

As instructed in the introductory text the so far mentioned questions should be answered by patients while they were sitting in the waiting room before their appointment. In contrast the following questions which form the last part of the questionnaire needed to be answered after the appointment when patients were checking out at the front desk. These questions referred to the waiting time duration. Therefore it did not make sense to let patients answer these questions while they were still waiting.

Three items measured the perceived waiting time duration. People needed to indicate on three five-point Likert scales if they perceived the waiting time duration rather short or long, unacceptable or acceptable and reasonable or unreasonable. The three used items were also taken from a scale which has been used for a previously conducted research (Vorhees et al., 2009). A next question asked for the objective waiting time duration. Patients had to indicate the number of minutes that they approximately had waited. This question was asked to be able to analyze the perception of waiting time duration related to the objective time duration patients had waited.

In the conditions where scent and/or music have been used participants were also asked if they perceived scent and/or music. If they answered this/these question(s) with yes, they have furthermore been asked to indicate on five-point Likert scales how pleasant and how relaxing they perceived the scent and/or music. This was to check if the results from the conducted pre-tests were accurate. The questionnaire ended with a written permission with which participants allowed the researcher to use the collected data anonymously. Furthermore the researcher thanked the patients for participation and provided a telephone number and e-mail address for asking questions and giving annotations.

In total four slightly different questionnaires (depending on the experimental condition) have been used for the field experiment. The questionnaires that were given to patients all have been formulated in German. (A German and an English version of the questionnaires can be found in Appendix E).

### **3.3.3 Target group, recruitment and procedure**

Patients of a plastic surgeon with either an aesthetical or a functional concern form the target group of this research project. Patients with differential severe concerns were included. Furthermore first-time visitors as well as repeat visitors form part of the group of interest.

As mentioned before the field experiment was conducted in the practice environment of a German plastic surgeon that covers aesthetical concerns as well as functional concerns of different severity. In this way it was easy to reach a large number of persons belonging to the target group. Data collection took place on three days of the week when there were consultation hours in the practice. During the other days the surgeon was exclusively doing surgeries. Therefore no data collection took place on these days.

Before the actual data collection started, the preparation of the different experimental conditions was planned. Referring to scent, three scent diffusers with lavender oil in it were centrally placed in the waiting room. On the next day, after the scent had been diffused for a



while, patients were asked to evaluate the intensity of the scent. Because a number of patients indicated that the scent was used too intensively, it was continued with two scent diffusers. In this condition there were no complaints about the intensity of the scent. Therefore it was decided to use two scent diffusers for the experiment. Before the experiment started the use of music was also planned and tested. The chosen instrumental music with nature sounds was played in the waiting room with a CD-player. Patients were asked about their opinion referring to the loudness of the provided music. After providing different levels of loudness and getting feedback about it, a specific level of loudness was fixed for the experiment. A CD collection containing three CDs, each one providing music for about one hour, was used for the experiment. The chosen music belonged to the same music style as the music that was worked with in the pretest. (To get an impression of the music style, the links provided in Appendix A can be used.) The CD collection provided three hours listening to instrumental music with nature sounds. By using this CD collection it was made sure that patients did not have to listen to just four different songs (that have been used for the pretest) several times while waiting. Listening to the same songs again and again might have been annoying for patients.

Shortly before the actual data collection started, the previously described questionnaires were given to the doctors' receptionist. When a patient registered at the front desk he or she was asked by the receptionist to fill in a questionnaire about patient satisfaction while waiting for the appointment with the doctor. If patients indicated that they have already filled in the questionnaire in line with a previous appointment, they were thanked and did not get the questionnaire again. Patients that were willing to fill in the questionnaire received it together with a pen and some verbal instructions. Depending on the condition (Scent/No scent; Music/No music) patients received the appropriate version out of the four slightly different versions of questionnaires that have been developed. After registering at the front desk and receiving the questionnaire patients were sent to the waiting room where the field

experiment was conducted. Because there is a small number of additional seating-accommodations on the corridor outside the waiting room, some patients did not take a seat in the intended waiting room where scent and/or music (depending on the experimental condition) have been provided. These patients were observed and when they handed in their questionnaires these questionnaires have been marked and excluded from the analysis.

Patients have been instructed verbally as well as in written form to fill in the first and second part of the questionnaire while they were waiting in the waiting room before their appointment, and the third part after their appointment when they are checking out at the front desk. When patients handed in the questionnaires at the front desk the doctor's receptionists checked if there were missing answers and if necessary asked patients to complete them.

At the time when at least 25 completely filled in questionnaires referring to one experimental condition had been handed in at the front desk it was switched over to the next condition. When consultation hours were over and the last patient had left the practice, the appropriate following experimental condition was prepared in the waiting room. On the next day the adequate version of the questionnaire was handed out to patients. This continued until there were at least 25 completely filled in questionnaire for every condition collected. In total, the field experiment took about seven weeks with data collection taking place on three days of a week.

### **3.4 Legal and ethical considerations**

While planning to conduct experimental research, it is very important to keep in mind that there are legal and ethical issues that need to be considered.

First of all participants need to know that a research is conducted and that they possibly will be part of it. Referring to the two pre-tests as well as the field experiment it must be sure that at no point of time participants get forced to any extent to participate in the studies. Participating is absolute voluntary and participants have the right to refuse to

participate. If people participate in the study they need to give a written permission. Even after people agreed to participate, they need to feel free to ask questions and stop with the study at any point in time.

Of course, all data needs to be treated anonymously. At the end of the studies the researcher needs to give people the possibility of debriefing. Participants have the right to ask questions and get to know everything about the research project and its purpose.

In summary, participants must not get annoyed about the research project or the researcher at any point of time, for their own sake and to not damage the surgeon's reputation. For this reason all the mentioned factors have been closely considered while the research project was conducted.

## **4. Results**

In the following section the participants who took part in the experiment are described. Then it is mentioned to what extent the manipulations worked. Furthermore the results of the conducted analyses are presented.

### **4.1 Participants**

In total 117 patients took part in the experiment; 28 in the *No Scent – No Music* condition, 28 in the *Scent* condition, 28 in the *Scent – Music* condition and 33 in the *Music* condition.

The sample consists of 28 men (23.9%) and 89 women (76.1%) with a mean age of 47.92 years. The age ranged from 14 to 88 years.

Referring to the type of patient, there were 82 first-time visitors (70.1%) and 35 repeat visitors (29.9%). Referring to the type of concern, 49 of the patients had a rather aesthetical concern (41.9%) and 68 a rather functional concern (58.1%).

Table 1 shows the mean age, gender, type of patient, type of concern and mean severity of concern amongst the four experimental conditions. As the provided data in Table 1 indicates, there were no significant differences amongst the four conditions. The sample characteristics were approximately the same amongst all experimental conditions.

Table 1: Sample characteristics amongst the different experimental conditions

		No Scent, No Music	Scent + Music	Music	Scent
<b>Age Ø</b>		47,61	51,21	46,45	46,68
<b>Gender</b>	Male	21,43 %	28,57%	21,21%	25%
	Female	78,57%	71,43%	78,79%	75%
<b>Type of patient</b>	First-time visitor	60,71%	60,71%	75,56%	82,14%
	Repeat visitor	39,29%	39,29%	24,24%	17,86%
<b>Type of concern</b>	Rather aesthetical	39,29%	42,86%	48,48%	35,71%
	Rather functional	60,71%	57,14%	57,14%	64,29%
<b>Severity of concern Ø</b>		3,39	3,68	3,64	3,68
<b>Total number of patients</b>		28	28	33	28

## 4.2 Manipulations

With calculating the descriptive of the appropriate variables it was checked if the manipulation worked, e.g. if patients generally perceived scent and/or music in the waiting room. The results show that the majority of patients perceived the used scent and music. Referring to scent 40 (71.4%) of the 56 patients who have been exposed to lavender scent indicated that they perceived a scent while waiting. 10 (17.9%) indicated that they did not perceive a scent and six patients (10.7%) did not remember if they perceived a scent in the waiting room.

Referring to music 42 (68.9%) of the 61 patients who have been exposed to instrumental music with nature sounds perceived the music in the waiting room. 18 (29.5%)

indicated to have not perceived it and one patient (1.6%) did not remember if he or she perceived music while waiting.

Furthermore it was checked if the propositions of the conducted pre-tests were accurate. The patients who had indicated that they perceived scent and/or music while waiting have therefore been asked to indicate on a five- point Likert scale (from 1= totally not pleasant/relaxing to 5= totally pleasant/relaxing) to what extent they perceived the scent and/or music as pleasant and relaxing. The used lavender scent was perceived as rather pleasant ( $M = 3.83$ ,  $SD = 1.20$ ) and rather relaxing ( $M = 3.78$ ;  $SD = 1.26$ ). The used instrumental music with nature sound was also perceived as rather pleasant ( $M = 3.57$ ,  $SD = 1.23$ ) and rather relaxing ( $M = 3.55$ ,  $SD = 1.33$ ).

In summary, the intention was to use scent and music in a way that it was not too penetrative with the consequence that scent and music do not annoy patients. But, of course, the intention was also that scent and music are used intensively enough to be perceived by patients, either consciously or at least unconsciously. The presented numbers show that the majority of patients perceived scent and music consciously while waiting. But the presented numbers also show that there were some patients that did not perceive it at all, or not consciously. Based on these findings it is supposed that scent and music were not too slightly used, and that the use was also not too penetrative.

Furthermore the presented findings show that the propositions of pre-tests about pleasantness and relaxation ratings of lavender scent and natural music with nature sounds are correct. On five-point Likert scales from 1= very unpleasant/totally not relaxing to 5= very pleasant/very relaxing the mean ratings are relatively high for both, pleasantness and relaxation of scent. Referring to pleasantness and relaxation of music the mean ratings are a little lower than those in the conducted pre-test but still high enough for both, pleasantness and relaxation of music, to conclude that the music was generally perceived as pleasant and relaxing.

### 4.3 Effects of scent and music

To look for effects of scent and music, a 2x2 univariate analysis of variance (ANOVA) was conducted. More specifically several ANOVAs were conducted; one for each dependent variable. Variables that were inserted as dependent variables are *level of anxiety*, *evaluation of waiting environment* and *perceived waiting time duration*. *Scent* and *music* were inserted as independent variables.

#### 4.3.1 Effects on anxiety

To check if scent and music have an effect on the level of anxiety of patients an ANOVA was conducted. Results showed no significant main effect of scent on anxiety ( $F(1, 117) = 0.07$ , *ns*). There was also no significant effect of music on anxiety ( $F(1, 117) = 0.14$ , *ns*). But results indicated a significant interaction effect of scent and music ( $F(1, 117) = 6.62$ ,  $p < .05$ ).

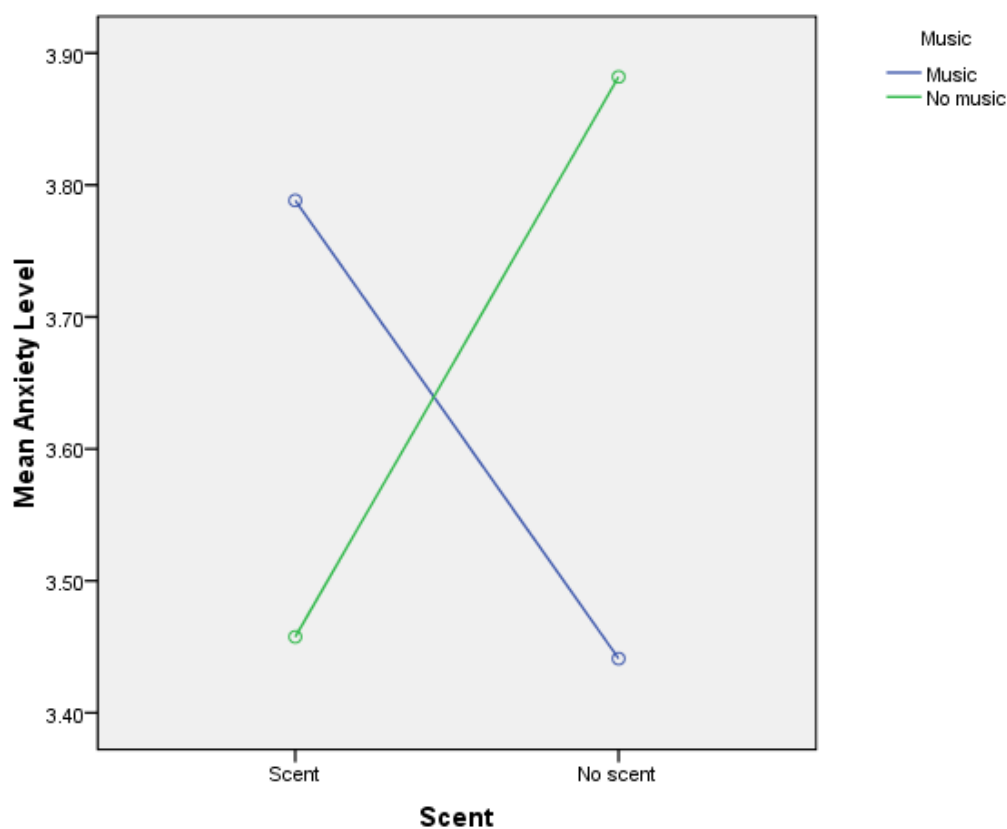


Fig. 5: Interaction effect of scent and music on anxiety

With looking at the pairwise comparisons, the differences between the means of anxiety in the four different experimental conditions were examined. Mean scores and standard errors are presented in the following figure.

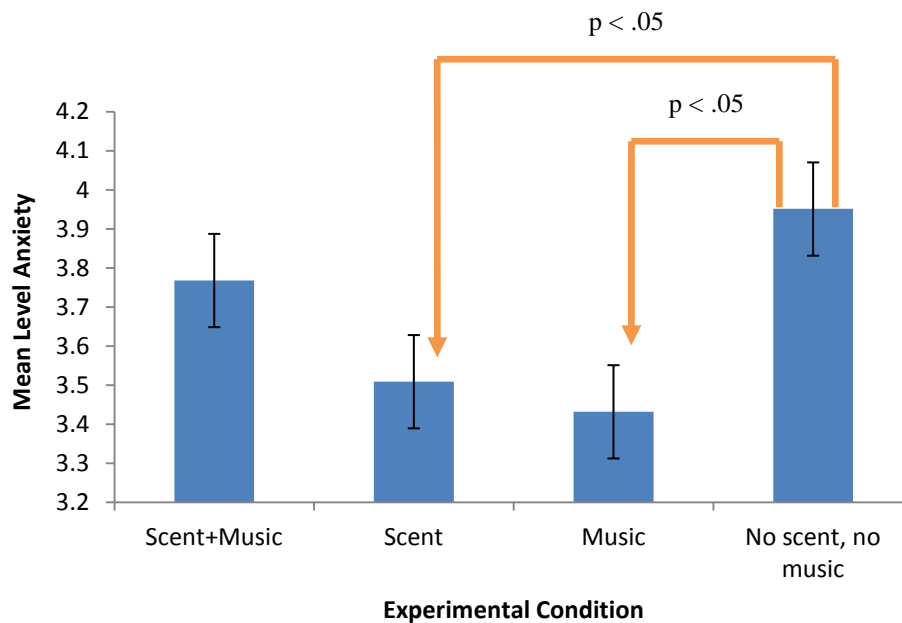


Fig. 6: Mean values of anxiety amongst different experimental conditions

No additive effect of scent and music as hypothesized was found, but results showed a negative interaction effect. There was a significant difference between the means of anxiety in the *No Scent - No Music* condition and the *Music* condition. Anxiety was significantly lower when there was music present ( $M = 3.43$ ,  $SD = 0.76$ ) than when there was no music and no scent in the waiting room ( $M = 3.95$ ,  $SD = 0.91$ ),  $t(59) = 2.42$ ,  $p < .05$ . There was also a significant difference between the means of anxiety in the *No Scent - No Music* condition and the *Scent* condition. Anxiety was significant lower when there was scent present ( $M = 3.51$ ,  $SD = 0.91$ ) than when there was no scent and no music in the waiting room ( $M = 3.95$ ,  $SD = 0.91$ ),  $t(54) = 1.82$ ,  $p < .05$ . The difference between the means of anxiety in *No Scent - No Music* condition and the *Scent - Music* condition was not significant. There was also no significant difference between the means of anxiety found when comparing the *Scent*



condition with the *Music* condition. The differences between the means of anxiety when comparing the *Music* condition with the *Scent – Music* condition and when comparing the *Scent* condition with the *Scent – Music* condition were not statistically significant too.

Within the ANOVA it was also checked if the *type of patient*, the *type of concern*, and the *severity of concern* are moderating the effects of scent and music on anxiety. The *severity of concern* was found to have a significant effect on anxiety ( $F(1, 117) = 13.10, p < .001$ ). Logically, the more severe the concern is, the more anxious patients are. But the severity of concern did not moderate the effects of scent and music on anxiety. Also in regards to the *type of patient* and the *type of concern* neither main effects nor moderating effects were found. Furthermore *gender* was tested as a possible moderator. No significant effect was found.

#### **4.3.2 Effects on evaluation of waiting environment**

To check if scent and music have an effect on the evaluation of the waiting environment another ANOVA was conducted. Results showed no significant main effect of scent on evaluation of environment ( $F(1, 117) = 0.01, ns$ ). There was also no significant main effect of music on evaluation of environment ( $F(1, 117) = 0.11, ns$ ). Furthermore there was no significant interaction effect of scent and music on evaluation of environment found ( $F(1, 117) = 1.55, ns$ ).

Again it was also checked if any variables are moderating the effects of scent and music on evaluation of environment. None of the variables of interest (*type of patient*, *type of concern*, *severity of concern*) showed to have a main effect or was identified as a moderator. Also *gender* showed no effects and was not found to work as a moderator.

### 4.3.3 Effects on perceived waiting time duration

Another ANOVA was conducted to check if scent and music have an effect on the perceived waiting time duration. Results showed no significant main effect of scent on perceived waiting time duration ( $F(1, 117) = 1.05, ns$ ). There was also no significant effect of music on perceived waiting time duration ( $F(1, 117) = 0.03, ns$ ). Furthermore there was no significant interaction effect of scent and music on perceived waiting time duration ( $F(1, 117) = 0.06, ns$ ).

It was checked if the *type of patient*, the *type of concern*, and the *severity of concern* moderated the effects of scent and music on perceived waiting time duration. None of the three variables were found to have a moderating effect. Again, also *gender* did not work as a moderator. In this ANOVA which was conducted to check if there are effects of scent and music on the perceived waiting time, the *objective waiting time duration* was inserted as an additional variable. This variable (*objective waiting time duration*) was found to have a significant effect on the perceived waiting time ( $F(1, 117) = 54.24, p < .001$ ). Logically, the shorter/longer the objective waiting time lasted, the shorter/longer patients perceived the waiting time.

## 5. Discussion

Referring to the formulated research question, a number of hypotheses should be tested. These hypotheses are:

**H1:** The presence of pleasant and relaxing scent in the waiting room (H1a) reduces patients' level of anxiety, (H1b) improves the evaluation of the waiting environment and (H1c) reduces the perceived waiting time duration.

**H2:** The presence of pleasant and relaxing music in the waiting room (H2a) reduces patients' level of anxiety, (H2b) improves the evaluation of the waiting environment and (H2c) reduces the perceived waiting time duration.

**H3:** The presence of pleasant and relaxing scent and pleasant and relaxing music in the waiting room (H3a) reduces patients' level of anxiety, (H3b) improves the evaluation of the waiting environment and (H3c) reduces the perceived waiting time duration.

**H4:** (H4a) The type of concern, (H4b) the severity of the concern and (H4c) the type of patient moderate the effects of scent and music in the waiting room.

The previously presented results confirm H1a. Pleasant and relaxing scent used in the waiting room lowers patients' level of anxiety. The results also confirm H2a. Pleasant and relaxing music used in the waiting room also lowers patients' level of anxiety. In contrast, H3a is not confirmed. When pleasant and relaxing music and pleasant and relaxing scent are used together in the waiting room they do not lower patients' level of anxiety. In this condition (*Scent – Music* condition) the level of anxiety was approximately the same as in the *No Scent - No Music* condition.

An explanation of these results can be found in the theory of Berlyne (1960) who stated that there is an optimal level of arousal for an individual at a given time. Referring to Berlyne (1960) there is a bell-curved function between the level of arousal and an individual's affective state. As introduced in the theoretical part of this report the aim of this project was,

amongst others, to find out how scent and music can be used to reduce negative affect in terms of reducing anxiety.

As already explained in more detail in the theoretical part of this report, Mehrabian and Russell (1974) stated that environmental stimuli are able to evoke specific emotions in an individual which in turn cause a particular behavior. According to Berlyne (1969) all these stimuli have specific characteristics. Just to mention one example, stimuli may differ in terms of their novelty. These characteristics such as novelty determine the arousal potential of a stimulus. With its arousal potential a stimulus is able to influence an individual's level of arousal. If stimuli in an environment have an optimal arousal potential, they cause a moderate level of arousal in an individual. If stimuli cause a too high or too low level of arousal, it results in negative affect.

Referring to the context of the conducted experiment it is assumed that participants' level of (negative) arousal is already rather high, because of the upcoming appointment with the surgeon. Therefore stimuli with a low arousal potential are needed to reduce the level of arousal and reach a moderate level of arousal as much as possible.

Based on the results of the conducted experiment it can be concluded that as well lavender scent as instrumental music with nature sounds - used in a situation when people are already some kind of negatively aroused - do have an appropriate arousal potential which in turn reduces patients' level of anxiety. If scent and music are used together at the same time - in a situation when people are already some kind of negatively aroused- the arousal potential is too extreme. If scent and music are used in combination, people probably detect that there is something done to "fool" them. It might happen that people even recognize that they should be calmed down with the provided music and scent. Consequently they conclude that there is something they need to worry about. If stimuli are used in a too extreme way and people consciously detect that, the stimuli won't "work" anymore and therefore won't relax people.

Summing up, because too little or too much stimulation tend to be ignored by individuals (Berlyne, 1960), the two stimuli (scent and music) are not working to reduce negative arousal in terms of reducing anxiety if they are used together. Again, it is important to mention that the effects of the chosen music style and the chosen type of scent might be different in other situations. In a situation when people for example are very calm and/or bored (low level of positive arousal) the chosen stimuli (used separately or in combination) might also have very negative effects. As previously introduced distinctions need to be made between negative and positive arousal (see Chapter 2.1). In the context of the conducted field experiment it is assumed that patients are negatively aroused because of the upcoming appointment with the surgeon. In a situation when people are positively aroused the effects of pleasant and relaxing scent and/or music might be different.

The results do not confirm any of the other hypotheses. Lavender scent and instrumental music with nature sounds do neither influence the evaluation of the waiting environment (H1b, H2b, H3b) nor the perceived waiting time duration (H1c, H2c, H3c). A possible explanation of the missing effects on the evaluation of the waiting environment is that the waiting room that was worked with is in an almost perfect condition. The whole practice environment is refurbished with new furniture and high quality décor. Therefore the environment has been evaluated very positively regardless of the experimental condition. In a waiting room that might have some shortcomings such as a small size or no windows, the use of pleasant and relaxing scent and/or pleasant and relaxing music might have an influence on the evaluation of the waiting environment. Further research is necessary to prove this assumption.

As for the non-existing effects of scent and music on the perceived waiting time duration, a possible explanation is the duration of the objective waiting time, e.g. the time that patients in fact waited in the waiting room. The practice that was worked with is a very big and popular one with a large number of patients coming to meet the surgeon every day. Most

of the time patients have to wait for a really long time; a two-hour wait is not uncommon. It is expected that scent and music might well be able to positively influence the perceived waiting time duration but to a specific extent only. If the waiting time exceeds a particular duration and is really long, scent and music would not be able to "fool" patients; the stimuli would not influence people's perception about the objective waiting time duration. Future research is necessary to prove this assumption.

The results also do not confirm H4. The type of concern (H4a), the severity of the concern (H4b) and the type of patient (H4c) all do not moderate the effects of scent and music on the level of anxiety, the evaluation of the waiting environment and the perceived waiting time duration. Although the results of this experiment do not show any moderating effects there might occur moderating effects if it is worked with a bigger sample. A general limitation of this research project is the relatively small sample, especially if the sample is divided into different sub groups (type of patient, type of concern etc.) while analyzing. Further research with a bigger sample might investigate more intensively the existence of moderators.

Another interesting fact that should be considered is that in the pre-test concerning the different music styles that had been conducted before the field experiment participants listened to the music for approximately a minute. In the waiting room patients often had to wait for a long time and therefore also listened to the music for a long period of time. A small number of patients made a remark on their questionnaires indicating that the music was annoying. A possible explanation is that music that is relaxing when listening to it for a moment might be, for example, annoying when listening to it for a longer period of time. Although patients generally evaluated the style of music both times (in the pretest and in the field experiment) positively, it is reasonable to conduct more extensive pre-tests in the future and investigate the effects of different music styles and different types of scent in consideration of the time duration and the situation in which they should be used.

It also needs to be mentioned that there was a large range in the age of patients. A lot of patients were 70 years and older. Because it is known that the sensual perception decreases over the years, these patients might have perceived the used scent and music differently than younger patients. Another thing that influences the perception of the stimuli is that the waiting room that was worked with was always open. There was no door and the windows were also always opened. Scent and music, used in a closed room without open windows might show other positive, as well as negative effects than the effects that were found within this research project. Future research might further investigate situational differences and their influences on the effects of the used environmental stimuli.

Despite the mentioned limitations, it can be clearly seen that the found results are reliable and useful to answer the formulated research question. These conclusions are drawn on the commitment that a well-considered project was planned with carefully conducted pre-tests as well as a scientifically conducted field experiment with experimental conditions and processes controlled accurately.

## 6. Conclusion

This last chapter of the report gives an answer to the previously formulated research question. Afterwards some practical implications that are based on the results of the conducted experiment are given to the plastic surgery practice that was worked with. Additionally some suggestions for future research are mentioned.

### 6.1 Answer to the research question

The formulated research question was: *How can scent and music be used in a waiting room of a plastic surgeon to positively influence the healthcare experience of patients?*

The answer that can be formulated is: Scent and music both can be used to partially influence patients' healthcare experience. A relaxing and pleasant scent such as lavender can be used to lower patients' level of anxiety while waiting for the appointment with the surgeon. Also relaxing and pleasant music such as instrumental music with nature sounds can be used to lower patients' level of anxiety while waiting for the appointment with the surgeon.

What needs to be considered is that either a pleasant and relaxing scent or a pleasant and relaxing music lower patients' level of anxiety. This effect would not appear if scent and music are both used at the same time.

Furthermore there is no significant difference in the effects of scent on the level of anxiety and the effects of music on the level of anxiety. Therefore it does not matter which one of the two environmental features is used. Both can be used separately in a waiting room to positively influence patients' healthcare experience.

Although there have been found positive effects of scent and music these two stimuli only partially influence the healthcare experience of patients. Scent and music can be used to lower patients' level of anxiety, but both features neither influence the evaluation of the waiting environment nor the perceived waiting time duration. Because scent and music do also not have any negative effects on the evaluation of the waiting environment and the



perceived waiting time duration, but do have a positive effect on patients' level of anxiety, it can be concluded that using either pleasant and relaxing music or pleasant and relaxing scent has a –even though rather small - positive effect on the healthcare experience.

## **6.2 Practical implications**

Based on the findings of this research project some suggestions about using scent and music for reducing anxiety can be formulated. Scent and music both can be used separately in the waiting rooms of plastic surgeons to reduce patients' level of anxiety while waiting. Therefore scent and music can probably also be used in other practice environments than just plastic surgery practices to calm patients down and improve their waiting experience. Furthermore, if used separately, scent and music might also relax people and reduce their level of anxiety in other waiting situations. Scent or music could for example be used in the waiting hall at an airport where people have to wait before they enter the airplane. The two environmental features (scent and music) could also be used on the floors in schools and universities to reduce anxiety in students before written and oral examinations or similar situations. There are a number of other situations in which people have to wait and feel anxious while waiting. In all these situations scent and music, if used separately, could help to reduce peoples' level of anxiety and therefore improve their waiting experience.

The suggestions referring to the cooperating plastic surgeon and its practice team are: Dr. med. A. Yousef is advised to use either lavender scent or instrumental music with nature sounds in his waiting room to lower patients' level of anxiety. It is advised to never provide lavender scent as well as instrumental music with nature sounds in the waiting environment.

Because the general evaluation amongst Dr. med. A. Yousef's patients referring to the pleasantness and relaxation of the two used environmental features was more positive for lavender scent than for the chosen music, and because both scent and music worked to reduce

patients' level of anxiety, it is advised to prefer the usage of lavender scent to the usage of instrumental music with nature sounds.

### **6.3 Suggestions for future research**

As already suggested in the discussion there are some things that are reasonable and interesting to be further researched in the future.

A similar field experiment that is conducted in a practice environment that is not in an almost perfect condition, but has some shortcoming would be interesting to get to know if scent and music are able to improve the evaluation of the environment. Furthermore it would be interesting to get to know if scent and music are able to reduce the perceived waiting time duration if the objective waiting time is not extremely long (as it was in the this field experiment most of the times), but acceptable. Research projects with bigger sample sizes would be interesting to go further in looking for differences within this patient group and identifying possible moderators. Because of the huge age range within this group it would for example be interesting to look for differences concerning the age of patients.

It is also interesting to get to know if other effects (than the ones found in this experiment) of scent and music occur when conducting a similar field experiment by addressing other types of patient groups, for example when conducting a similar field experiment in a dentists' waiting room.

By all means it would be reasonable and interesting to conduct similar field experiments by using other stimuli separately as well as different combinations of stimuli to identify the most useful "tool" that can be used to improve patients' waiting experience.

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## **Appendices**

Appendix A: English and German pre-test questionnaire (Pre-test: Music)

Appendix B: Used materials (Pre-test: Scent)

Appendix C: English and German pre-test questionnaire (Pre-test: Scent)

Appendix D: Waiting room and used materials (Field experiment)

Appendix E: English and German questionnaire (Field experiment)

## **Appendix A: English and German pre-test questionnaire (Pre-test: Music)**

# UNIVERSITEIT TWENTE.

Dear Sir or Madam,

My name is Caroline Loock and I am studying *Communication Science* with the specialization *Marketing Communication* at the *University of Twente*, Enschede. Within the framework of my *Master Thesis* I am doing research into patient satisfaction in healthcare environments. You would do me a huge favor if you would take some time to help me with my project. I will present you different songs, one after another. For each song there are three questions that need to be answered. It is important that you listen to each song at least 50 seconds. Please do not watch the music video while listening to the song to make sure that you evaluate the song, not the video. You also do not have to think about your answers too seriously, answer intuitional. It will take you 10-15 minutes to complete the questionnaire.

THANKS FOR YOUR HELP!

Caroline Loock

## QUESTIONNAIRE PART 1

1. What is your gender? ☐ Male ☐ Female

2. How old are you? \_\_\_\_\_ years

## QUESTIONNAIRE PART 2

**Song 1:** <http://www.youtube.com/watch?v=YTUf-9pvGzM> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all ☐ ☐ ☐ ☐ ☐ Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all ☐ ☐ ☐ ☐ ☐ Very

**Song 2:** <http://www.youtube.com/watch?v=fgCOUO-s8nY> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 3:** <http://www.youtube.com/watch?v=YuqyrF6lXLY> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 4:** [http://www.youtube.com/watch?v=m\\_rSzzopAXo&feature=related](http://www.youtube.com/watch?v=m_rSzzopAXo&feature=related) (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 5:** <http://www.youtube.com/watch?v=nRAOvZaNvNM> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 6:** <http://www.youtube.com/watch?v=NBHLLIDk9T0> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 7:** <http://www.youtube.com/watch?v=evuQzHJ2v24> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 8:** <http://www.youtube.com/watch?v=tnHlB8aQp3Y&feature=relmfu>

(to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 9:** <http://www.youtube.com/watch?v=nI9mhyJ4IkM> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 10:** <http://www.youtube.com/watch?v=0lOiNAOihtQ> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 11:** <http://www.youtube.com/watch?v=nT7jfvDRaKE&feature=related> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Song 12:** <http://www.youtube.com/watch?v=vig3RXuNr-Y&feature=relmfu> (to listen to the song: Strg + Click)

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive this music?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

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After answering all questions, please send this document back to  
c.loock@student.utwente.nl

THANKS AGAIN FOR YOUR HELP!

# UNIVERSITEIT TWENTE.

Sehr geehrte Damen und Herren,

mein Name ist Caroline Loock und ich studiere Kommunikationswissenschaften mit Schwerpunkt Marketing-Kommunikation an der Universität Twente in Enschede (NL). Momentan beschäftige ich mich im Rahmen meiner Masterarbeit mit dem Thema *Patientenzufriedenheit in Arztpraxen*. Sie wären mir eine große Hilfe, wenn Sie sich einen Moment Zeit nehmen würden, um mir mit meiner Untersuchung zu helfen. Hierzu werden Ihnen nacheinander zwölf Lieder präsentiert, zu denen jeweils zwei Fragen beantwortet werden sollen. Es ist wichtig, dass Sie mindestens die ersten 50 Sekunden jedes Liedes anhören. Bitte schauen Sie sich während des Hörens nicht das dazugehörige Musikvideo an, um sicher zu stellen, dass Sie das Lied und nicht das Video beurteilen. Denken Sie nicht lange über Ihre Antworten nach, sondern beantworten Sie die Fragen intuitiv. Das Ausfüllen des Fragebogens dauert ca. 10-15 Minuten.

VIELEN DANK FÜR IHRE HILFE!

Caroline Loock

## FRAGEBOGEN TEIL 1

1. Was ist Ihr Geschlecht? ☐ männlich ☐ weiblich

2. Wie alt sind Sie? \_\_\_\_\_ Jahre

## FRAGEBOGEN TEIL 2

**Lied 1:** <http://www.youtube.com/watch?v=YTUf-9pvGzM> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

1. Wie angenehm empfinden Sie dieses Lied?

Überhaupt nicht angenehm ☐ ☐ ☐ ☐ ☐ Sehr angenehm

2. Wie entspannend empfinden Sie dieses Lied?

Überhaupt nicht entspannend ☐ ☐ ☐ ☐ ☐ Sehr entspannend

**Lied 2:** <http://www.youtube.com/watch?v=fgCOUO-s8nY> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 3:** <http://www.youtube.com/watch?v=YuqyrF6lXLY> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 4:** [http://www.youtube.com/watch?v=m\\_rSzzopAXo&feature=related](http://www.youtube.com/watch?v=m_rSzzopAXo&feature=related) (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 5:** <http://www.youtube.com/watch?v=nRAOvZaNvNM> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend



**Lied 6:** <http://www.youtube.com/watch?v=NBHLLIDk9T0> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 7:** <http://www.youtube.com/watch?v=evuQzHJ2v24> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 8:** <http://www.youtube.com/watch?v=tnHIB8aQp3Y&feature=relmfu>

(Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 9:** <http://www.youtube.com/watch?v=nI9mhyJ4IkM> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 10:** <http://www.youtube.com/watch?v=0IOiNAOihtQ> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 11:** <http://www.youtube.com/watch?v=nT7jfvDRaKE&feature=related> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**Lied 12:** <http://www.youtube.com/watch?v=vig3RXuNr-Y&feature=relmfu> (Zum Anhören Strg + linker Mausklick auf den Link)

**Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.**

**1. Wie angenehm empfinden Sie dieses Lied?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**2. Wie entspannend empfinden Sie dieses Lied?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

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Bitte senden Sie den ausgefüllten Fragebogen per E-Mail zurück an  
c.loock@student.utwente.nl

NOCHMALS VIELEN DANK FÜR IHRE MITARBEIT!

Fragebogen-Code 0: MMMNMKKNKNN

## Appendix B: Used materials (Pre-test: Scent)



From left to right: Scent “Lemon Grass”, scent “Mango”, scent “Rose”, scent “Orange”, scent “Mint”, scent “Lavender”, scent “Magnolia”, scent “Vanilla”.

In front: Bamboo poles; those diffuse scents into the air when placed in the glass bottles.

## **Appendix C: English and German pre-test questionnaire (Pre-test: Scent)**

Dear Sir or Madam,

My name is Caroline Loock and I am studying *Communication Science* with the specialization *Marketing Communication* at the *University of Twente*, Enschede. Within the framework of my *Master Thesis* I am doing research into patient satisfaction in healthcare environments. You would do me a huge favor if you would take some time to help me with my project. I will present you eight different scents, one after another. For each scent there are two questions that need to be answered. After evaluating one scent, please take a smell at your own skin for a few seconds to neutralize your smell perception before evaluating the next scent. Do not think about your answers too seriously, answer intuitional. Answering the questionnaire will take you 5-10 minutes.

THANKS FOR YOUR HELP!

Caroline Loock

## QUESTIONNAIRE PART 1

1. What is your gender? ☐ Male ☐ Female

2. How old are you? \_\_\_\_\_ years

## QUESTIONNAIRE PART 2

Scent 1: \_\_\_\_\_

1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive the scent?

Not at all ☐ ☐ ☐ ☐ ☐ Very

2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive the scent?

Not at all ☐ ☐ ☐ ☐ ☐ Very

Scent 2: \_\_\_\_\_

1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive the scent?

Not at all ☐ ☐ ☐ ☐ ☐ Very

2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive the scent?

Not at all ☐ ☐ ☐ ☐ ☐ Very

**Scent 3:** \_\_\_\_\_

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Scent 4:** \_\_\_\_\_

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Scent 5:** \_\_\_\_\_

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Scent 6:** \_\_\_\_\_

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Scent 7:** \_\_\_\_\_

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**Scent 8:** \_\_\_\_\_

**1. Imagine you are waiting at a doctor's waiting room. How pleasant do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

**2. Imagine you are waiting at a doctor's waiting room. How relaxing do you perceive the scent?**

Not at all      ☐      ☐      ☐      ☐      ☐      Very

Sehr geehrte Damen und Herren,

mein Name ist Caroline Loock und ich studiere Kommunikationswissenschaften mit Schwerpunkt Marketing-Kommunikation an der Universität Twente in Enschede (NL). Momentan beschäftige ich mich im Rahmen meiner Masterarbeit mit dem Thema *Patientenzufriedenheit in Arztpraxen*. Sie wären mir eine große Hilfe, wenn Sie sich einen Moment Zeit nehmen würden, um mir mit meiner Untersuchung zu helfen. Hierzu werden Ihnen nacheinander acht verschiedene Düfte präsentiert, zu denen jeweils zwei Fragen beantwortet werden sollen. Riechen Sie bitte nach jedem Duft für einen Moment an Ihrer eigenen Haut, sodass sich der Geruch in Ihrer Nase neutralisiert, bevor Ihnen der nächste Duft präsentiert wird. Denken Sie nicht lange über Ihre Antworten nach, sondern beantworten Sie die Fragen intuitiv. Das Ausfüllen des Fragebogens dauert ca. 5-10 Minuten.

VIELEN DANK FÜR IHRE HILFE!

Caroline Loock

## FRAGEBOGEN TEIL 1

1. Was ist Ihr Geschlecht? ☐ männlich ☐ weiblich

2. Wie alt sind Sie? \_\_\_\_\_ Jahre

## FRAGEBOGEN TEIL 2

**Duft 1: \_\_\_\_\_.** Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.

1. Wie angenehm empfinden Sie diesen Duft?

Überhaupt nicht angenehm ☐ ☐ ☐ ☐ ☐ Sehr angenehm

2. Wie entspannend empfinden Sie diesen Duft?

Überhaupt nicht entspannend ☐ ☐ ☐ ☐ ☐ Sehr entspannend

**Duft 2: \_\_\_\_\_.** Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.

1. Wie angenehm empfinden Sie diesen Duft?

Überhaupt nicht angenehm ☐ ☐ ☐ ☐ ☐ Sehr angenehm

2. Wie entspannend empfinden Sie diesen Duft?

Überhaupt nicht entspannend ☐ ☐ ☐ ☐ ☐ Sehr entspannend

**Duft 3:** \_\_\_\_\_. Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.

**1. Wie angenehm empfinden Sie diesen Duft?**

Überhaupt nicht angenehm      ☐      ☐      ☐      ☐      ☐      Sehr angenehm

**2. Wie entspannend empfinden Sie diesen Duft?**

Überhaupt nicht entspannend      ☐      ☐      ☐      ☐      ☐      Sehr entspannend

**Duft 4:** \_\_\_\_\_. Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.

**1. Wie angenehm empfinden Sie diesen Duft?**

Überhaupt nicht angenehm      ☐      ☐      ☐      ☐      ☐      Sehr angenehm

**2. Wie entspannend empfinden Sie diesen Duft?**

Überhaupt nicht entspannend      ☐      ☐      ☐      ☐      ☐      Sehr entspannend

**Duft 5:** \_\_\_\_\_. Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.

**1. Wie angenehm empfinden Sie diesen Duft?**

Überhaupt nicht angenehm      ☐      ☐      ☐      ☐      ☐      Sehr angenehm

**2. Wie entspannend empfinden Sie diesen Duft?**

Überhaupt nicht entspannend      ☐      ☐      ☐      ☐      ☐      Sehr entspannend

**Duft 6:** \_\_\_\_\_. Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.

**1. Wie angenehm empfinden Sie diesen Duft?**

Überhaupt nicht angenehm      ☐      ☐      ☐      ☐      ☐      Sehr angenehm

**2. Wie entspannend empfinden Sie diesen Duft?**

Überhaupt nicht entspannend      ☐      ☐      ☐      ☐      ☐      Sehr entspannend

**Duft 7:** \_\_\_\_\_. Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.

**1. Wie angenehm empfinden Sie diesen Duft?**

Überhaupt nicht angenehm      ☐      ☐      ☐      ☐      ☐      Sehr angenehm

**2. Wie entspannend empfinden Sie diesen Duft?**

Überhaupt nicht entspannend      ☐      ☐      ☐      ☐      ☐      Sehr entspannend

**Duft 8:** \_\_\_\_\_. Stellen Sie sich vor Sie sitzen im Wartezimmer einer Arztpraxis.

**1. Wie angenehm empfinden Sie diesen Duft?**

Überhaupt nicht angenehm      ☐      ☐      ☐      ☐      ☐      Sehr angenehm

**2. Wie entspannend empfinden Sie diesen Duft?**

Überhaupt nicht entspannend      ☐      ☐      ☐      ☐      ☐      Sehr entspannend



## Appendix D: Waiting room and used materials (Field experiment)



Fig.7: Waiting room; View 1



Fig.8: Waiting room; View 2



Fig.9: Waiting room; View 3

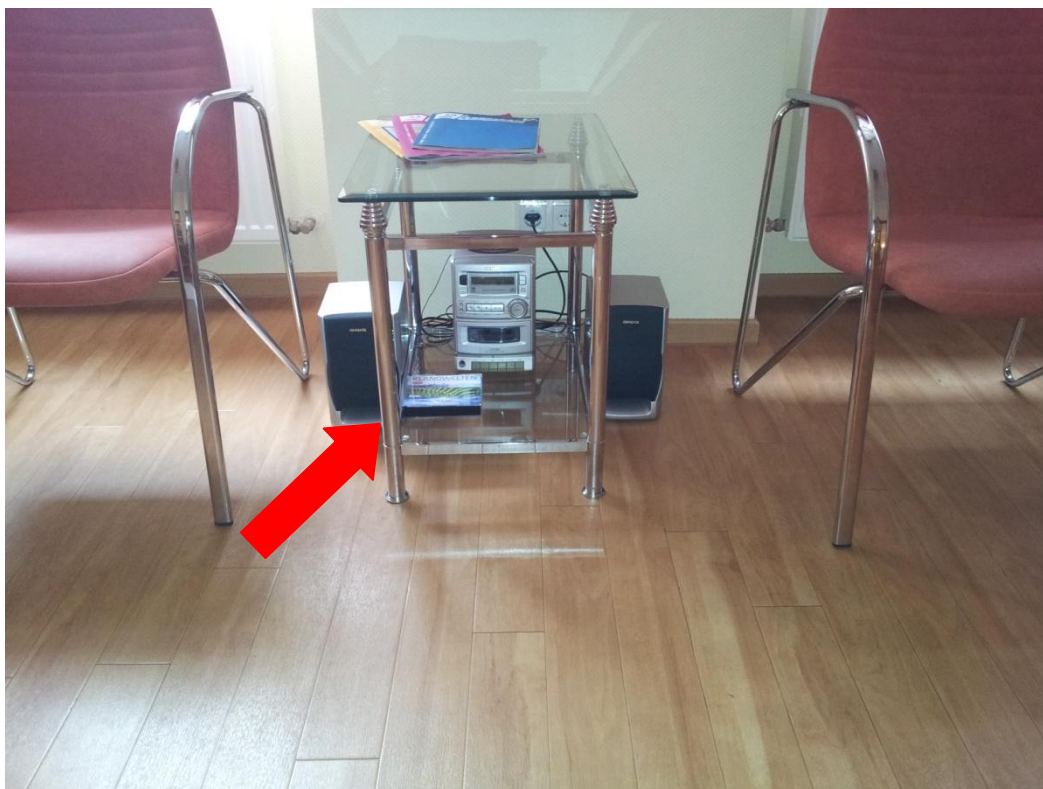


Fig.10: CD-Player and CD-Box (Instrumental music with nature sounds) used in the waiting room



Fig. 11: Lavender scent used in the waiting room

## **Appendix E: English and German questionnaire (Field experiment)**

Dear Sir or Madam,

My name is Caroline Loock and I am studying *Communication Science* with the specialization *Marketing Communication* at the *University of Twente*, Enschede. Within the framework of my *Master Thesis* and in cooperation with Dr. med. syr. Yousef I am doing research into patient satisfaction in waiting rooms of healthcare environments. You would do me a huge favor if you would fill in this questionnaire while you are waiting and hand it in at the front desk before you leave. All data will be treated anonymously. The questionnaire consists of three parts. Please fill in the first and second part while you are waiting. After your appointment, shortly before you are leaving the practice, fill in the third part. If you are asked on a next visit to fill in the questionnaire again, please reject that to avoid a falsification of the results.

Thanks for your help!

Caroline Loock

## Questionnaire Part 1

**1. What is your gender?**      ☐ Male      ☐ Female

**2. How old are you?**      \_\_\_\_\_ years

## Questionnaire Part 2

**4. Are you visiting this practice for the first time?**      ☐ Yes      ☐ No

**5. What is the reason for your visit?** I have a ....

☐ rather aesthetical concern      ☐ rather functional concern

**6. How would you describe the severity of your concern?**

Not at all serious      ☐      ☐      ☐      ☐      ☐      Very serious

## 7. Please indicate to what extent following statements apply to you in the current situation:

- I feel nervous.						
Not at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very strong
- I feel calm.						
Not at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very strong
-I feel tense or wound up.						
Not at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very strong
- I feel relaxed.						
Not at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very strong
- Worrying thoughts go through my mind.						
Not at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very much
-I feel safe and secure.						
Not at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very strong
- I feel restless as if I have to be on the move.						
Not at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very strong
- I feel comfortable.						
Not at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very strong

## 8. Please indicate to what extent following statements apply.

- The waiting room is comfortable.						
Fully disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fully agree
-The waiting room is attractive.						
Fully disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fully agree
-The waiting room is pleasant.						
Fully disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fully agree
-The waiting room is clean.						
Fully disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fully agree

**(End of part 2: Please read and answer the following four questions shortly before leaving the practice and hand it in at the front desk afterwards.)**

### Questionnaire Part 3

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**9. How did you perceive the waiting time?**

Short	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Long
Unacceptable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Acceptable
Reasonable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unreasonable

**10. How long did you approximately wait? \_\_\_\_\_ minutes**

**11. Did you perceive music while you waited?** ☐ Yes ☐ No ☐ I do not remember

**If yes, how pleasant did you perceive the music?**

Not at all pleasant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very pleasant
---------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	---------------

**If yes, how relaxing did you perceive the music?**

Not at all relaxing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very relaxing
---------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	---------------

**12. Did you perceive a scent while you waited?** ☐ Yes ☐ No ☐ I do not remember

**If yes, how pleasant did you perceive the scent?**

Not at all pleasant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very pleasant
---------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	---------------

**If yes, how relaxing did you perceive the scent?**

Not at all relaxing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Very relaxing
---------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	---------------

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### Consent form

I have been informed that this questionnaire is part of a research project. All data has been provided voluntarily and may be used by the researcher anonymously.

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(Signature)

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Please make sure that all questions have been answered before you hand in the questionnaire.

Thanks for your cooperation! 😊

Do you have questions or annotations? Then please give me a call (0173/9154607) or write an e-mail (c.loock@student.utwente.nl).

# UNIVERSITEIT TWENTE.

Sehr geehrte Damen und Herren,

mein Name ist Caroline Loock und ich studiere Kommunikationswissenschaften mit Schwerpunkt Marketing-Kommunikation an der Universität Twente in Enschede (NL). Momentan beschäftige ich mich im Rahmen meiner Masterarbeit und in Zusammenarbeit mit Herrn Dr. med. Yousef mit dem Thema *Patientenzufriedenheit in ärztlichen Wartezimmern*. Sie wären mir eine große Hilfe, wenn Sie während Ihrer Wartezeit diesen Fragebogen ausfüllen und am Ende Ihres Besuchs am Empfang abgeben würden. Alle Angaben, die von Ihnen gemacht werden, werden selbstverständlich anonym verarbeitet. Der Fragebogen besteht aus drei Teilen. Bitte beantworten Sie Teil 1 und Teil 2 während Ihrer Wartezeit, Teil 3 dagegen erst nach Ihrem Termin, kurz vor Verlassen der Praxis. Sollten Sie bei einem zukünftigen Besuch der Praxis ein weiteres Mal gebeten werden einen Fragebogen auszufüllen, lehnen Sie dieses bitte ab, so dass die Ergebnisse nicht verfälscht werden.

Vielen Dank für Ihre Hilfe!

Caroline Loock

## Fragebogen Teil 1

**1. Was ist Ihr Geschlecht?**     ☐ männlich     ☐ weiblich

**2. Wie alt sind Sie?**     \_\_\_\_\_ Jahre

## Fragebogen Teil 2

**4. Sind Sie zum ersten Mal in dieser Praxis?**     ☐ Ja     ☐ Nein

**5. Was ist der Grund Ihres Erscheinens?** Ich habe ein....

☐ eher ästhetisches Anliegen     ☐ eher funktionelles Anliegen

**6. Wie würden Sie die Ernsthaftigkeit/Schwere Ihres Anliegens beschreiben?**

Überhaupt nicht gravierend     ☐     ☐     ☐     ☐     ☐     Sehr gravierend

## 7. Bitte geben Sie an inwiefern folgende Aussagen in der momentanen Situation auf Sie zutreffen:

- Ich bin nervös. Überhaupt nicht	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sehr stark
- Ich bin ruhig. Überhaupt nicht	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sehr stark
- Ich fühle mich angespannt oder überreizt. Überhaupt nicht	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sehr stark
- Ich bin entspannt. Überhaupt nicht	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sehr stark
- Mir gehen beunruhigende Gedanken durch den Kopf. Überhaupt nicht	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sehr viel
- Ich fühle mich geborgen. Überhaupt nicht	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sehr stark
- Ich fühle mich rastlos, muss immer in Bewegung sein. Überhaupt nicht	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sehr stark
- Ich fühle mich wohl. Überhaupt nicht	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sehr stark

## 8. Bitte geben Sie an inwiefern folgende Aussagen zutreffen.

- Das Wartezimmer ist gemütlich. Stimme überhaupt nicht zu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stimme vollkommen zu
- Das Wartezimmer ist schön. Stimme überhaupt nicht zu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stimme vollkommen zu
-Das Wartezimmer ist angenehm. Stimme überhaupt nicht zu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stimme vollkommen zu
-Das Wartezimmer ist sauber. Stimme überhaupt nicht zu	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stimme vollkommen zu

(Ende Teil 2: Bitte lesen und beantworten Sie die folgenden vier Fragen erst kurz vor Verlassen der Praxis und geben den ausgefüllten Fragebogen anschließend am Empfang wieder ab.)



**9. Wie haben Sie die Wartezeit empfunden?**

Kurz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lang
Inakzeptabel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Akzeptabel
Angemessen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unangemessen

**10. Wie lange haben Sie ungefähr gewartet?** \_\_\_\_\_Minuten

**11. Haben Sie während Ihrer Wartezeit Musik wahrgenommen?**

☐ Ja    ☐ Nein    ☐ Ich kann mich nicht erinnern

**Wenn ja, wie angenehm empfanden Sie die Musik?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**Wenn ja, wie entspannend empfanden Sie die Musik?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

**12. Haben Sie während Ihrer Wartezeit einen Duft wahrgenommen?**

☐ Ja    ☐ Nein    ☐ Ich kann mich nicht erinnern

**Wenn ja, wie angenehm empfanden Sie den Duft?**

Überhaupt nicht angenehm    ☐    ☐    ☐    ☐    ☐    Sehr angenehm

**Wenn ja, wie entspannend empfanden Sie den Duft?**

Überhaupt nicht entspannend    ☐    ☐    ☐    ☐    ☐    Sehr entspannend

---

**Einverständniserklärung**

Ich wurde darüber informiert, dass dieser Fragebogen Teil einer wissenschaftlichen Untersuchung ist. Alle Angaben wurden freiwillig gemacht und dürfen anonym weiterverarbeitet werden.

\_\_\_\_\_  
(Unterschrift)

Bitte stellen Sie vor Abgabe des Fragebogens sicher, dass keine Frage übersehen wurde.

**VIELEN DANK FÜR IHRE MITARBEIT! ☺**

Haben Sie Fragen oder Anmerkungen zu meiner Arbeit, freue ich mich über Ihren Anruf unter 0173/9154607 oder eine E-Mail an c.loock@student.utwente.nl

**Declaration of academic honesty**

I herewith declare that I – Caroline Looock – have produced this thesis without the prohibited assistance of third parties and without making use of aids other than those specified.

The thesis work was conducted from April 2012 to September 2012 in cooperation with Dr. med. (syr.) Yousef, and the University of Twente (Enschede, NL).

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Location, date

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Caroline Looock